

Astrologie und Forschung I

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Alle Texte gibt es im Original hier:

www.astrology-and-science.com

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Brief abstracts of articles on this website

Click title to see full abstract with option to see article

gr = graphics, m = minutes reading time, *new or updated since July 2008

Adroit Utilities *New visitors should start here*

Brief biographies of authors -- Hubert Basler, T Patrick Davis, Geoffrey Dean, Suitbert Ertel, Jacques Halbronn, David Hamblin, Ivan W Kelly, Bart Koene, Alan Leo, Arthur Mather, David Nias, Peter Niehenke, Garry Phillipson, Rudolf Smit, and Koen Van de moortel. Most with a photograph. 8gr 5m

Case for and against astrology -- Cites views on astrology by astrologers and scientists. Includes research findings, two figures showing key results, and how not to test astrology. Case against is that astrology is factually untrue. Case for is that astrology can be personally meaningful. 2gr 12m

Grand summary -- This entire website in 600 words. Astrology ranges from the trivial to the profound. Today for the first time in 20 centuries we can answer most questions about astrology. For astrologers the answers are often bad news. But there is more to astrology than being true or false. 2m

Guide to sources -- Where to find scientific research into astrology. Covers websites, journals, books, the low standard of astrological sources, emergence of a scientific research base, and growth of published research articles since 1930 (1 figure). With an annotated bibliography of 60 critical works. 1gr 20m

Journal cumulative contents -- Lists the contents of the astrological research journals *Correlation* 1981-2007, the now defunct *Astro-Psychological Problems* 1982-1995, and (briefly) *Astrologie in Onderzoek* 1977-2003 and *Kosmos* 1978-1995. With commentaries, pictures, and statistics. 9gr 40m

Links -- Almost all astrology on the Web is commercial or social talk, or the same endlessly repeated generalities, so that few sites are actually useful to scientific readers. Here we list the more useful sites (37 of general interest and 70 relevant to research) that were active at December 2007. 2gr 30m

Printing, searching, translating articles -- Gives help on printing, formatting, saving as text files, searching, and translating articles. 1m

Quick index -- Short cuts for readers mainly interested in empirical findings. 90 entries linked to the most relevant articles on artifacts, critiques, effect sizes, research results, and sources. 1m

Reference alert -- 1700 references obtained by entering the keyword *astrology* or *astrolog** into ten online academic databases covering journals, books and theses in the fields of arts, biology, business, history, humanities, medicine, psychology, science, and social sciences. 1gr 95m

Site philosophy -- Includes aims, history, how to contact us. Site provides readable articles on scientific research into astrology that are also sensitive to astrology's merits. All articles have a brief abstract and a full abstract. Website began 2000, has 16,000 visitors a year. Comments are welcome. 1gr 2m

Applied astrology *Critical views of. See also Sun Signs*

Astrologer meets client -- Tricks of the trade. Astrology is a means of communication not a source of knowledge, but various tricks of the trade make it seem otherwise. Astrological consultation is more a massage of the client's ego than a message from the stars. With ten cartoons. 10gr 12m

Astrology my passion -- The founder of this website tells how reading charts

converted him from a skeptic to a believer. But learning how his readings could convince clients that astrology was true even if false, and the failure of astrology when tested, converted him back again. 3gr 15m

Basic statements about astrology -- In 1983 German astrologers agreed on seven basic statements about astrology that implied astrology had been proven true and worked for reasons unknown. Today this no longer applies. Six new statements are proposed to replace the seven old ones. 25m

Concepts of modern astrology -- Here the core ideas of serious astrology meet expert critical thinking. Astrology needs (but lacks) sound ideas and sound methods for detecting errors. Long, thorough, but very readable. With many quotes from leading astrologers and a staggering 250 references. 1gr 90m

Horary astrology -- Horary astrology is said to give accurate yes/no answers, but this is incompatible with the disagreement among astrologers on crucial issues and its often ambiguous rules. 3m

Moment Supreme -- Horoscopes seem to correctly describe a person. This discovery is an unforgettable Moment Supreme, which makes astrologers keep on believing in astrology. But the accuracy is due to non-astrological factors, not to astrology. So the Moment Supreme is an illusion, albeit a beautiful one. 12m

Murder -- A skeptic visited professional astrologers giving the birth data of a serial killer as his own. They generally described him as kind and considerate. Similar results were obtained using the birth data of two other serial killers. Orthodox predictors of psychopathy are much better. 10m

Optimum place for astrology -- Science = observation and testing, astrology = anything goes, with no overlap. So reverting to a declared art form may be the only valid way ahead for astrology, where the birth chart is now simply a tool for channeling wisdom from astrologer to client. 7m

Theories of astrology -- Surveys the role of theories (ie explanations), the many speculative theories of why astrology works (none are useful), a theory based on non-astrological factors (the only theory to have survived repeated tests), and theories of astrology's longevity and perceived value. 46 references. 25m

Using astrology as a counselling tool -- Surveys the trend away from chart reading to chart exploration. Includes what makes a good therapist, a good client, a successful outcome, examples of how it works, and insights from an astrology for which no claims of validity are made. 115 references. 1gr 70m

Book reviews

Astrology File *Scientific Proof of the Link between Star Signs and Human Behaviour* (Sachs) -- Three reviews of a 1998 best-seller. First shows how flaws in reasoning make results meaningless. Second re-analyses Sachs's data and finds no support for the claims. Third finds many statistical errors. 30m

Astrology Really Works! (Magi 1995) -- Claims to present irrefutable evidence that astrology really works, and challenges skeptics to prove otherwise. A good example of claims based entirely on artifacts and of how not to do research. Review includes probability of contacts in declination. 1gr 10m

Astrology, Science and Culture (Willis & Curry 2004) -- Claims the only real astrology is horary astrology, or divination, which fills the world with magic and meaning. Empirical findings and contrary views (even those of astrologers) are dismissed. A highly unreadable, biased and ultimately futile book by academics. Now updated with Curry's brief reply, the reviewers' response, and a summary of five other reviews. 25m

Cosmos and Psyche *Intimations of a New World View* (Tarnas 2006) -- Claims that astrology promises an escape from disenchanting science. Based on 30 years of research without controls. Main features are huge erudition, paralysing unreadability, inferential

incompetence, and unfounded conclusions. 1gr 25m

Self-defence / Case for A (Parry 1990 and West 1991) -- Two militant books promise new support for astrology but deliver only dated studies and selective reporting. 15m

Doing Scientific Research *See also Objections. Includes research results*

Artifacts in data -- Artifacts are non-astrological factors that mimic astrology and wrongly persuade us that it works. Artifacts can afflict data (this article) and reasoning (next article). This article includes artifacts in data that became famous as the best claimed evidence for astrology. 2gr 10m

Artifacts in reasoning -- Explores over 30 hidden persuaders (systematic errors in human reasoning that we are generally unaware of) that explains why astrologers and clients can be convinced that astrology works even if it doesn't. All are in everyday use in astrology. None require that astrology be true. 10m

Astro sleuthing contests -- Organised in the 1990s by the late T Patrick Davis to try and reach consensus among astrologers on what methods work best. Results showed that astrological methods are in chaos and that astrologers are generally not interested in sorting them out. 15m

Competitions in astrology -- Surveys 15 prize competitions and their results, especially the results of the \$US5000 superprize offered in 1984 for evidence that the accuracy of chart interpretations cannot be explained by non-astrological factors. 50 references. 65m

Effect sizes -- A non-technical look at how effect sizes in astrology (and graphology, palmistry etc) are not usefully better than chance, how effect sizes in orthodox approaches are much better, and how astrology works even when the wrong chart is used. What astrology books don't tell you. 5gr 10m

Four key topics -- In 1994-99 astrologers and scientists collaborated on four surveys covering the relevance of science, philosophical problems, theories of astrology, and faulty reasoning. A fifth unfinished survey was of future directions for research. The outcomes are summarised. 7m

Meta-analyses of nearly 300 empirical studies -- Brings together in graphical form meta-analyses of sun sign self-attribution, matching tests, picking own chart, astrologer agreement, Gauquelin's tests of signs, aspects and planets, and lunar and other effects. Results are uniformly negative. 6gr 15m

Phillipson interview of researchers -- Garry Phillipson grills this website's five researchers with over 150 questions covering the methods, results, and problems of scientific research into astrology. Easy to read, concise, nontechnical, has a massive index. (Abstract includes excerpts, takes 4m to read.) 4gr 2h

Projection -- Astrology as a tarot reading. The same tarot card can evoke different responses in different people. It is the client who gives the cards meaning via a process called projection. The paranormal is not needed. Projection alone is sufficient to explain the tarot's and astrology's success. 4gr 15m

Research results -- abstracts of 91 studies, most of them empirical, from the astrological research journals *Correlation*, *APP*, *AinO*, and *Kosmos*. Length averages 270 words. Covers character, events, signs, aspects, houses, Gauquelin effect, tests of astrologers, and approaches to research. Illustrates research since the 1980s and the negative results obtained. With nine figures. 9gr 85m

Truth of astrology -- A look at arguments supporting astrology made by 30 astrologers in response to a competition. In each case faulty reasoning has led them astray. Astrology is unlikely to become respectable unless astrologers embrace critical thinking skills. 25m

Vested interests 1, scientific integrity 0 -- Decline and fall of the AA's research journal *Correlation*. A salutary look at what happens when science is unable to deliver

the support required by vested interests. The days when *Correlation* could be regarded as a serious journal seem to be over. 20m

What tests are easy? -- A guide for students doing projects. Has three tests of sun sign beliefs, two tests of sun sign columns, one test of astrologers, and one test of Barnum effects. 8m

What works best in astrology? -- For students of astrology. Explore your ideas using the charts of 24 people who have clear-cut characteristics. Indications as they arrive will be added anonymously to this article. So far nine responses showing little agreement. Allow several hours exploration time. 7m

Gauquelin

The Gauquelin work 1 -- A concise history with rare photographs. Michel Gauquelin (1928-1991) with Francoise Gauquelin (1929-2007) discovered tiny planetary effects that created baffling puzzles for astrology and science. Includes effect sizes, his negative results in detail, and 9 tributes. 13gr 50m*

The Gauquelin work 2 -- Opinions, artifacts, puzzles. Natural and procedural artifacts explain hardly any of the baffling puzzles, and controlling them has little effect on planetary effects. Social artifacts explain every puzzle but the effect of controlling them is not yet known. 14gr 45m*

The Gauquelin work 3 -- Dean's January 2006 reply to *Correlation* articles by Ertel, Kollerstrom, Douglas and others on Gauquelin matters. It displays in a different colour the 60% (including crucial paragraphs) censored by the *Correlation* editor. Includes a reply to Ertel's rejoinder. 4gr 25m

Historical *Includes obituaries*

Alan Leo's tests of astrology -- During 1906-1914 twenty prize competitions in *Modern Astrology* had readers delineate an anonymous chart for rating by the subject. Leo held (wrongly) that the results proved the truth of astrology. With examples of delineations, ratings, and testimonials. 3gr 20m

Astrology should be encouraged -- In 1907 this prize-winning essay claimed astrology gives good guidance on health, marriage, friends, travel, jobs, etc, and has never been proven false. 4m

Chair of Astrology -- In 1998 a million pounds was bequeathed for a Chair of Astrology at a British university. Summarises the views in 1999 of two dozen academics and a think-tank of astrologers. Predictions by the academics were essentially correct. With an appendix of 3 media articles. 25m

Concerning the vanity of astrology -- this 1674 criticism of astrology by John Flamsteed (1646-1719), the first astronomer royal, was perhaps the earliest by a major scientist. His points (the disagreement on basics, the endless nonfalsifiability, the absence of a mechanism) still apply today. 1gr 5m

Evolution of claimed evidence for astrology -- Illustrated by 1850s astro-meteorology, debates with critics in 1908 and 1933, a 1936 booklet by astrologer Charles Carter, a 1951 letter by science editor John O'Neill, the 1958 founding of the AA, and a 1976 response to 186 scientists by science writer Mark Feldman. They are reminders of how limited our scientific understanding of astrology was up to the 1970s. 5gr 20m*

How astrology can help everyday life -- A digest of a 1984 monograph in which a scripture professor from Friburg looks at the astrological mode of thinking, its hypotheses, benefits and liabilities, and how it can provide helpful viewpoints even if false. An example of the thinking then emerging. 5m

Indian scientists on Vedic astrology -- In 2001 the University Grants Commission in India offered to fund courses in astrology and palmistry at Indian universities. Article

summarises 30 letters from scientists to the prestigious Indian journal *Current Science*. Not all were against. 15m

Obituary of H.J.Eysenck -- Professor Hans Eysenck (1916-1997) was arguably the most influential psychologist of his time. Covers his upbringing, career, writings, and interest in graphology, astrology and parapsychology. He was an inspiration to many. Includes a critical look at his birth chart. 2gr 15m

Origins of Recent Advances in Natal Astrology -- Its publication in 1977 was a landmark in the history of scientific astrology. Interviews in 1978 and 1989 with its compilers, and in 1985 with Charles Harvey, cover its origins, its compilation, and the mixed reactions of astrologers. 2gr 20m

Patron of research -- A tribute to Charles Harvey 1940-2000. His eminence within astrology, and his enthusiasm for scientific research, made him a key figure in the astrology-science debate. But research did not support his hope that astrology would unite spiritual and material values. 5gr 12m

Sextus Empiricus's critique -- c.200 AD this famous Greek physician and philosopher raised many arguments against astrology, some of which are still in use today, eg astrological analogies are absurd, births at same time have different lives, births at different times meet the same end, 15m

Value of astrology -- In 1910 this London symposium of eight views held that astrology is a time saver, indicates our strengths and liabilities, and is clearer than palmistry. It fosters tolerance and compassion, and must be widely practised to make its value more evident. Wordy. 20m

Objections to Scientific Research *With our reply*

Are scientists undercover astrologers? -- The claim that some areas of science are really astrology in disguise may have been true in the Middle Ages but is not true today. 20m

Astrologer attacks researchers -- In 2001 UK astrologer Dennis Elwell wrote four long articles attacking this website's researchers. He claimed they were hostile to astrology. Here the researchers summarise his points, his mistakes, and his apparent inability to be helpful. With an option to see on another website the original articles with the researchers' point-by-point response (total 5h). 15m

On Rebunking the Debunkers -- When astrologers debunk research they ignore informed critiques, ignore negative studies, and embrace positive studies no matter how flawed. 20m

Star Wars -- In 2003 astrologers reacted to negative findings in the *Journal of Consciousness Studies* with name-calling and getting it wrong. Appendices give the JCS abstract and a point-by-point reply to the critiques of Jonathan Cainer, Frank McGillion, and Vladimir Gorbatshevich. 20m

Philosophy *including Facts vs Values*

Astrology as religion -- The spiritual dimension is a necessary part of human existence. For many astrologers, astrology is a religion rather than a science. It enriches their lives and the lives of their clients in the same way as other people's lives are enriched by Christianity. 4m

Astrology between religion and science -- The absence of convincing scientific support for astrological claims makes it difficult to see astrology except in religious terms. Thus its ideas can be viewed in the same way as the ideas of life after death, purgatory, karma and reincarnation. 7m

Guinard's Manifesto -- Dr Patrice Guinard sees meaning in astrology, and claims this is because our psyche resonates with the planets. But his arguments boil down to implausible speculations that are not supported by empirical studies. In reply Guinard

gives a brief brush-off response. 12m

Rhetoric -- Satirical guide for astrologers by philosophers. Excerpts from the Butterflies and Wheels website that will be of value to those who find logic and science confusing. 2m

Views of modern philosophers -- In their various books and articles seventeen modern philosophers argue that astrology is not a source of reliable knowledge although it can be a source of sympathy and support. Includes hints on deciding what to believe. 28 references. 12m

Ways of knowing -- A simple nontechnical account of the divide between science and spirit, and of ways of knowing. Astrologers look at astrology from a value viewpoint and conclude that it works. Critics look at astrology from a factual viewpoint and conclude the opposite. 12 references. 12m

Readers' Comments

On specific topics -- Gives our replies to the 21 comments received so far from readers. There are 8 general comments, 3 comments to which reasoning errors are relevant, 5 comments about astrological forces and white crows, and 5 questions from a Swedish radio station. 12m

On this website in general -- We welcome suggestions for improving the user-friendliness and content of this website. So far there has been only praise for its impartiality and information content. 2m

Reader's manifesto -- From Atlanta GA. The author proposes a new astrology that is nonfalsifiable, nevertheless it leads to falsifiable hypotheses. Readers were invited to send in a critique. The best could win a rare signed copy of *Recent Advances*. None were received so we provide our own. 2m

Sun signs

History, controversies, validity -- A comprehensive survey. Astrologers disagree violently about sun sign columns. Scientific research is negative but astrologers ignore it. Can sun sign columns be tested in ways that astrologers will accept? Readers sent in their ideas, see next item. 45m

Response to above invitation -- A total of 16 astrologers and 14 scientists responded from a total of nine countries. Suggested tests were much the same as existing tests, so the existing negative verdict seems unlikely to change. Includes summaries of their responses. 30m

Love signs -- Three recent studies with a combined sample size of 27 million couples have failed to find the slightest evidence for sun sign effects. Lonely hearts (and anybody else including astrologers) who worry about sun signs are absolutely wasting their time. 6gr 12m

Sachs's Astrology File *Scientific Proof of the Link between Star Signs and Human Behaviour* -- Three reviews of a 1998 best-seller. First shows how flaws in reasoning make results meaningless. Second re-analyses Sachs's data and finds no support for claims. Third finds many statistical errors. 30m

True Confessions -- My girlfriend has a large immediate family, all of whom are firm believers in astrology. At a large family party they rated sun sign horoscopes as less accurate than ones that (unknown to them) had been switched by me. This upset them and ruined my love life.

Brief biographies of authors

Abstract -- Brief biographies of Hubert Basler, T Patrick Davis, Geoffrey Dean, Suitbert Ertel, Jacques Halbronn, David Hamblin, Ivan Kelly, Bart Koene, Alan Leo, Arthur Mather, David Nias, Peter Niehenke, Garry Phillipson, Rudolf Smit, and Koen Van de moortel. Each biography averages 50-150 words and most of them include a photograph.



The above pictures show the five main researchers featured on this website. Left, **Arthur Mather** (Scotland). Right, **Ivan Kelly** (Canada). Centre, a meeting with Professor Hans Eysenck (1916-1997) and Dr David Nias in November 1996 at the Institute of Psychiatry, London. From left to right are Nias, **Rudolf Smit** (Netherlands), **Geoffrey Dean** (Australia), **Suitbert Ertel** (Germany), and Eysenck.

Dr Hubert Basler. An eminent German statistician whose textbook *Grundbegriffe der Wahrscheinlichkeitsrechnung und Statistischen Methodenlehre* [Basic concepts in probability and statistical methods] is in its 11th printing.



T Patrick Davis (1927-2001) started her astrological teaching career early in 1960. She was Founder and Past President of the Illinois Federation of Astrologers and was a past Board Member of both the Academy of Science and the Astronomy Society. She joined the AFA Faculty in 1972 shortly before publishing her first book *Astrologer's Condensed Manual*, which became an instant hit (perhaps helped by her male-sounding name, which she had devised in order to improve the chances of her work being accepted). Late in 1974 she retired from her astrological counselling practice, her bookstore, and all public astrological activity to pursue astrological research, which in 1979 until her death in January 2001 focussed on heliocentric astrology. Her projects included explorations of retrograde and stationary planets, sexual assaults, missing children, inventors, victims, criminals, financial markets, politics, degree areas, and astrological techniques. In 1991 she received the Aquarius Workshops Robert Carl Jansky Award for research and leadership. Picture is from *Mercury Hour* October 1983 page 51.

Dr Geoffrey Dean. Co-compiler with Arthur Mather of the book *Recent Advances in Natal Astrology: A Critical Review 1900-1976*. Since 1974 he has conducted large-scale studies of astrology, and has authored or co-authored many critical articles, debates, surveys, and prize competitions for research into astrology. He has been a full-time astrologer and was the founding president of the Federation of Australian Astrologers in Western Australia. Noted for his humorous lectures profusely illustrated with slides. In 1988 he received a Commemorative Bi-Centennial Award from the *Astrological Monthly Review* (Australia) for his contributions to astrological research. In 2003 he was elected a CSICOP Fellow for significant contributions to science and skepticism. In 2005 the November issue of *AMR* was dedicated to Dean, a "researcher who is brave enough to ask awkward questions". He is a British freelance technical writer and editor living in Perth, Western Australia.

Professor Emeritus Dr Suitbert Ertel. The world's leading investigator of Gauquelin planetary effects, on which he has authored many scientific articles including a bibliography of Gauquelin's publications, and co-authored with Kenneth Irving the book *The Tenacious Mars Effect*, Urania Trust, London 1996. Before his retirement he was Professor of Psychology at Georg-August University in Gottingen, Germany.



Dr Jacques Halbronn is one of France's most active scholars in astrology. His approach is interdisciplinary, as can be seen on the websites <http://cura.free.fr> and <http://ramkat.free.fr>. In 1975 he founded the *Mouvement Astrologique Universitaire* (MAU) and until 1995 he organised annual colloquia in France and overseas. Among many notable publications are two academic theses directly related to astrology (1979

and 1999), and his *Guide de la Vie Astrologique*, now in its 3rd edition (1997), a comprehensive listing of astrologers, authors, books, bookshops, courses, and journals in France and francophone countries.

David Hamblin MA DFAstroIS was a Council member of the Astrological Association during 1982 and 1983 and was its Chairman until late 1985. His book *Harmonic Charts: A New Dimension in Astrology* was published in 1983 by Aquarian Press.

Professor Ivan W Kelly is Chairman of the Astrology Subcommittee of the USA-based Committee for the Scientific Investigation of Claims of the Paranormal, and author or co-author of over one hundred scientific or philosophical articles including many critical works on astrology, human judgement, and alleged lunar effects on behaviour. He is especially interested in the philosophical aspects of science. Since 1979 he has been Professor of Educational Psychology and Special Education at the University of Saskatchewan, Saskatoon, Canada.



Dr Bart Koene is a physicist and electrochemist at Delft University of Technology. His current research interest is corrosion. He has written several critical articles about New Age subjects and has a lively interest in philosophy.



Alan Leo (1860-1917) is generally acknowledged as the father of modern astrology. Through his magazine *Modern Astrology* (1895-1917), some thirty books such as *Astrology for All* (1901) and *A Thousand and One Notable Nativities* (1910, the first large collection of modern birth data), and his shilling horoscopes of mimeographed

sheets stapled together (20,000 were sold in the first three years at a time when one shilling was about 4% of the average weekly wage), he converted a prediction-oriented tradition into a systematic method of psychological analysis with a strong spiritual basis that reflected his Theosophist views. In 1902 he founded the Society for Astrological Research, the first of its kind, but it lasted only one year. Modern astrology is difficult to imagine without Leo's profound interventions.

Arthur Mather. A self-taught student of astrology and co-ordinator of research for the UK Astrological Association 1971-1978. Co-compiler with Geoffrey Dean of *Recent Advances in Natal Astrology: A Critical Review 1900-1976*, the first book-length critical review of scientific research into astrology, which was facilitated by the scientific articles he had retrieved while working as an information scientist. Collaborator with Dean since 1975 on critical articles, debates, surveys, and prize competitions for research into astrology. Their joint presentation at the AA Research Conference in 2004 reviewed 25 years of research progress. Received MSc in Information Science from City University, London. He is especially interested in the boundaries of science in relation to astrology and other paranormal claims. He lives near Edinburgh, Scotland.

Dr David Nias. Psychologist, co-author with Professor Hans Eysenck of *Astrology Science or Superstition?* (1982), which in 1984 appeared as a Pelican edition and by 1997 had been translated into seven languages. Co-author of reviews (1986 and 1997) of Eysenck's involvement in astrology. Presently a medical psychologist at the Royal London Hospital.



Dr Peter Niehenke studied mathematics, physics and psychology, and obtained his PhD in 1987 with his thesis *Kritische Astrologie -- Zur erkenntnistheoretischen und empirisch-psychologischen Prufung ihres Anspruchs* [Critical Astrology -- an epistemological and empirical psychological study], a scrutiny of astrology based on comparing birth charts with questionnaire responses for 3500 people, also published in book form by Aurum Verlag. From 1981 until 1991 he was President of Deutschen Astrologen-Verbandes (German Astrologers Association), and also ran the DAV research centre in Freiburg. He is an astrologer, psychotherapist, and publisher of an officially-licensed correspondence course for the training of professional astrologers.



Garry Phillipson. Graduated in philosophy from the University of East Anglia. Subsequently studied Buddhist philosophy and meditation, and was a Buddhist monk during 1986-1993. His ground-breaking book *Astrology in the Year Zero*, Flare, London 2000, studies the practice, philosophy and assumptions of astrology. He is currently working on a PhD in astrology at Bath Spa University College.



Rudolf Smit. Secretary of the late Professor H J Eysenck's Committee for Objective Research into Astrology, founding editor and typesetter of what is now *Astrologie in Onderzoek* [Astrology under Scrutiny], and editor and typesetter 1992-1999 of *Correlation*, the journal of research into astrology. Originally an amateur astronomer and author of a popular textbook on photographic optics. A practising astrologer 1972-1984 and author of many articles and studies on astrology including *De Planeten Spreken: De werkelijkheid achter de astrologie* [The planets speak: the reality behind astrology] Fidessa, Bussum, 1975. In 1988 he received a Commemorative Bi-Centennial Award from the *Astrological Monthly Review* (Australia) for his contributions to astrology. Until late 2000 he was editor and translator for one of the Netherlands' leading technological institutes. He is the initiator and webmaster of this website.



Koen Van de moortel lives in Ghent, Belgium. He has an MSc in physics and is a writer of astrological and scientific software. In 1989 he founded the Belgian study group *The Round Table* to improve communication between scientists and practitioners in fringe areas. His multilingual website www.astrovdm.com is perhaps the only individual astrologer website that is critical and research-oriented.

The case for and against astrology

End of a shouting match

"If I doubt astrology to a believer, I am looked at with a shocked and bewildered stare, as if I were attacking apple pie and motherhood." Anthony Standen, *Forget Your Sun Sign*, 1977.

Abstract -- Eleven representative views of astrologers 1863-2006 imply that astrology is all-revealing, factual, inarguably true, applicable to everything including past lives, enthralling to thinkers, soon to dominate scientific thought, the key to a new world view, and more. Just study it seriously, they say, and you will be convinced it works. But seven representative views of scientists 1930-1998 who studied it seriously imply the exact opposite. This conflict of views can be explained by differences in what astrology means to different people, by differences in what astrology claims, and by the failure of astrologers to allow for non-astrological factors (hidden persuaders) that lead to astrology-like outcomes. The case against astrology is that it is untrue, it has failed hundreds of tests, and astrologers do not usefully agree on what a given birth chart indicates. The case for astrology is that a warm and sympathetic astrologer provides low-cost non-threatening therapy that is otherwise hard to come by. Much the same applies to sun sign astrology but at a more basic level. In short, there is more to astrology than being true or false. But astrology is an easy target for commercial abuse. It also faces strong competition from hundreds of self-help psychology books that it may or may not survive once its true nature becomes more widely known. Includes tests of validity and agreement, and insights into how not to test astrology.

End of a shouting match

Astrology has been a field made quarrelsome by a shortage of facts. Could astrology be true? Could the stars really correlate with human affairs? Such questions have been furiously debated without resolution for more than 2000 years. Astrology has been the world's longest shouting match.

Not any more. Advances in related areas (astronomy, psychology, statistics, research design) and a decisive technology (personal computers) have since 1975 put astrology under the scientific microscope like never before. Today, most questions can be answered. Quarrelling is no longer the option it once was. In what follows we ignore the usual tired arguments against astrology (sun signs do not agree with the constellations, there is no known way it could work) in favour of the only question that matters: What is the case for and against astrology?

Unfortunately the media generally see astrology only as a sales gimmick (eg sun signs in Sunday supplements) or as a source of sensation, as when phonline astrologers earn huge sums or when crooked astrologers fleece the public. If your knowledge of astrology comes from what you read in the media, be aware that you are likely to be seriously misinformed both for and against astrology.

Views of astrologers

Astrologers leave you in no doubt that astrology works:

Against its detractors, astrology "will obtain an easy victory, a glorious triumph, by the force of its most powerful weapons -- facts." (Alfred John Pearce, for nearly 50 years the learned editor of Zadkiel's Almanac, *A Defence and Exposition of the Principles of Astrology*, 1863.)

"Practical experiment will soon convince the most sceptical that the bodies of the solar system indicate, if they do not actually produce, changes in: 1. Our minds. 2. Our feelings and emotions. 3. Our physical bodies. 4. Our external affairs and relationships with the world at large." (Charles Carter, leading British astrologer of his day, *The Principles of Astrology* 1925.)

"Official science will recognise that the ancients were not mistaken, and astrology, aided by new methods of investigation, will recover its ancient prestige." (French astrologer Paul Choisnard, whose verdict was based on his experimental tests, *Les Objections contre L'Astrologie: Reponses aux critiques anciennes et modernes* 1929.)

"No one has ever been known to make a serious study of Astrology and then reject it." (Nicholas de Vore, American astrologer and president of the Astrologic Research Society, *Encyclopedia of Astrology* 1947.)

"From being an outcast from the fraternity of sciences, it seems destined to assume an almost central role in scientific thought." (John Addey, leading British astrologer of his day, *Astrology Reborn* 1971.)

"Astrology throws light on every department of life; ... From sex to career to character and future prospects -- and more." (American astrologer Sydney Omarr, whose astrology columns were then appearing in nearly 300 newspapers, *Astrology's Revelations About You* 1973.)

"There is no area of human existence to which astrology cannot be applied." (Julia and Derek Parker, *The Compleat Astrologer* 1975, which sold over a million copies in ten languages. The first is a former President of the British Faculty of Astrological Studies.)

"Anyone who makes a serious and open-minded study of astrology becomes totally unable to scoff. Its truths are inarguable." (Mary Coleman, Australian psychologist and astrologer, *Astro-Pick your Perfect Partner* 1986.)

Astrology "despite the contemptuous guffaws of scientific orthodoxy, still continues to enthral the minds of some of our finest contemporary thinkers." (Charles and Suzi Harvey, respectively former President of the British Astrological Association and former Editor of its journal, *Principles of Astrology* 1999.)

"Astrology's symbols are the soul's language of life. They reveal not only the mysteries of the universe but also the mysteries of each of our lives." (Gina Lake, American counselling psychologist and astrologer, *Symbols of the Soul: Discovering your Karma through Astrology* 2000.)

Astrology "promises to contribute to the emergence of a new, genuinely integral world view, one that ... can reunite the human and the cosmic, and restore transcendent meaning to both" (Professor Richard Tarnas, American philosopher and astrologer, *Cosmos and Psyche* 2006.)

In short, astrology is all-revealing, factual, inarguably true, applicable to everything including past lives, enthralling to thinkers, soon to dominate scientific thought, the key to a new world view, and more. Just study it seriously and you will be convinced it works. Or so astrologers lead us to believe. Now a word from scientists who have studied it seriously.

Views of scientists

The following views reflect serious studies up to the 1990s:

"I myself, at the risk of appearing ridiculous even to my colleagues, have for fourteen years held my archives open for astrological evidence, ... [but all were] the result either of a forced application of the rules to human careers already known, or of a careful culling of hits from preponderating numbers of misses. I do not think that any psychical researcher ... has given attention to the claims of astrology and has not definitely cast the pretended science on the dust heap." (Walter Price, presidential address to the Society for Psychical Research, 1930.)

"The ancients were evidently unaware that [astrological judgements] were the result of reasoning by analogy, which so often proves a treacherous foundation. That is why the whole superstructure of astrology is so utterly worthless and fallacious." (August Thomen, *Doctors Don't Believe It* 1938, a survey of medical superstitions.)

"The casting of horoscopes provides a living to thousands of individuals and provides dreams to an infinitely larger number of consumers. ... [But] since the most painstaking studies have shown the inanity of horoscopes, there should be a strong rising up against this exploitation of public credulity" (Michel Gauquelin, after analysing the horoscopes of 16,000 famous people, *Dreams and Illusions of Astrology* 1969.)

"The picture emerging suggests that astrology works, but seldom in the way or to the extent that it is said to work." (Geoffrey Dean and Arthur Mather, *Recent Advances in Natal Astrology* 1977, a critical review by fifty astrologers and scientists of over 1000 astrology books, 410 journal articles, and 300 relevant scientific works.)

"We are convinced however that astrology does not work. Astrology cannot be used to predict events of any kind, nor is astrology able to provide any useful information regarding personality, occupation, health, or any other human attribute" (Roger Culver and Philip Ianna, *The Gemini Syndrome* 1979, a review by astronomers of years of data collection, tests, and most of the available evidence.)

"Astrology is largely (but not entirely) superstition. However, because of the important areas which remain to be investigated, this conclusion may need future qualification. We should not be dogmatic." (Hans Eysenck and David Nias, *Astrology: Science or Superstition?* 1982, a review by psychologists of the then most recent research.)

"The single fact that astrologers contradict each other at about every point, and the firm convictions of their own correctness supported by their experience, must call up doubts about the reliability of [their] methods. ... Not a single classical astrological element is shown to be able to resist statistical research." (Ronnie Martens and Tim Trachet, *Making Sense of Astrology* 1998, a review of astrological claims.)

Evidently astrology works if studied by astrologers but not if studied by scientists. How is such disagreement possible? To find out we must first look at what is meant by "astrology".

What is meant by "astrology"?

Astrology means different things to different people and leads to different levels of interest. In Western countries there are four broad levels of interest in astrology as shown below with the rough percentage of the population involved at each level. For comparison the proportion of people who are dentists is roughly 0.05%.

Level of interest

1. Superficial -- Reads sun signs, seeks entertainment, 50%
2. Some knowledge -- Has own chart, seeks self-examination, 2%
3. Deep involvement -- Calculates charts, seeks meaning to life, 0.02%
4. Scientific -- Performs tests, seeks answers, 0.00002%

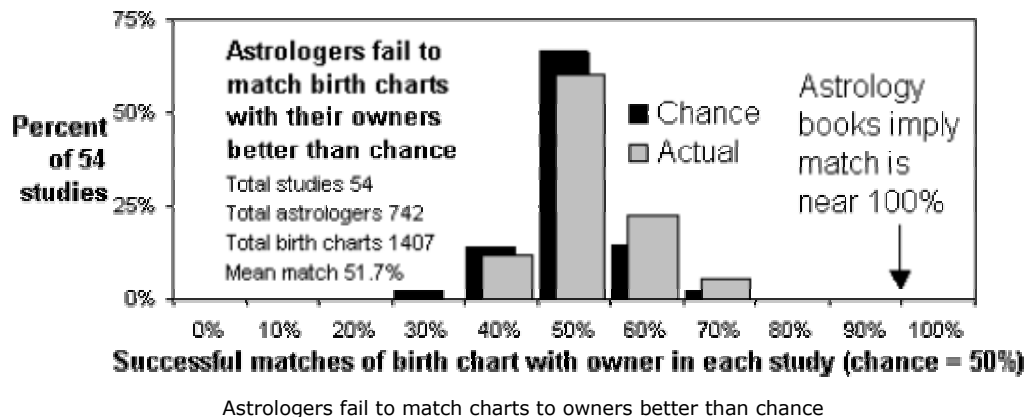
On going through the levels there is a huge falling off in numbers and a dramatic change in what astrology means. At the first level are the readers of sun sign columns. They see astrology as entertainment. At the second level are those who have their birth chart calculated and read. They see astrology as an intriguing way of exploring themselves. At the third level are those who read charts to find meaning in their lives. They see astrology as a form of religion unconnected with the entertainment of sun sign columns. At the fourth level are those who test astrology scientifically. They see astrology as a popular belief worthy of study regardless of whether the belief is actually true.

The previous views of astrology by astrologers apply to levels 2 and 3, which also apply to people who consult astrologers. In the USA roughly one million people a year consult astrologers, which seems like a convincing vote in favour of levels 2 and 3. But even this number is only about 2% of the millions of Americans who at any one time are seeking answers to their psychological problems, and is less than 1% of those who read newspaper horoscopes. So the popularity of astrological consultations is perhaps no more remarkable than the popularity of any of 99 flavours of ice cream -- if it exists then some people will try it. Which of course does not explain why astrologers are convinced that astrology at levels 2 and 3 really works. For this we need to put astrology to the test.

Putting astrology to the test

Astrologers claim they can tell your character, abilities, health, love life, events, destiny, and more, just from your birth chart. It seems amazing that a handful of planets could show all this. Indeed, polls consistently show that many people don't believe it. But astrologers have the perfect answer -- just try it. Put astrology to the test, they say, and you'll be convinced it works. What could be more reasonable? So this is precisely what research has done.

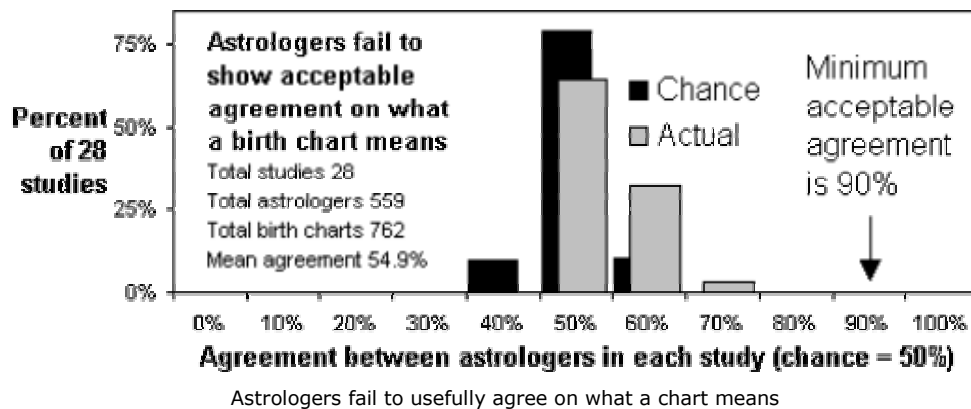
Take sets of birth charts jumbled up with descriptions of their owners. Can astrologers match charts to owners? In astrology books they do it all the time. So we expect the proportion of successful matches to pile up close to 100%. To date a total of 54 studies have made this test using a total of 742 astrologers and 1407 birth charts. Despite these impressive numbers the average success rate was no different from the 50% expected by chance, see figure below. For these astrologers (many of them among the world's best) astrology performed no better than tossing a coin.



Here the results expected by chance were determined by picking matches at random for each of the 54 studies and repeating 10,000 times. The difference between the 51.7% success rate achieved by astrologers and the 50.0% expected by chance is easily explained by the tendency of journals to accept positive results and reject negative results, and is in any case not even weakly significant ($p=0.77$).

For astrologers this is bad news, which they dismiss in various ways. They say the tests were unduly difficult or were run by people ignorant of astrology (in fact many were run by astrologers). They say you cannot test astrology (which if true would mean they could never know anything about it). Or they see the bad news as proof of astrology's subtlety, so it is right even when it is wrong (ditto). But once again research comes to the rescue with an ingenious test that avoids any need to match charts with owners.

How well do astrologers agree on what a given birth chart indicates? To date a total of 28 studies have put this to the test using a total of 559 astrologers and 762 birth charts. Typically each test looked at how well 5 to 30 astrologers agreed on what a given chart indicated about its owner. Their average agreement was dismal -- better than tossing a coin but nowhere near the minimum acceptable, see figure below. Again many of these astrologers were among the world's best.



In general no test of individuals is acceptable unless the agreement between practitioners or between applications is above 90% where chance agreement is 50%, that is, where first and second opinions agree better than chance in 4 out of 5 cases. However, if we are interested only in large differences rather than small ones, as in measuring blood pressure, then agreement down to 75% may be acceptable provided nothing better is available elsewhere. But anything below 70% is generally useless because first and second opinions will agree better than chance in less than 2 out of 5 cases. The average agreement among astrologers was 54.9%, or better than chance in barely 1 out of 10 cases.

The next question is obvious. If astrologers cannot usefully agree on what a birth chart indicates, how can they know that astrology works? Indeed, why should anyone bother with astrology in the first place? It is here that we need to ask what is meant by "astrology works".

What is meant by "astrology works"?

One of the key inspirations of recent research has been to recognise that astrology, however defined, delivers statements that (like statements generally) can contain (1) factual information such as "you have red hair", and (2) personal meaning such as "you are here to fulfil your destiny". As shown below, the distinction between facts and meaning helps to explain why astrology can be seen to work even when it doesn't.

At one extreme are people who seek only personal meaning. For them astrology works if it provides meaning. Here "it works" means "it is meaningful." This kind of astrology does not need to be true, and attacking it would be like attacking Superman comics or a religious faith. At the other extreme are people who seek only factual proof. For them astrology needs to be true. Here "it works" means "it delivers results beyond those explained by non-astrological factors", of which more later.

In between are people who see astrology as meaningful but grounded in the kind of factual statements ("Leos are generous") that fill astrology books. This allows research findings to be welcomed if positive ("it confirms astrology!") and rejected if negative ("astrology is not like that!"). But it does not end there.

How to convince yourself that astrology works

Linda Goodman says Leos are warm, generous, independent, and dislike being told what to do. So you ask one hundred Leos if this is true. Ninety say yes, the rest say it

depends but generally yes. Cautiously you press on. Astrologers say a Mars-Neptune conjunction signifies a person who is idealistic and concerned with values such as consideration for others. So you ask one hundred people with a Mars-Neptune conjunction if they are idealistic. Ninety-five say yes.

Still cautious, you have your birth chart read. The astrologer tells you things she could not possibly have known, like you have a sense of humour and you sometimes worry about money. Amazingly, everything fits. You are now convinced that astrology works. You haven't the foggiest idea how it works but it certainly works. You conclude that disbelievers have no idea what they are talking about.

For astrologers that is the end of it. Millions of people have tested astrology in this way, and millions have ended up convinced that it works. For them this is end of story. Astrology really works! No doubt about it!

Why scientists are not convinced

But scientists are not convinced. They know we can be fooled into seeing faces in clouds by a whole host of non-astrological factors such as hidden persuaders (reasoning errors and statistical artifacts). They also know that the remedy is simple -- do what astrologers never do, namely use switched data as controls. So they put the same questions to non-Leos and people without a Mars-Neptune conjunction, and they have their chart read after giving the astrologer someone else's birth data.

The results confirm their suspicions. Whereas 90% of Leos said they were like Leo, so did 90% of non-Leos. Absence of a Mars-Neptune conjunction made no difference to people's idealism. And someone else's chart fitted them just as well as their own -- a point repeatedly confirmed by astrologers whenever they inadvertently use the wrong chart. Many tests with switched data have been made, always with results like these. Which of course is consistent with the studies shown earlier, where astrology performed no better than tossing a coin, and astrologers failed to usefully agree on what a given chart indicated.

For scientists that is the end of it, at least until the evidence indicates otherwise. Your sun sign and birth chart may fit you exactly but so do sun signs and birth charts not your own. Astrologers and clients cannot tell the difference. Like the Emperor's New Clothes, astrology seems to be built on self-deception. At which point the message is clear.

The message is clear

Before deciding whether or how astrology works we need to test switched data. We must stop asking if Leos are generous and ask instead if Leos are more generous than non-Leos. Without such comparisons our tests will be meaningless. But during twenty centuries astrologers have rarely tested switched data. So they cannot claim to know whether astrology works. If we bring together the evidence from hundreds of studies, and from articles elsewhere on this website, the case for and against astrology can be stated as follows. First the case against.

The case against astrology

The case against astrology is that it is untrue. It has not contributed to human knowledge, it claims the prestige of science without the methods of science, it has failed hundreds of tests, it does not deliver benefits beyond those produced by non-astrological factors (hidden persuaders), and users do not usefully agree on basics such as which

zodiac to use or even on what a given birth chart indicates. No hint of these problems will be found in astrology books, which is why some scientists see astrologers as misguided or even fraudulent. In fact astrologers are mostly nice people who genuinely wish to help others.

But the claim that astrologers repeatedly make (astrology is true because based on experience) is simply mistaken -- what they see as its strength (experience) is actually its weakness (the experience is not assessed using switched data). They show little awareness of the factors such as the absence of accurate feedback that prevent learning from experience, or of the numerous hidden persuaders that give the illusion of such learning in its absence. Astrologers also show little interest in procedures that avoid the weaknesses of experience, and every interest in ignoring unwelcome evidence. Together these attitudes have created a case against that is longer and stronger than the case for.

The case for astrology

The case for astrology is that it is among the most enduring of human beliefs, it connects us with the cosmos and the totality of things, it provides a basic means of describing ourselves, and there is a wide range of approaches. In practical terms a warm and sympathetic astrologer provides low-cost non-threatening therapy that is otherwise hard to come by. You get emotional comfort, spiritual support, and interesting ideas to stimulate self-examination. And new ideas are always emerging that could raise spiritual awareness. In a dehumanised society an astrologer provides personal support at a very low price. Where else can you get this sort of thing these days?

Much the same applies to sun sign astrology but at a more basic level -- and many people seem to want it. Or as historian and social critic Theodore Roszak says in his book *Why Astrology Endures* (Briggs, San Francisco 1980): "For a growing number of people, the rich imagery of these old traditions has become a more inspirational way of talking [about ourselves] ... than conventional psychiatry. The astrological universe is, after all, the universe of Greco-Roman myth, of Dante, Chaucer, Shakespeare, Milton, Blake. It has poetry and philosophy built into it."

Conclusion

There is more to astrology than being true or false. But integrity and validity are crucial because astrology lends itself to commercial abuse, as in sun sign columns and phonelines, and to exploitation of the gullible. It also faces strong competition from thousands of self-help psychotherapy books that typically describe a problem and how to attack it, all supported by examples. Such books, especially if based on sound scientific principles, can help as much as psychotherapy does, see *Clinical Psychology Review* 13, 169-186, 1993. So it remains to be seen whether astrology can survive such competition once its own true nature becomes more widely known.

You can find more on tests of astrology in *Research results*, which gives abstracts for 91 studies typical of those made in the 1980s and 1990s, and in *Meta-analyses*, which gives overviews of all studies made in particular areas. Both articles are on this website under Doing Scientific Research

Grand summary of entire website

470,000 words reduced to 600 words

Abstract -- Astrology ranges from the trivial to the profound. Today, for the first time in twenty centuries, we can answer most questions about astrology. Few people are aware of this revolution in our understanding, hence this website. The answers are often bad news for astrology. But there is more to astrology than being true or false.

Profound vs trivial astrology

Astrology, from the Greek *astron*, star, and *logos*, discourse, is the study (generally nonscientific) of supposed relationships between the heavens and human affairs. It has nothing to do with astronomy, the scientific study of celestial objects. Astrology takes two forms. One is the serious and profound astrology of journals and consulting rooms. The other is the popular but trivial entertainment of sun sign astrology columns and phone lines. They are not the same. Both forms are addressed on this website.

The research revolution

Astrologers say the heavens reflect our destiny from the cradle to the grave. Could this be true? The question has been furiously debated for more than twenty centuries, but an answer has been possible only since the 1970s, when advances in relevant areas (astronomy, psychology, statistics, research design) and a decisive technology (personal computers) led to a revolution in scientific research into astrology. Not to be confused with what astrologers traditionally call "research", the uncritical examination of birth charts.

Hundreds of empirical studies

Before 1950 almost no empirical studies of astrology existed. But by 2000 over one hundred had appeared in psychology journals and four hundred in astrology journals, equivalent to about 200 man-years of scientific research. For 91 typical studies see *Research results* and for overviews see *Meta-analyses*, both under Doing Scientific Research. The findings have been clear and consistent whether obtained by astrologers or by scientists -- astrology has not contributed to human knowledge, it has failed hundreds of tests, it has no acceptable mechanism other than hidden persuaders (see below), and users do not usefully agree on basics such as which zodiac to use or even on what a given birth chart indicates. Today, for the first time in twenty centuries, we can say with some certainty that no, the heavens do not reflect our destiny.

Hidden persuaders

And astrology is easy to explain. Users do not guard against hidden persuaders (reasoning errors and statistical artifacts, see *Artifacts in reasoning* under Doing Scientific Research), which is why an actually invalid astrology seems to work, why users can accept erroneous conclusions as true, and why scientists tend to see astrologers as hopelessly uninformed. That astrologers are in fact mostly nice people who genuinely wish to help others does not excuse their being uninformed. Nevertheless there is more to astrology than being true or false, see *Case for and against astrology* under Adroit Utilities. Astrology should be neither lightly embraced nor lightly dismissed.

Keeping up to date

Few people are aware of the above revolution in our understanding of astrology. It is almost never mentioned in astrology books or on astrology websites. So the present website was started in July 2000 by former astrologer Rudolf H Smit from Zwolle in the Netherlands. The aim is to provide readable articles on scientific research into astrology that are also sensitive to astrology's merits. All articles have two levels of abstract to save your time, and all articles are in plain English. Just browse the home page.

Guide to Sources

Includes an annotated bibliography

Abstract -- The first half covers sources of information on scientific research into astrology (websites, journals, books), where to find references, the low standard of astrological sources, and the emergence of a scientific research base. Includes a figure showing growth of published research articles since 1930. The second half contains an annotated bibliography of 60 critical works and a brief guide to the bibliography.

Coping with chaos

Nobody should be surprised to learn that the hardest things to find in astrology are facts. Especially unwelcome facts. Searching websites, journals and books will overwhelm you with hundreds of articles and references, but finding the facts can still be difficult. What can be done?

Try this: (1) Beware speculation. Select sources based on empirical research. This alone will eliminate most of the noise. (2) Beware single studies. One swallow does not make a summer. Look for overviews. (3) Beware dated overviews. Research has been so rapid that overviews of research findings made before 1990 tend to be dated and incomplete. (4) Beware suspect topics. Astrologers tend to rush into complex topics such as health without first checking the viability of simple topics such as being reserved. Beware running before walking.

In each case the articles on this website will help. For those new to research the best non-technical place to start on this website is the long *Phillipson interview of researchers* under Doing Scientific Research. If you are doing a project on astrology, see also *What tests are easy?* under Doing Scientific Research (this article also refers to the list below). If you need references, see next section but one.

Science-based websites, journals, books

All three are needed if you wish to be properly comprehensive.

Websites have a long way to go before they replace existing books, and even further before they replace existing journals. Even so, the sites listed in *Links* under Adroit Utilities on the home page will still overwhelm you with dozens of articles and hundreds of references. Most of these are dated or incomplete and should be used with caution.

Journals are a problem. Many studies are reported in journals rarely kept in university libraries and can be difficult to find. Entering the keyword "astrol" into a computerised database such as PsycINFO or Medline will lead you to many studies, but not to the larger number of other (and often better) studies that exist. Until the necessary

information becomes available online, which may never happen, its retrieval is possible only by personal visits to large astrology collections. On the other hand, nobody should chase after journals unless they have first read the overviews available in recent books and on this website.

Science-based *books* on astrology can be hard to find, albeit less so than journals, see below under List of Critical Sources. This is in striking contrast to the abundance of astrological literature in general, whose high quantity and low quality deserve comment, see next.

Finding references

Finding references to scholarly books and articles on astrology is much easier than it was in the 1970s. On this website under Adroit Utilities, *Links* gives a comprehensive annotated listing of websites including Google Scholar that provide references and articles, *Journal cumulative contents* lists the contents of four astrological research journals, and *Reference alert* lists nearly 1600 references taken from ten online databases together with information about those databases. *Research results* under Doing Scientific Research gives comprehensive abstracts for 91 representative studies mostly from the 1980s and 1990s.

Astrological literature in general

In Western languages the literature of astrology now totals about 300 shelf-metres of books and periodicals. Since the 1960s the number of new astrology books has doubled roughly every ten years, and is presently about ten titles a week excluding sun sign annuals, of which about two or three are in English. Altogether there are more than 3000 astrology books in print (about 1 in 1500 of all books in print) and about twice this number out of print. Book finders on the internet typically return over a thousand new and used astrology titles in English.

There are also about 100 periodicals. For comparison there is a similar number of periodicals in parapsychology, about 300 in astronomy, and about 1000 in psychology. The median circulation for serious journals in astrology is about 1000, much the same as in parapsychology and half that for astronomy and psychology. At a popular level, most Western countries have large-circulation monthly magazines that sell roughly 1 copy for every 1000 people. Orthodox top sellers such as *Better Homes and Gardens* sell roughly 1 copy for every 50 people.

Low standards prevail

Popular astrology books are heavily tainted with sun signs and newspaper-style horoscopes, which most astrologers denounce as nonsense. The rest are characterised by unsupported and often contradictory assertions that are hard to take seriously. Speculation and strange ideas, yes. Tests and critical thinking, no. Disagreement is the rule, including disagreement on how to resolve disagreement.

Thus astrologers tend to agree on the importance of planets, if not always on the symbolism behind their meanings, but that is all. There is disagreement on the factors to include (signs, houses, aspects, midpoints, nodes, parts, harmonics, hypothetical planets, asteroids, progressions, directions, the list is seemingly endless), on what kind (there is more than one system of signs, of houses, of aspects, of progressions, and so on), and on their interpretation (methods range from strict rules to anything goes). There is not even agreement on what charts can indicate -- previously accepted things

like outer behaviour are now eschewed in favour of inner dispositions. To debunk astrology you need only compare enough astrology books with each other.

But don't take our word for it

"Some fools employ all their lives in writing nonsense, and others all theirs in trying to make sense of it." James Wilson, astrologer and translator of Ptolemy's *Tetrabiblos*, in *A Complete Dictionary of Astrology*, Hughes, London 1819, page 304. Note the date.

"The impression cannot be denied that anybody who has read a book or two [on astrology] feels qualified to set forth his own system... The result is no editorship, no discrimination, no perspective." Lori Wallace, astrologer and book reviewer, in *Astrology Now*, June 1976, page 8.

"I think it would not be unfair to term this [astrology] literature a nightmare." Carl Sargent, parapsychologist, in *Hans Eysenck: Consensus and Controversy*, edited by S and C Modgil, Falmer Press, Lewes 1986 page 350.

"Anyone used to reading books on or around our subject must have a mind which positively aches with the effort of keeping it open: a reader put off by *non sequiturs*, evidence which isn't evidence at all, irrationality and eccentricity will not get halfway along the first shelf [at any astrology bookshop]." Derek Parker, astrology scholar and writer, in *Astrological Journal* 1991, pages 264-265.

As for research, "It appears to be an unwritten article of faith ... that all improvements are welcome so long as the complacent surface of tradition is not disturbed." Donald Bradley, astrologer and researcher, in *Profession and Birthdate*, Llewellyn, Los Angeles CA 1950, page 10.

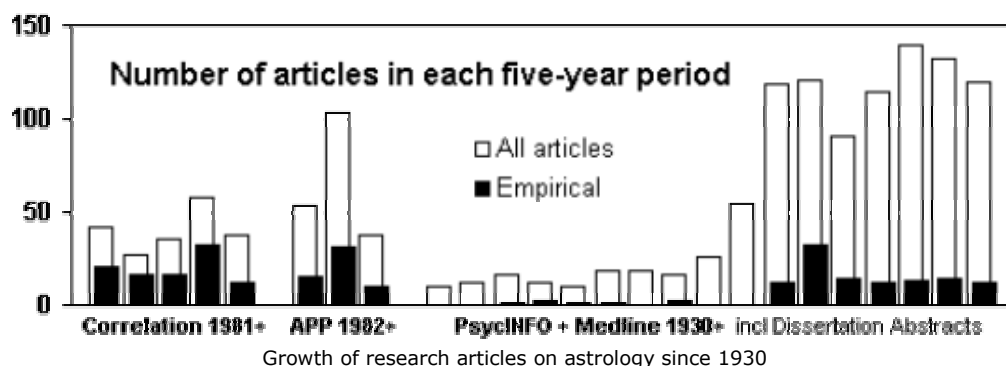
"Very little attention is given to quality research; most of the emphasis is on speculative traditional ideas which are accepted uncritically without question." Richard Nolle, astrologer, book reviewer and researcher, in *Critical Astrology: Investigating the Cosmic Connection*, AFA, Tempe AZ 1980, page 10.

"After many decades of work it is clear to me that astrologers have no intention of putting their house in order. They have no interest in research unless it confirms what they already accept and use, or unless it requires no additional effort or supplies, or unless it emanates from a time period when the Earth was assumed to be flat and the center of the universe." T Patrick Davis, astrologer and researcher, in Dean & Mather (2000), *Sun Sign Columns: Response to an Invitation*, on this website.

Emergence of a research base

Before 1950 very few scientific studies of astrology existed. Something like a dozen major statistical studies by astrologers had appeared since 1900, but none were widely known, and their poor methodology (such as no controls) did not give meaningful results. By 1975 the situation had improved due mostly to the work of the Gauquelins. But the real turning point came in 1977 when a collaborative critical review by Dean and Mather gathered together the existing scattered studies. It took seven man-years to prepare. Among other things it found more than 150 empirical studies in astrology journals and more than 20 in psychology journals. See also *Origins of Recent Advances* under Historical on the home page.

The same year saw the first astrological software for home computers. A birth chart that could take hours to calculate by hand now took only seconds. Astrological practice and research would never be the same again. Accordingly, when the research base provided by the above critical review appeared, it led to a minor explosion in critical books, research journals, groups and studies. Today the above numbers of empirical studies are over 400 in astrology journals and over 100 in psychology journals. The figure below shows the number of research articles published every five years in *Correlation*, in the now-defunct *Astro-Psychological Problems* published by Francoise Gauquelin, and in the journals abstracted by PsycINFO and Medline, through 2004.



The typical research article shown in the figure tends to be a discussion or a historical essay rather than an actual test of astrological claims, and overall the proportion of empirical studies (shown in black) averages only about 30%. The totals of all research articles for the three sources are about 200, 200, and 550 respectively, of which empirical studies are about 100, 60, and 120.

Annotated Bibliography

The following 60 titles include the more important or more recent books and the occasional journal article, but generally excludes works in languages other than English. A brief guide to these sources appears at the end. For websites see *Links* under Adroit Utilities on the home page. We welcome suggestions for inclusion.

Ankerberg J & Weldon J (1989). *Astrology: Do the Heavens Rule Our Destiny?* Harvest House, Eugene OR 97402, 334 pages with 356 references but no index. Powerful and very readable critique by Bible scholars who have done their homework (the Christian perspective does not intrude). Many useful quotes, all referenced to the exact page.

Benski C et al (1996). *The Mars Effect: A French test of over 1000 sports champions*. Prometheus Books, Amherst NY, 157 pages but no index. These negative findings by skeptics were later found to be unsoundly based, the study being too likely to miss an actual effect. Includes a critical commentary by JW Nienhuys.

Blackmore S & Hart-Davis A (1995). *Test Your Psychic Powers: Find Out the Truth for Yourself*. Thorsons, London. Sets out simple experiments for testing sun sign columns and nine other paranormal areas (telepathy, crystals, dreams, dowsing, pendulums, premonitions, psychokinesis, ouija boards, and palmistry) that you might find more appealing! Blackmore was then a leading skeptic and investigator of the paranormal.

Boyd A (1996). *Dangerous Obsessions: Teenagers and the occult*. Marshall Pickering, London, 250 pages with 350 references. Surveys over 500 young people in Britain and finds that dabbling in the occult can lead to trauma and abuse. Astrology (pages 20-26) is no exception.

Brau JL, Weaver H, & Edmands A (1980). *Larousse Encyclopedia of Astrology*. McGraw-Hill, New York, 308 pages. Included here as an example of how even a prestigious publisher can be one-sided. The work is an excellent general-purpose coverage of history, methods, interpretation, calculations, and biographies, but has almost nothing on research or research findings. You would never know research existed.

Burns JT (1997). *Cosmic Influences on Humans, Animals, and Plants: An Annotated Bibliography*. Scarecrow Press, Lanham MD. Over 300 studies, many of them once cited as evidence for astrology, are individually summarised. The next best thing to reading the original studies, many of which are hard to find. The author is Professor of Biology at Bethany College and a former Executive Director of the Foundation for the Study of Cycles.

Carroll RT (2003). *The Skeptics Dictionary: A Collection of Strange Beliefs, Amusing Deceptions, and Dangerous Delusions*. John Wiley, New York. Over 400 essays on pseudosciences and how to think critically about them. Also available online, see *Links* under Adroit Utilities on the home page. The author is Professor of Philosophy at Sacramento City College.

Cazeau CJ & Scott SD (1979). *Exploring the Unknown: Great Mysteries Reexamined*. Plenum Press, New York. Astrology is on pages 225-237.

Cooper D (1974). *The Gullibility Gap*. Routledge & Kegan Paul, London. Chapter 7. Fools by Heavenly Compulsion is on pages 93-109.

Correlation (1994 on). Crucial issues in astrology research: Is the scientific approach relevant to astrology? 1994, 13(1), 10-53. Some philosophical problems of astrology 1995, 14(2), 32-44. Theories of astrology including Jung's synchronicity 1996, 15(1), 17-52. Astrology and human judgement (cognitive and perceptual biases) 1998, 17(2), 24-71. All items are amply referenced. The first is a unique peer commentary involving 22 astrologers and 11 scientists modelled on the peer commentaries in the journal *Behavioral and Brain Sciences*. Back copies of *Correlation* can be purchased from The Astrological Association, Lee Valley Technopark, Tottenham Vale, London N17 9LN. Telephone (0208) 880-4848. <http://www.astrologicalassociation.com>. The scientific standards of *Correlation* declined sharply in 1999 and the journal is no longer a reputable source.

Couttie B (1988). *Forbidden Knowledge: The Paranormal Paradox*. Lutterworth Press, Cambridge UK. Astrology is on pages 68-72 (mostly lunar effects) and pages 73-79.

Culver RG & Ianna PA (1988). *Astrology: True or False? A Scientific Evaluation*. Prometheus Books, Buffalo NY, 228 pages with over 200 references. Minor update of the original 1979 version. A clear and very readable critique by astronomers, much useful information including test results, a classic survey of astrological prediction, and ten tests issued as a challenge to astrologers (no volunteers to date), but lacks the

psychological perspective of Eysenck & Nias (1982). Concludes that astrology is neither scientifically sound nor scientifically useful.

Dean G (1992). Does astrology need to be true? In Frazier K (ed). *The Hundredth Monkey and other paradigms of the paranormal*. Prometheus Books, Buffalo NY, pages 279-319 with 126 references. Goes beyond the popular astrology of newspaper columns to examine the serious astrology of consulting rooms and learned journals. The answer to the title question is no.

Dean G (2002). Is the Mars effect a social effect? *Skeptical Inquirer* 26(3), 33-38, May/June 2002 with a follow-up in 27(1), 57-59, 65, Jan/Feb 2003. An abridged and more readable version of Dean's 2000 article "Attribution: a pervasive new artifact in the Gauquelin data", *Astrology under Scrutiny* Volume 13 [the first English issue of the Dutch research journal *Astrologie in Onderzoek*], 1-72, 300 references, with a long critique by Suitbert Ertel and a reply from Dean. Essential for followers of Gauquelin. An updated version is *The Gauquelin work 2* under Gauquelin on the home page.

Dean G & Kelly IW (2000). Does astrology work? Astrology and skepticism 1975-2000. In Kurtz P (ed). *Skeptical Odysseys: Personal Accounts by the World's Leading Paranormal Inquirers*. Prometheus Books, Amherst NY, pages 191-207, ISBN 1-57392-884-4. Non-technical with 3 figures, 3 tables, conclusions for and against, and further reading. Reviews the progress of scientific investigations of astrology since 1975. Topics explored in the rest of the book (35 authors) include alternative medicine, claims of miracles, ESP, psychic phenomena, religion, and UFOs.

Dean G & Kelly IW (2003). Is astrology relevant to consciousness and psi? *Journal of Consciousness Studies* 10 (6,7), 175-198. Tests of time twins and of astrologers showed no support for psi effects. 85 references. Available online at <http://www.imprint.co.uk/pdf/Dean.pdf> See also *Star Wars* under Objections to Scientific Research on the home page.

Dean G, Mather A, & 52 others (1977). *Recent Advances in Natal Astrology: A Critical Review 1900-1976*. Analogic, Perth Western Australia, 608 pages with 1010 references. Out of print but several copies are held by the library of the Astrological Association. Much is now very dated, and most of the positive findings have subsequently been overturned, so its value is now mainly historical. All the important studies are in Eysenck & Nias (1982).

Dean G, Kelly IW, Saklofske DH, & Furnham A (1992). Graphology and Human Judgment. In Beyerstein BL & DF (eds). *The Write Stuff: Evaluations of Graphology*. Prometheus Books, Buffalo NY, pages 342-396 with 175 references. The arguments apply equally to astrology. On pages 163-200 with 45 references is a most useful discussion by BL Beyerstein of sympathetic magic, again very relevant to astrology.

Dean G, Mather A & Kelly IW (1996). Astrology. In Stein G (ed). *Encyclopedia of the Paranormal*. Prometheus Books, Amherst NY, pages 47-99 with 15 general references. A comprehensive scientific survey covering history, popularity, arguments for and against, conceptual problems, controlled tests, effect size comparisons, problems of birth chart interpretation, how belief in astrology arises, role of human judgement biases, and the future of astrology. But at \$US160 the encyclopedia is affordable only by libraries.

Dean G, Nias DKB, & French CC (1997). Graphology, astrology, and parapsychology. In Nyborg H (ed). *The Scientific Study of Human Nature: Tribute to Hans J. Eysenck at Eighty*. Pergamon, Oxford, pages 511-542 with 124 references. Surveys Eysenck's contributions to paranormal research.

Dean M (1980). *The Astrology Game*. Beaufort, New York, 360 pages with nearly 200 references. About one fifth is a useful critique of the pop astrology industry. The rest, now dated, tries to establish evidence for astrology. Predicts (wrongly) that a new astrology is being born.

Dunbar R (1995). *The Trouble with Science*. Faber & Faber, London. 213 pages with 205 references. A readable account of science vs anti-science by a professor of psychology who is also a philosopher and biological anthropologist. No direct mention of astrology but is essential corrective reading for astrologers who knock science. The trouble with science is its success, and the fact that evolution has given us minds better able to socialise than cope with modern complexity. Anti-science is easier.

Eisler R (1946). *The Royal Art of Astrology*. Michael Joseph, London, 296 pages but no index. Mostly historical. A critique of British newspaper horoscopes and their writers is on pages 19-25.

Ertel S & Irving K (1996). *The Tenacious Mars Effect*. Urania Trust, London. Among other things it highlights the often dubious methods used by skeptics to discredit Gauquelin's uncomfortable findings.

Eysenck HJ & Nias DKB (1982). *Astrology: Science or Superstition?* St Martin's Press, New York, 244 pages with 230 references. Also in Penguin paperback but out of print. Best single source on research up to 1982 and possibly the easiest to obtain in public libraries. Clear, sympathetic and very readable critique by psychologists. Concludes that everything is negative except the Gauquelin results. Now somewhat dated but still valid, later research tends to be even more negative.

Flew A ed (1987). *Readings in the Philosophical Problems of Parapsychology*. Prometheus Books, Amherst NY. 376 pages with 137 references. Scientists ask how and why? Philosophers ask so what? Philosophers spend almost no time on astrology even though the concepts postulated by astrologers, such as various ultimate realities, are very conducive to philosophical analysis. Until they write a book on the philosophical problems of astrology, this is the next best thing -- a readable anthology of 36 articles, some (eg on Plato, on Hume, on materialism, on analysing concepts) directly relevant to astrology.

Freedland N (1972). *The Occult Explosion*. Michael Joseph, London. Chapter 8. The Trouble with Astrology pages 106-123.

Fuzeau-Braesch S & Delboy H (1999). *Comment d'explorer l'astrologie: Expérimentation et approches théoriques*. Albin Michel, Paris. [How to validate astrology: experimental and theoretical approaches]. Includes many of the authors' results. Not yet examined by us.

Gallant RA (1974). *Astrology: Sense or Nonsense?* Doubleday, Garden City NY, 201 pages with many illustrations, glossary, index, and annotated bibliography of 12 works.

The author is an astronomer and science writer. He concludes that "The subjective kind of truth astrology is after is not to be found in Galileo's telescope or in Pasteur's microscope, any more than the objective kind of truth science is after is to be found in the astrologers' horoscope" (p.168).

Gambrill E (1990). *Critical Thinking in Clinical Practice: Improving the Accuracy of Judgements and Decisions about Clients*. Jossey-Bass, San Francisco. 432 pages, 660 references. How to reduce reasoning errors in psychology, medicine and the helping professions. Well organised, packed with information, many examples, a few references to astrology (but only to illustrate reasoning errors), each chapter has a summary. Equally applicable to astrology. Should be read by every astrologer. Updated edition, Jossey-Bass, 2003.

Gauquelin M (1979). *Dreams and Illusions of Astrology*. Prometheus Books, Buffalo NY, 158 pages with 125 references and notes but no index. Originally published in French 1969. Mostly a survey of Gauquelin's early non-positive results. Concludes that "since the most painstaking studies have shown the inanity of horoscopes, there should be a strong rising up against this exploitation of public credulity" (p.158).

Gauquelin M (1983). *The Truth about Astrology*. Basil Blackwell, London, 202 pages. The title was imposed by the publisher. Published in the USA as *Birthtimes* by St Martin's Press, New York. The best single source on the Gauquelin work but includes little on non-Gauquelin work and of course nothing on the important later developments. Also in Hutchinson paperback 1984. Details of sources occupy 15 pages.

Gauquelin M (1988). *Written in the stars*. Aquarian, Wellingborough UK, 256 pages with 70 references. A translation of excerpts from earlier French works, namely ~L'influence des astres~ (1955) and ~Les hommes et les astres~ (1960), together with an overview and brief update to 1988. Stands on its own and as a complement to the work above. 70 references.

Gauquelin M (1991). *Neo-Astrology: A Copernican Revolution*. ~ Arkana Penguin, 193 pages. Wonderfully clear account of the forerunners, from Babylonian to Elizabethan times, of Gauquelin's planetary findings. There are remarkable correspondences. Gauquelin's last book before his death. Details of sources occupy 14 pages.

Hines T (1988). *Pseudoscience and the Paranormal: A Critical Examination of the Evidence*. Prometheus Books, Amherst NY. Astrology (along with lunar effects and biorhythms) is on pages 141-164. Now in a second revised edition 2003.

Holden JH (1996). *A History of Horoscopic Astrology: From the Babylonian Period to the Modern Age*. American Federation of Astrologers, Tempe AZ, 360 pages with a bibliography of 27 titles and 45 pages of index (2800 entries) allowing you to locate persons, publishers, topics, books and periodicals. Clear, readable, the only history to focus on technical developments, includes brief biographies of about one thousand individual astrologers. Indispensable for the serious researcher.

Jerome LE (1977). *Astrology Disproved*. Prometheus Books, Amherst NY. Argues that astrology is based on magical correspondences that do not exist. Superficial treatment now very dated.

Kanitscheider B (1991). A philosopher looks at astrology. *Interdisciplinary Science Reviews* 18, 258-266. One of the few works where a philosopher gives astrology more than a passing look. Argues that the absence of a rational theory of astrology is irrelevant if people turn to astrology seeking not knowledge but sympathy and support.

Kelly IW, Culver R, & Loptson P (1989). Arguments of the astrologers. In Biswas SK, Malik DCV, & Vishveshwara CV (eds). *Cosmic Perspectives*. Cambridge University Press, New York, pages 207-231.

Kelly IW, Dean GA, & Saklofske DH (1990). Astrology: A Critical Review. In Grim P (ed). *Philosophy of Science and the Occult*. State University of New York, Albany NY, pages 51-81 with 78 references.

Leahey TH & Leahey GE (1983). *Psychology's Occult Doubles: Psychology and the Problem of Pseudoscience*. Nelson-Hall, Chicago. Astrology is on pages 32-42 with 8 references. For excerpts see 19.1 in the big

Martens R & Trachet T (1998). *Making Sense of Astrology*. Prometheus Books, Amherst NY, 276 pages with 140 references. A critique by two prominent Belgian skeptics. Looks in detail at each astrological idea (signs, houses, aspects, etc) and then at (some of) the empirical evidence. Includes important studies published since Eysenck & Nias (1982). Concludes that the final judgement "is without any doubt negative" and that, even so, astrology is unlikely to go away.

McGillion F (2002). *Blinded by Starlight: The Pineal Gland and Western Astronomia*. Xlibris, Tincum PA (a print-on-demand service for self-published authors), 259 pages, index. Essentially a clear, very readable torrent of snippets based on nearly 300 scientific references to support the author's belief that the planets can affect us via the pineal gland. Main topics are magnetic, pineal, lunar, and season-of-birth effects on people. Ignores the experimental evidence against astrology and simply assumes there is something for the pineal to explain.

Neher A (1990). *The Psychology of Transcendence*, second edition. Dover, New York. A sympathetic and nontechnical look at a huge range of fringe beliefs in the light of the best findings in psychology and physiology. Neither pro nor con, the emphasis is on understanding as a way to avoid deception and maximise benefit. Shows how many supposed mysteries such as astrology (pages 229-243 and 310-311) have simple explanations, which does not detract from their value as a means of self-discovery. On pages 313-322 is a review of the anti-science arguments used by occultists and others untrained in scientific method. Over 850 references.

Nolle R (1980). *Critical Astrology: Investigating the Cosmic Connection*. American Federation of Astrologers, Tempe AZ. A guide to doing research into astrology. With examples, a critical discussions of four hot topics (prediction, harmonics, tropical signs, Mars and air disasters), and 140 references. No index and often misleading because now very dated. Author was a former book reviewer for Horoscope magazine.

Parker D (1970). *The Question of Astrology: A Personal Investigation*. Eyre & Spottiswoode, London, 254 pages. Articulate, much useful inside information and social observations covering numerous countries.

Phillipson G (2000). *Astrology in the Year Zero*. London: Flare Publications. See <http://www.flareuk.com>. Explores key issues via interviews with astrologers and researchers. Includes a review of recent research findings, a look at human judgement errors, and a critical bibliography, all with expanded versions on this website.

Pottenger M ed (1995). *Astrological Research Methods Volume 1*. ISAR, PO Box 38613, Los Angeles CA 90038-8613, 466 pages. Not a critique but included here because it is the only available anthology of articles on research methods. Unfortunately there are frequent opposing views that are left unresolved, and there is no mention of human reasoning errors. But the authors include scientists as well as astrologers, quite a few articles convey the scientific spirit, and in general the anthology represents a major advance in astrological thinking. Huge index of often 100+ page numbers per entry leaves you to do all the work. A proposed Volume 2 on how to do research has been abandoned.

Rae AC (1992). *Bluff Your Way in Astrology & Fortune Telling*. Ravette Books, Horsham, West Sussex, 62 pages. A wonderfully cynical guide to being an expert without having to know or study anything. Includes Chinese astrology, Tarot, I Ching, palmistry, and runes.

Sachs G (1998). *The Astrology File: Scientific Proof of the Link between Star Signs and Human Behavior*. Orion Books, London. Not a critique but included here because occasionally books appear that claim to validate sun signs. But in every case a critical examination has revealed mistakes and procedural blunders, of which this book is a best-selling example. The author uses samples of up to several millions of cases, which are so huge that even the most trivial of errors (for example, in matching the sample to controls) become enormously inflated in statistical significance. So his conclusions are misleading. Otherwise, the book is readable and well set out. For critiques that expertly reveal its mistakes and procedural blunders see *Three critiques* under Sun Signs on the home page.

Sagan C (1996). *The Demon-Haunted World: Science as a Candle in the Dark*. Random House, New York. Mentions astrology only in passing but is an excellent introduction to real-world critical thinking. The demon in the title refers to how, when darkness gathers, we tend to abandon rationality in favour of "habits of thought familiar from ages past".

Seymour P (2004). *The Scientific Proof of Astrology: A scientific investigation of how the stars influence human life*. Foulsham, Slough, 278 pages, no index. The book does not say so, but it is a reprint of Seymour's 1997 book *The Scientific Basis of Astrology: Tuning to the music of the planets*, also published by Foulsham. Clear, readable, but not a survey of experimental evidence for astrology, just Seymour's ideas on how magnetospheric resonance might explain the Gauquelin findings. His ideas necessarily require the Gauquelin findings to be real and not artifactual.

Seymour P (1988). *Astrology: The Evidence of Science*. Lennard, Luton, 200 pages, index, 77 references. Slightly revised edition 1990, Penguin Arkana. Clear, readable, wide-ranging, has more on the experimental evidence than his later books (above) but is still dominated by his magnetospheric ideas and is not a proper survey of the evidence.

Sladek J (1974). *The New Apocrypha: A Guide to Strange Science and Occult Beliefs*. Stein and Day, New York. Astrology is on pages 157-166.

Standen A (1977). *Forget Your Sun Sign: An Outline of Antiastrology*. Legacy Publishing, Baton Rouge LA, 135 pages with 33 references. Very readable, covers much more than sun signs, but now very dated. The author is a scientist who studied astrology "very thoroughly, and came out an antiastrologer. This book is to explain the reasons why." His reasons apply even more today.

Stewart JV (1996). *Astrology: What's really in the stars*. Prometheus Books, Buffalo NY, 156 pages 194 references. First two-thirds looks at early sources including Babylonian omen tablets (many photographs), the ancient Greeks, and Ptolemy. Rest is sketchy and lacking in detail.

Strohmer C (1988). *What your Horoscope Doesn't Tell You*. Tyndale, Wheaton IL. Followed in 1998 by a more detailed update *America's Fascination with Astrology: Is it Healthy?* Emerald House, Greenville SC. Very telling criticism by a former astrologer, but loses plausibility when it attributes astrology's dangers to evil spirits.

Thomen AA (1938). *Doctors Don't Believe It*. Dent, London. Astrology is on pages 283-290. The book is described by Lord Horder in his Introduction as the first critical work on health superstitions for nearly 300 years.

Van de moortel K (2002). *Astro-Logics*. Self-published, Ghent. 156 pages, 109 references. See <http://www.astrovdm.com>. A critical look at astrology by a leading writer of astrological software. Very readable and largely nontechnical. Reveals the disagreements and inconsistencies behind almost every kind of chart factor and argues that only research can get out of this mess. Gives a selection of research results, most of them negative, and some basic guidelines for doing research, but does not address human reasoning errors.

Wilson EO (1998). *Consilience: The Unity of Knowledge*. Knopf, New York. A sensitive, wide-ranging, and beautifully-written exploration of art, science, and religion in terms of consilience -- that the explanations of different phenomena most likely to survive are those that can be connected and proved consistent with one another. Astrology is mentioned briefly (pages 54, 228) as a pseudoscience built on faith in sympathetic magic, personally satisfying but with neither the ideas nor the means to contribute anything to a genuine unity of knowledge. The author is a renowned biologist and twice winner of the Pulitzer Prize.

Brief guide to the annotated bibliography

Critical reviews of astrology in the light of research findings include psychologists Eysenck & Nias (1982), astronomers Culver & Ianna (1988), bible scholars Ankerberg & Weldon (1989), skeptics Martens and Trachet (1998), and astrologer Van de moortel (2002).

Critical reviews that include meta-analyses (an efficient way of summarising many studies) and comparisons of effect sizes between astrology and other approaches are Kelly Dean & Saklofske (1990), Dean Mather & Kelly (1996), and Dean & Kelly (2000). The last is both concise and entertaining, and is perhaps the best overview to date of research findings for the general reader.

An important series of articles on crucial issues in research appeared in *Correlation* (1994 on) and are summarised in *Four key topics* under Doing Scientific Research on the home page.

Critiques of philosophical, religious or social aspects of astrology include Kelly and Krutzen (1983), Leahey & Leahey (1983), Kanitscheider (1991), and Dean (1992). Relevant also are Carroll (2003), Dunbar (1995), Flew (1987), Sagan (1996), and Wilson (1998). Reviews of the arguments of astrologers include Kelly Culver & Loptson (1989), and Dean Mather & Kelly (1996).

Descriptions of the Gauquelin work include Gauquelin (1983, 1988), Benski et al (1996), Ertel & Irving (1996), Burns (1997), and Dean (2002). The last covers crucial points missed by the others and is updated in *The Gauquelin work* under Gauquelin on the home page.

The reasoning errors and perceptual biases that can underlie belief in astrology are briefly reviewed by Dean (1992) and in detail by Dean Kelly Saklofske & Furnham (1992), and Dean Mather and Kelly (1996). Also relevant are Dunbar (1995) and Sagan (1996). Corrective measures are reviewed by Gambrell (1990).

Recent critiques of the occult that cover astrology include Freedland (1972), Cooper (1974), Couttie (1988), Hines (1988), Neher (1990), and Carroll (2003).

There is of course an extensive and ongoing literature on the history of astrology, and a smaller one on its sociology, which are perhaps the only two areas of study that most academics would consider legitimate. For example ancient astrology (Baigent 1994, Barton 1994, Stewart 1996), medieval psychology (Kemp 1990), pre-19th century astrology (Tester 1987), 19th century astrology (Curry 1992), all of astrology (Campion 2006), and modern sociology (Parker 1970, Spencer 1998). Most of these works are not cited in the preceding list and are as follows:

Baigent M (1994). *From the Omens of Babylon: Astrology and Ancient Mesopotamia*. Penguin Arkana, 226 pages with 160 references.

Barton T (1994). *Ancient Astrology*. Routledge, London, 245 pages with 120 references.

Campion N (2006). *What do astrologers believe?* Granta Books, London, 112 pages with index and key references. Essentially a concise but very readable and quite excellent history of astrology. It highlights the various disagreements between astrologers over the years, and between astrology and science, albeit shrugging them off as disagreements and not something to be resolved.

Curry P (1992). *A Confusion of Prophets: Victorian and Edwardian Astrology*. Collins and Brown, London, 192 pages. Readable history of the main characters leading to the revival of astrology in the 1900s. Details of sources occupy 15 pages.

Kemp S (1990). *Medieval psychology*. Greenwood Press, New York.

Spencer N (2000). *True as the Stars Above*. Gollancz, London. A journalist examines the deep-rooted significance of astrology in the modern world. Marred by an ignorance of

reasoning errors and the findings of research. 276 pages with a bibliography of 150 titles.

Tester SJ (1987). *A History of Western Astrology*. Ballantine Books, New York, 264 pages. A thorough survey from the Greeks to the 17th century. Valuable for the author's command of ancient Latin and Greek. Most pages have footnotes giving references. For those wishing to escape medieval detail, Gauquelin (1991) is better.

Journal cumulative contents

***Correlation* 1981-, *APP* 1982-, *AinO* 1977-, *Kosmos* 1978-
Of *Correlation*, *APP*, and (briefly) *AinO*, *Kosmos***

Abstract -- Lists the contents of astrological research journals *Correlation* 1981-2007 published by the Astrological Association, the now defunct *Astro-Psychological Problems* 1982-1995 published by Francoise Gauquelin, and (in brief outline only) *Astrologie in Onderzoek* [Astrology under Scrutiny] and its precursors 1977-2003 published in the Netherlands, and *Kosmos* published in the USA. The first three are the world's only peer-reviewed astrological journals focussing on scientific research. Research into astrology was at its peak in the 1980s and 1990s. Many of the studies published by these journals were not directly relevant to what astrologers do in everyday practice, and none of the studies found effect sizes commensurate with astrological claims. Nevertheless the contents illustrate the topics then being investigated and a level of scientific interest in astrology that (in view of the negative results) will most likely never arise again. Includes descriptive commentaries, pictures of representative journal covers, plots of page counts per issue, and excerpts from editorials.

The actual contents of these four journals (as opposed to lists of contents) is illustrated by 90 comprehensive abstracts in *Research Results* on this website under Doing Scientific Research. The journals cover much the same research areas, and it is common to find the same authors appearing in more than one journal.

Contents of *Correlation* 1981-2006



New editors bring a change of cover style. Left to right: 1.1 June 1981 editor Simon Best, 12.1 June 1993 editor Rudolf Smit, 19.1 June 2000 editor Pat Harris. Last shows the editorial change of sub-title from *Journal of Research*

into *Astrology* to *Astrological Association Journal of Research in Astrology*, marking a shift away from a science-based journal towards a more traditional astrological journal. Page size was about 15x23 cm 1981, 15x22 cm 1982, 15x21 cm 1983-1999, all centre-stapled, then 15x23 cm with glossy paper and thermal binding.

Aims

Correlation was launched in 1981 by the Astrological Association to provide an outlet for the interest in research stimulated by the publication in 1977 of *Recent Advances in Natal Astrology*. Its aims have remained unchanged since 1981, namely to publish "articles reporting empirical research into astrology, review articles, and those discussing broader methodological, conceptual and philosophical issues". The name *Correlation* was the name of the AA's research bulletin that had appeared during 1968-1976, see the entry under volume 21.2 June 2003 for pictures and a description, and which was therefore the precursor of the present *Correlation*.

Early optimism

The earliest *Correlation* issues of 1981 and 1982 had a diversity of authors and topics, mostly reflecting the optimistic feeling that continued research would confirm the leads uncovered in *Recent Advances*. The same feeling was reflected in a vigorous exchange of letters to the editor, which for the first decade averaged more than 5 per issue and made instructive reading. But the optimism proved to be unfounded. Except in Gauquelin areas, negative results tended to become the norm, interest in research decreased, and in the second decade the average number of letters to the editor fell to little more than 2 per issue.

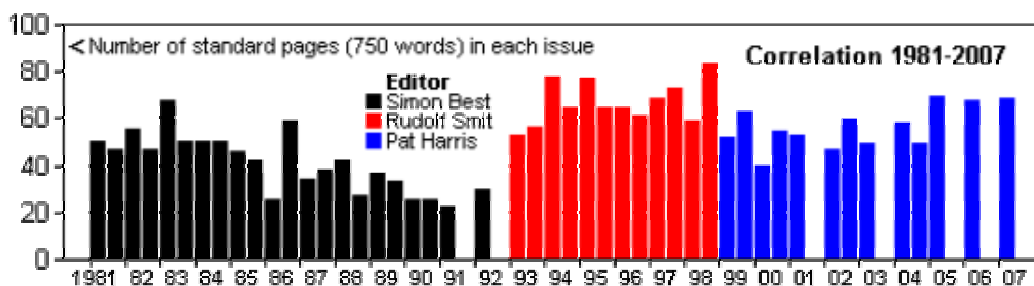
Empirical studies and outcomes

Only in Gauquelin areas, which to 2007 had comprised roughly 60% of all *Correlation* empirical studies and roughly 25% of all *Correlation* pages, was the interest maintained as shown by the following breakdown of empirical studies and their outcomes during the first two decades. This of course was before the discovery of social artifacts in the Gauquelin data, which (unless Gauquelin effects persist in their absence) means that Gauquelin studies are no longer directly relevant to astrological claims.

		Outcome was Positive	Mixed	Negative	Total	
Studies in non-	1981-1990	1	4	8	13	
Gauquelin areas	1991-2000	4	0	13	17	
Studies in	1981-1990	12	3	6	21	
Gauquelin areas	1991-2000	10	5	3	18	Total 69

Size of each issue

As shown below, the size of each *Correlation* issue has varied, as has the regularity of publication.



Number of standard pages (750 words) per *Correlation* issue 1981-2007. Total words 1981-2005 is about 1.7 million. Early issues of *Correlation* averaged 750 words per page, here taken as the standard page to which all issues have

been adjusted pro rata. Actual words per issue will be less than pages x 750 due to photos, figures, tables, and partly-blank pages. Gaps indicate where no issue appeared. Volume numbers continued in sequence, so after 1991 they were no longer in sync with the year.

Price and circulation

Price for two issues including postage was £4.50 in 1981, £6 in 1987, £10 in 1993, £13 in 1999, and £15 in 2006, less for AA members, more for air mail, an average increase of 4.7% pa. In 1994 only 6% of subscribers were non-AA members. Circulation in the 1980s and 1990s was about 400 and 500 respectively, declining to about 250 in 2007. *Correlation* is not abstracted by abstracting services such as PsycINFO and Medline. Copies are held by the British Library, Central Library of Scotland, National Library of Wales, Warburg Institute London, Library of Congress, and the National Library of Medicine in Bethesda USA.

Contents

The following list of contents covers all issues of *Correlation* up to 2006 and totals 474 entries, of which about half are editorials, book reviews, letters, and notices. It is based on the actual contents, not the contents pages, and provides details not given in the latter. Subheadings such as *Forum* (introduced in 1994 to accommodate shorter articles and reprinted articles) have been omitted to save space. Entries have been condensed where necessary to fit on one line. Abstracts of **entries in bold face** (N=32), expanded where necessary to provide more information, are in *Research results* on this website under Doing Scientific Research. Unexpanded abstracts of other *Correlation* articles up to 2007 can be found on www.astrology-research.net but many are inadequate and retrieval is cumbersome.

Correlation 1.1 June 1981 (founding editor Simon Best)

01 Editorial by Simon Best

Editorial -- Research into the basic hypotheses of astrology, as opposed to research within astrology by astrologers, has been on the increase world-wide in the last few years. For some time there has been a need for a journal in which to publish experimental results, discuss theoretical issues and permit communication between researchers of all persuasions. *Correlation* has been launched to fulfil this need and provide a forum for serious debate. ... Articles are invited for consideration from those involved in research or wishing to discuss any subject bearing on the problems both of carrying out and interpreting research in this area. Such articles should show informed comment and, whether sympathetic or sceptical in tone, should be free of invective. The deadline for the November issue of *Correlation* is September 30th, 1981. A glossary of terms for those unfamiliar with astrological concepts is provided at the end of the journal.

02 187 Signatories - Scientific Support for Research into Astrology

04 P.Curry - Astrology and Philosophy of Science

11 Prof H.Eysenck - The Importance of Methodology in Astrological Research

15 Prof A.Smithers - Personality in relation to Date of Birth in the N and S Hemispheres

26 J.Addey - The True Principles of Astrology and their Bearing on Astrological Research

36 M.Startup - The Accuracy of Astrologers' Keywords Part 1

44 N.Kollerstrom - **A Lunar Sidereal Rhythm in Crop Yield and its Phasing in the Zodiac**

54 L.Mathieson - Computers in Astrological Research

56 Research in Progress (Addey, Gauquelin, Steffert, Curry, Startup, Rogerson)

58 Report on British Psychological Society Seminar, Zurich World Congress, both April 1981

59 Reviews - Brackenridge's *Kepler*, Hand's *Sidereal Ephemeris*

Correlation 1.2 December 1981

01 Editorial

02 Report on 2nd London Research Conference November 1981
 04 M.Gauquelin - Planets, Personality and Ordinary People
 15 G.Dean - Planets and Personality Extremes
 19 C.James III - **Bradley's Jupiter Pluvius Rainfall Study**
 24 M.Startup - The Accuracy of Astrologer's Keywords Part 2
 37 D.Nias - Storms in the Ionosphere: A Re-appraisal of Nelson's Work
 41 M.Shallis - The Problem of Astrological Research
 47 Letters - L.White, J.Addey, F.Gauquelin, M.Startup, N.Kollerstrom
 51 Reviews - Gauquelin's *Murderers and Psychotics*, Michelsen's *Sidereal Ephemeris 1976-2000*
 53 Reviews - Erlewine's *Manual of Computer Programming for Astrologers*
 55 M.Gauquelin's reply to J.Chervas's article in *New Scientist*

Correlation 2.1 June 1982

01 Editorial
 02 Tribute to John Addey 1920-1982
 04 M&F Gauquelin, S.Eysenck - Personality and Planets: A Replication on American Subjects
 11 J.Mohan et al - Astrological Factors and Personality: Cross Cultural Validation in Children
 17 Profs I.W.Kelly and D.Saklofske - Personality and Sun-Sign
 22 Prof A.Smithers - Rejoinder to Kelly and Saklofske: To Explain and to Explain Away
 28 P.Curry - Astrology and the Self Reflective Sciences
 33 F.Gauquelin - The Astrologers' Keywords Re-Analyzed Part 3
 37 C.Kemp - Microcomputers: Selection Considerations
 42 Letters - P.Curry, G.Dean, M.Shallis, J.Nelson, G.Douglas
 47 Reviews - Eysenck & Nias's *Astrology: Science or Superstition?*, Gauquelin's *Report on American Data*, McGillion's *The Opening Eye*, Douglas's *Physics, Astrology and Semiotics*

Correlation 2.2 December 1982

01 Editorial
 02 Prof H.Eysenck - A Note on Michael Gauquelin's Suggestions for Studying Ordinary People
 04 M.Gauquelin - An Empirical Study of the Accuracy of Ancient Astrologers Keywords
 12 Prof A.Smithers and David Cohen - Personality, Sun-Sign, and Planetary Position
 21 M.Startup - Astrologers Keywords for the Planets: A New Quantification of their Accuracy
 29 T.Dwyer - Harmonic Charts for Small Computers
 31 M.Startup - Postgraduate Dissertations on Astrology
 35 Letters - H.Eysenck, G.Dean, B.Riley, D.Nias, V.Vergo, M.Gauquelin
 42 Reviews - Shallis's *On Time*, Konig et al's *Biologic Effects of Environmental Electromagnetism*
 44 Contents of *Correlation* Volume 1 (1981)

Correlation 3.1 May 1983

01 Editorial
 02 Report on 3rd London Research Conference March 1983
 04 G.Dean - **Shortwave Radio: A critical analysis of the forecasts of John Nelson**
 37 Contents of *Correlation* Volume 2 (1982)
 38 N.Kollerstrom - Planetary Influences on Metal Ion Activity

51 Letters - M.Startup, H.Eysenck, R.Sewell, G.Douglas, R.Alexander, N.Kollerstrom, J.Nelson
58 Reviews - Pattie's *Astrology*, Champion's *Introduction to the History of Astrology*
61 Reviews - F Gauquelin's *Psychology of the Planets* and journal *Astro-Psychological Problems*
64 Tribute to Dr Solco Tromp 1909-1983

Correlation 3.2 November 1983

01 Editorial
02 News - Lunar Newsletter, history conference, CeBESIA's prize, deaths of Bart Bok, George Abell
03 M.Mitchell - Sun Signs as a Chronobiological Effect 1: Theoretical Considerations
13 D.Stevens - Multidimensional Scaling of Celestial Data
22 G.Dean - **Can Self-attribution Explain Sun-Sign Guessing?**
28 Letters - J.Nelson, G.Dean (2x), N.Kollerstrom, A.Fyfe, G.Dean, R.Alexander
35 Letters - G.Dean R.Sewell, M.Gauquelin, N.Campion, M.Startup, G.Dean, N.Kollerstrom
40 Marcello Truzzi's *Zetetic Scholar* (notice)
41 Reviews - Gauquelin's *Truth about Astrology*, Garin's *Astrology in the Renaissance*
43 D&J Parker's *History of Astrology*, Placidus's *Primum Mobile*, Budd et al's *Radical Astrology*
45 Dubrov & Pushkin's *Parapsychology and Contemporary Science*
46 Gauquelin's *Cosmic Clocks*, AFA's *Journal of Research*

Correlation 4.1 May 1984

01 Editorial
02 Report on History of Astrology conference March 1984, 2nd World Congress Lucerne April 1984
05 M.Startup - Planets, Personality and Ordinary People: A Re-appraisal
08 M.Gauquelin - **Profession and Heredity Experiments: Computer Re-analysis**
25 N.Kollerstrom - Wheat Germination and Lunar Phase: a Pilot Study
32 Letters - Budd et al, G.Dean, R.Harvey, G.Dean, R.Alexander
37 Letters - M.Shallis, G.Dean, N.Kollerstrom, G.Dean, D.Stevens
43 Reviews - Hamblin's *Harmonic Charts*, Gauquelin's *2145 Physicians, Army Leaders, Executives*
46 Abstract of Startup's PhD thesis (which focussed on aspects)
46 4th London Research Conference October 1984 (notice)
47 Contents of *Correlation* Volume 3 (1983)
48 Tribute to Prof Frank Brown 1908-1983

Correlation 4.2 November 1984

01 Editorial
02 Report on 4th London Research Conference October 1984
04 M.Startup - Personality and planetary position: An attempted replication with ordinary people
14 K.Pawlik and L.Buse - **Self-attribution as a moderator variable in differential psychology**
31 Letters - F.Gauquelin, M.Startup, S.Schneider, G.Dean (2x), Al H.Morrison, M.Mitchell, R.Powell
44 Death of John H.Nelson
45 Reviews - Gauquelin's *Planetary Heredity: A Reappraisal on 50,000 Subjects*
46 Gauquelin's *1540 Authors, Artists, Actors, Politicians, Journalists*, Powell's *The*

Zodiac:

46 *A Historical Survey*, Kollerstrom's *Astrochemistry: A Study of Metal-Planet Affinities*

47 Collins's *The Theory of Celestial Influence*, J&D Parker's *The New Compleat Astrologer*

Correlation 5.1 May 1985

01 Editorial

02 News - Morris Prof of Parapsychology, CeBESIA award to Nick Kollerstrom

03 G.Dean - **Can astrology predict E and N? 1. Individual factors**

18 M.Mitchell - Sun Signs as a chronobiological effect 2: Chi square vs calendar offset

25 M.Gauquelin - **Astrological aspects at the birth of eminent people**

35 Contents of *Correlation* Volume 4 (1984)

36 Letters - M.Gauquelin, N.Campion, R.J.Power, R.Alexander, D&J Parker

43 Reviews - Eade's *The Forgotten Sky: A Guide to Astrology in English Literature*

44 Carey's PhD thesis on *Astrology and Divination in later Medieval England*

Correlation 5.2 November 1985

01 Editorial

02 G.Dean - **Can Astrology Predict E and N? 2. The Whole Chart**

25 M.Gauquelin - The Six Geometric Figures Test: An Attempted Replication on 600 Answers

33 Letters - A.Harvey, F.Gauquelin, G.Dean

39 Review - Dethlefsen's *The Challenge of Fate*

Correlation 6.1 June 1986

01 Editorial

02 M.Mitchell - Sun Signs as a chronobiological effect 3: Periodicity in vocational sunsigns

11 J.Mohan and A.Gulati - Zodiac signs and personality: a pilot study

15 Letters - H.Eysenck, M.Gauquelin, R.J.Power, N.Kollerstrom, M.O'Neill, G.Douglas

22 Review - Ferguson's *The Stars of Dance*

23 Contents of *Correlation* Volume 5 (1985)

24 Special discount on back issues for *Correlation* subscribers

Correlation 6.2 December 1986

01 Editorial

02 Report on 5th London Research Conference Nov 1986, 1st Eysenck Research Seminar July 1986

06 Committee for Objective Research in Astrology CORA (notice)

07 G.Dean - Can astrology predict E and N? 3: Discussion and further research

52 Errata - Parts 1 and 2 of Dean's article in 5.1 and 5.2

53 Letters - M.O'Neill, Al H.Morrison

55 Review - Sedgwick's *Harmonics of History*

56 Errata - Sun Signs as a chronobiological effect 3 (in 6.1)

Correlation 7.1 June 1987

01 Editorial

02 Report on 2nd Eysenck Research Seminar April 1987

03 6th London Research Conference November 1987 (notice)

04 S.Ertel - Further grading of eminence: planetary correlations with musicians, painters, writers

18 P.Roberts - Harmonic analysis of the diurnal distributions of Gauquelin's professional groups

26 Letters - A.Smithers, A.Harvey
28 Reviews - Halbronn & Hutin's *Histoire de l'Astrologie*, Seymour's *Cosmic Magnetism*
31 Obituary: Agnes Fyfe 1898-1986
32 Contents of *Correlation* Volume 6 (1986)
32 Errata - Dean's Can astrology predict E and N? Part 3 (in 6.2)

Correlation 7.2 December 1987

01 Editorial
02 Report on 6th London Research Conference November 1987
08 3rd Eysenck Research Seminar Naples June 1987 (notice)
09 T.Dwyer - **The Meaning of Pluto Part 1: Experiment and primary analysis**
14 G.Dean and R.Smit - **The Meaning of Pluto Part 2: Further analysis of Dwyer's data**
22 Letters - G.Dean, A.Smithers, R.Moxon
28 Reviews - Elwell's *Cosmic Loom: The New Science of Astrology*
31 Reviews - Powell's *Hermetic Astrology Volume 1*, Niehenke's *Critical Astrology*
34 Erratum - Ertel's Further grading of eminence (in 7.1)
35 Obituary: James Williamsen 1941-1988
36 Urania Trust (notice)

Correlation 8.1 June 1988

01 Editorial
02 Report on Medical Astrology Conference March 1988, 3rd Eysenck Research Seminar June 1988
04 7th London Research Conference November 1988 (notice)
05 S.Ertel - **Planetary Aspects and Human Birth: Improved Method Yields Negative Results**
22 Letters - G.Dean, A.Smithers, N.Campion, R.Wilkie, T.Dwyer, R.Nolle, R.Powell
30 Reviews - Seymour's *Astrology: The Evidence of Science*, Curry's *Astrology, Science and Society*
31 Reviews - Tester's *A History of Western Astrology*, Curry's *The Decline of Astrology 1642-1800*
33 Reviews - Gauquelin's *Written in the Stars*
36 Obituary: Reinhold Ebertin 1901-1988
38 Schneider-Gauquelin to move to USA, APP to join with *NCGR Journal*
38 Contents of *Correlation* Volume 7 (1987)
39 Errata - Report on London Research Conference, Dean's letter (both in 7.2)
40 Urania Trust (notice)

Correlation 8.2 December 1988

01 Editorial
02 Report on 7th London Research Conference November 1988
05 M.Klein - The Accuracy of Relationship Description as a Test of Astrology
18 Letters - N.Kollerstrom, P.Seymour, B.Taylor, M.Mitchell, A.Ruperti
29 Reviews - Landscheidt's *Sun-Earth-Man*, Gauquelin's *Planetary Heredity*
32 Excerpts - P.Seymour's reply to N.Henbest's review of his book in *New Scientist* 12 May 1988

Correlation 9.1 June 1989

01 Editorial
02 Report on Neo-Astrology Conference Big Rapids July 1989
04 Report on 1st International Congress on Geocosmic Relations Amsterdam April 1989

05 S.Ertel - **Planetary Effects Defy Physical Interpretation**

25 Letters - A.Muller, M.Gauquelin (2x), S.Ertel, T.Landscheidt, P.Seymour

43 Review - Negus's *Kepler's Astrology*

44 8th London Research Conference November 1989 (notice)

44 Contents of *Correlation* Volume 8 (1988)

Correlation 9.2 December 1989

01 Editorial

02 Report on 8th London Research Conference November 1989

04 M.Mitchell - Sun Signs as a Chronobiological Effect 4: A Physiognomic Investigation

20 R.Powell - Precession of the Equinoxes and Isaac Newton's Chronological Studies

28 S.Ertel - Birth Time Precision Reconsidered

33 Letters - S.Ertel, G.Dean (2x)

37 Reviews - Curry's *Prophecy and Power: Astrology in Early Modern England*

39 Smith & Best's *Electromagnetic Man: Health and Hazard in the Electrical Environment*

Correlation 10.1 June 1990

01 Editorial

02 Obituary: Neil F Michelsen 1931-1990

04 B.Steffert - Planetary Effects linked to EPQ Scores in Ordinary People

10 M.O'Neill - The Moon's Nodes in Synastry: A Replication

19 Letters - P.Curry, N.Kollerstrom, M.Stuart

22 Reviews - Kollerstrom & O'Neill's *The Eureka Effect*

24 Reviews - Roberts's *The Message of Astrology*, Wright's *The Scottish Birth-Data*

27 9th London Research Conference 1991 (notice) (delayed to 1993, see 12.2)

28 Contents of *Correlation* Volume 9 (1989)

Correlation 10.2 December 1990

01 Editorial

02 Report on 1st Kepler Research Weekend London November 1990

03 S.Ertel - Scrutinizing Gauquelin's Character Trait Hypothesis Once Again

20 M.Gauquelin and S.Tracz - Gauquelin's Character Trait Hypothesis: The Fresno Experiment

34 Letter - G.Bates

37 Reviews - Michelsen's *Tables of Planetary Phenomena*, Thornton's *The Forces of Destiny*

40 Tomassen's *Geo-cosmic Relations: The Earth and its Macro-Environment*

Correlation 11.1 June 1991

01 Michel Gauquelin: In Memoriam 1928-1991

03 E.Sullivan - Michel Gauquelin's retrograde Mars (chart interpretation)

09 P.Curry - Michel and the scientists

10 P.Roberts - Recollections of Michel

12 S.Ertel - Publications of Michel Gauquelin 1955-1991

24 M.O'Neill - Time-Switching Control Applied to Hill and Thompson's Redhead Data

34 G.Dean - Einstein's testimonial to astrology (letter)

37 Review - Gauquelin's *Neo-Astrology: A Copernican Revolution*

40 Contents of *Correlation* Volume 10 (1990)

Correlation 11.2 December 1992

01 Editorial

02 J.McGrew and R.McFall - **A Collaborative Vernon Clark Experiment**

11 N.Kollerstrom and M.O'Neill - Invention Moments and Aspects to Uranus
 24 M.Harding - Astrology and the New Philosophies 1
 37 J.F.Ruis - Significant Synastry Aspects on a Gauquelin Sample of 2174 Marriages
 38 Letters - N.Kollerstrom, P.Roberts
 39 Reviews - Fuzeau-Braesch's *Astrologie: La Preuve Par Deux*, Meeus's *Astronomical Algorithms*

Correlation 12.1 June 1983 (new editor Rudolf Smit)

01 Editorial - A New Beginning by Rudolf Smit

Editorial -- To say it mildly, in the world of science astrology is still controversial. This is one of the reasons why it has always been hard for serious researchers into astrology to find a proper podium for reports on their findings. The Astrological Association of Great Britain, in the person of Simon Best, provided them with that podium through *Correlation*, the research journal of which Simon has been the editor for more than a decade. Thanks to his efforts *Correlation* has become the foremost magazine on serious research into astrology, a reputation which is often alluded to with respect even by skeptics. ... New editors usually bring in new ideas. I am not an exception to that rule. For starters, some cosmetic changes have already been implemented: there is a new front cover and a new page layout. The first and foremost aim of this new page layout is the enhancement of legibility, while maintaining a harmonious balance between white and typeface on the one hand, and economy (how much text on a page) on the other; I am still in the experimental stage. As for the contents of *Correlation* changes are being contemplated, with the condition though that this journal shall not compromise on quality.

02 S.Ertel - Why the Character Trait Hypothesis Still Fails: Resolving the Conflict
 10 G.Dean - Improving the Application of Astrology to Individuals with Item Response Theory
 28 J.van Rooij - Jungian Typology and Astrology: An Empirical Test
 33 R.van Gent - Isaac Newton and Astrology: Witness for the Defence or for the Prosecution?
 38 M.Harding - Astrology and the New Philosophies Part 2
 51 Letters - M.O'Neill, L.van Assem
 55 9th London Research Conference November 1993 (notice)
 56 FAA Conference Sydney January 1994 (notice), Urania Trust library appeal (notice)

Correlation 12.2 December 1993

01 Editorial - *Correlation* to Guide Debate on Science vs Astrology
 02 G.Dean - Why Key Dialogues?
 05 Report on 9th London Research Conference November 1993
 20 J.F.Ruis - Indication of Synastry Aspects in a Gauquelin sample of 2824 Marriages Part 1
 44 W.Heukelom - Astrology, a Contribution to Social Work? (symposium report)
 47 Contents of other astro research journals (*AinO*, *APP*)
 52 Theodore Landscheidt elected to Member of New York Academy of Science
 54 Letters - F.Gauquelin, J.Ruijling,
 56 Review - Muller's *Astro Research Data*

Correlation 13.1 June 1994

01 Editorial - Co-operation is the Key
 03 J.F.Ruis - Role of Synastry Aspects in a Gauquelin sample of 2824 Marriages Part 2
 10 Key Topic 1 (next item below): Foreword by the Editor
 11 G.Dean and A.Mather - **Is the Scientific Approach Relevant to Astrology?**
 19 Commentaries (N=23)
 45 Commentaries - Overview and Rejoinders
 51 Additional Rejoinders from Arthur Mather
 53 Afterword by the Editor
 54 Letters - N.Campion, J.van Rooij, M.Urban-Lurain

Correlation 13.2 December 1994

- 01 Editorial - What science and skepticism really mean
- 03 S.Ertel - Mars effect uncovered in French skeptics' data
- 17 G.Dean - **Was there ever a Samuel Hemmings?**
- 31 J.F.Ruis - Planetary gender differences
- 38 J.f.Ruis - Shift control of synastry effect
- 40 M.O'Neill - A replication of Ruis's marriage results
- 45 Report on Kepler Day November 1994 (wrongly titled 1995)
- 47 P.Niehenke - Appeal to astro researchers to send details of project
- 48 Ten reactions to Key Topic 1
- 51 J.Hill - Replication of redhead study
- 54 B.Steffert and M.O'Neill - Replication of redhead study
- 55 C.Harvey - **Different approaches to astrological research**
- 59 M.O'Neill - Fewer professionals than expected with four planets in key sectors
- 60 Contents of other astro research journals (*AinO*, *APP*, *Les Cahiers du RAMS*)

Correlation 14.1 June 1995

- 01 Statement on the Reappointment of the Editor of *Correlation*
- 02 J.van Rooij et al - Sun Sign and Discipline of Study
- 08 S.Ertel - Gender of Notables Related to Planetary Positions
- 15 P.de Vries-Ek and F.McGillion - Jung's Astrological Experiment and Synchronicity
- 26 M.O'Neill - Further Comments on J.F.Ruis's Marriage Results
- 30 S.Ertel - **Birth Time Precision and the Gauquelin Effect**
- 38 K.Hawley - The Determination of Expected Harmonic Aspect Frequencies
- 45 N.Campion - Did the Moon Sink the Titanic? (review of an article in *Skeptical Inquirer*)
- 48 Reactions to Ertel's article from N.Kollerstrom, J.W.Nienhuys
- 50 Reply by S.Ertel
- 54 H.Oestrem - Operationalizing the whole chart
- 56 N.Campion - Astrology as a science: neo, pseudo, or social?
- 59 10th London Research Conference November 1996 (notice)
- 60 Report on Kepler Day November 1995 (issue was delayed to allow inclusion)
- 63 ISAR conference July 1997 (notice)

Correlation 14.2 December 1995

- 01 Editorial - The Curse of Ignorance
- 02 S.Ertel - Re-Examination of the Gender Differences as Claimed by J.F.Ruis
- 07 J.Dudley - **An Attempt to Predict Accidental Death with Vedic Astrology**
- 12 G.Dean - A Re-Assessment of Jung's Astrological Experiment
- 23 G.Dean - **More on King George III and Samuel Hemmings**
- 27 F.Gauquelin - Ertel's tests of the Character Trait Hypothesis
- 28 S.Ertel - Reply to F.Gauquelin
- 29 J.W.Nienhuys - Ertel's article on CFEPP
- 30 S.Ertel - Reply to J.W.Nienhuys
- 32 G.Dean and P.Loptson - Key Topic 2; Some Philosophical Problems of Astrology
- 45 K.Irving et al - Rejoinder to Key Topic 2
- 58 The Tenacious Mars Effect (advertisement)
- 59 Contents of other astro research journals (*APP*, *Les Cahiers du RAMS*)
- 62 10th London Research Conference November 1996 (notice)
- 63 J.Lee - Survey of Dissertations and Theses Having Astrology as Subject Part 1

Correlation 15.1 June 1996

- 01 Editorial - In Search of Superstars!
- 02 S.Ertel - How to Suppress the Gauquelin Mars Effect: Strategies of Committees
- 17 G.Dean et al - Key Topic 3: Theories of Astrology
- 53 Reviews - Ertel & Irving's *Tenacious Mars Effect*, CFEPP's *The Mars Effect*
- 61 P.Loptson - Response to rejoinder on Key Topic 2
- 62 R.Harvey - Comments on Key Topics
- 63 J.Lee - Survey of Dissertations and Theses having Astrology as Subject Part 2

Correlation 15.2 December 1996

- 01 Editorial - It Takes Only One Astrologer...
- 02 Report on London Research Conference November 1996
- 14 R.Nanninga - The Astrotest: A Tough Match for Astrologers
- 21 J.van Rooij - An analysis of Astrologers Failing the Astrotest
- 26 B.Koene - An Ancient Philosopher's Criticism of Astrology: Sextus Empiricus
- 34 Kepler Day November 1997 (call for papers)
- 35 J.M.Ashmun - **Astrology on the Internet**
- 52 P.Niehenke - Astrological Research and the Concept of Similarity
- 56 M.McPherson replies to Peter Loptson
- 60 Review - Fuzeau-Braesch's *Pour L'Astrologie*

Correlation 16.1 June 1997 (guest editor Prudence Jones)

- 01 Editorial - Moving Beyond Character Analysis
- 03 R.Smit - **Leo Knecht: A White Crow Beyond Our Wildest Dreams?**
- 19 N.Kollerstrom - **The Mars-Redhead Dilemma**
- 22 G.Douglas - Some Extreme Character Types
- 29 P.Niehenke - **A Test of Alice Bailey's Ray Theory of Sun Signs**
- 32 S.Ertel - Scrutiny of Theodor Landscheidt's Planetary Claims
- 40 T.Landscheidt - Response to Ertel
- 48 In Memoriam - Professor Hans J.Eysenck 1916-1997
- 55 R.Harvey - *Correlation* aiming at the wrong target?
- 56 G.Dean - Key Topic 2 and avoidable arguments
- 59 G.Dean - Brady & Lehman's study of castle beseigement
- 61 G.Dean - Response to J.van Rooij on the Astrotest
- 63 Review - Magi Society's *Astrology Really Works!*
- 68 Review - Douglas's *Semiotic Square and Greek and Roman astrology*

Correlation 16.2 December 1997

- 01 Editorial - Thanks, Goodbye, Welcome, and Aims
- 03 T.P.Davis - Research for the Working Astrologer: Astro Sleuthing Contests
- 10 G.Dean - **John Addey's Dream: Planetary Harmonics and Character Traits**
- 40 G.Dean - Truth of Astrology Competition: A summary of entries and some implications
- 57 G.Dean - Redheads and beginner's luck, Hemingway, Sun signs at Manchester University
- 63 G.Dean - **Astrology: is this the proof?**
- 66 K.Irving - Recycling, refereeing and the Key Topics
- 68 G.Dean - response to Irving
- 69 M.McPherson - Geoffrey Dean's avoidable arguments
- 71 The Knecht Challenge (a reminder, see 16.1)
- 72 *Culture and Cosmos* (advertisement)

Correlation 17.1 June 1998

- 01 Editorial - Science is a Tough Business
- 03 S.Ertel - **Can Astrologers Pick Politicians from Painters?**
- 09 G.Dean - Meaningful Coincidences: Parallels between Phrenology and Astrology
- 41 P.Niehenke - *The Astrology File*, scientific proof of sun sign effects?
- 44 S.Ertel - Scrutiny of Sachs's excursion into astrological research
- 49 A.Patterson - Eysenckian qualities good for research
- 50 K.Vandemoortel - Love at first sight: A study into astrology and attraction
- 53 G.Dean - Reply to Maggie McPherson on avoidable arguments
- 54 M.Harding - Dean has no understanding of either linguistic or continental philosophy
- 56 Contents of other astro research journals (*Les Cahiers du RAMS*)

Correlation 17.2 December 1998

- 01 Editorial - What Challenges Lie Ahead? by Rudolf Smit

Editorial -- In late autumn 111 years ago the eminent British scientist Sir Francis Galton discovered the concept of correlation, from which this journal (and its precursor) takes its name. In the 1870s Galton had begun on the quantitative trail that was to lead him through "reversion" to "regression" to "correlation", hence the symbol r universally used for correlation. [He saw] how the problem was a general one, applicable to co-relations generally. The realisation dawned suddenly and changed the world of science forever, but Galton's account of it (unfortunately without date or time) was rediscovered only a century later, see S.M.Stigler, Francis Gallon's Account of the Invention of Correlation, *Statistical Science* 1989, 4, 73-86. Galton's account could not end more aptly for our readers: "I can only say that there is a vast field of topics that fall under the laws of correlation, which lies quite open to the research of any competent person who cares to investigate it".

- 04 S.Ertel - Is There No Mars Effect? CFEPP's verdict scrutinized with independent help
- 24 G.Dean et al - **Key Topic 4: Astrology and Human Judgement**
- 72 R.Smit - Results of the Knegt Follow-up Test
- 76 Review - Anderson's *An astrological research into gender dysphoria*
- 78 Tenacious Mars Effect (advertisement)

Correlation 18.1 June 1999 (new editor Pat Harris)

- 01 Editorial - Astrology in the Sciences by Pat Harris

Editorial -- Welcome to my first issue of *Correlation*. You may notice some differences between this journal and those presented by my predecessor, Rudolf Smit, and I hope that these will help to enhance your enjoyment of the journal further. I would like to thank Rudolf for his continued help and support throughout the summer during the handover of the role of editor to me. His kindness and consideration made the transition a pleasure and I am very glad indeed that he will be continuing to provide input to the journal as one of its consulting editors.

- 03 G.Douglas - Why Is Venus Green? A morphological approach to Astrology
- 21 P.Roberts - New Resarch in Personality and Astrology
- 32 C.Bagley - Identifying Painters and Politicians: Re Astrology as Art and Science
- 40 C.Smith - Moods, Violence and the Lunar Cycle
- 47 P.B.Mortensen et al - Family History, Place, Season of Birth vs risk of Schizophrenia
- 59 F.McGillion - Afterword on Mortensen et al's article
- 62 Review - Fuzeau-Braesch and Delboy's *Comment demontrer l'astrologie*
- 63 *Culture and Cosmos* (advertisement)

Correlation 18.2 December 1999

- 01 Editorial - Astrology in Academia - Charles Harvey's vision for Astrology's future
- 03 Obituary Charles Harvey 1940-2000
- 09 S.Ertel - Debunking with Caution: Cleaning up Mars Effect Research
- 42 C.A.B.Smith - Gauquelin Planetary Influences
- 47 R.Nanninga and J.W.Nienhuys - There is no Mars effect!

- 50 S.Ertel - Reply to Nanninga and Nienhuys
- 60 G.Dean - CFEPP claims not supported (with jumbled tables corrected in 19.1)
- 65 G.Dean - Response to Roberts on New Research
- 66 P.Roberts - reply to Dean
- 67 S.Ertel - Reflections on C.Bagley's comments on my study
- 71 Contents of *Les Cahiers du RAMS* No 7
- 72 AA Research Conference November 2000 (notice)

Correlation 19.1 June 2000 (new glossy format)

- 01 Contents
- 02 AA Research Conference November 2000 (notice)
- 03 Editorial - A New Image and Revolutionary Aims by Pat Harris

Editorial -- You will have noticed by now that *Correlation* has undergone a transformation and one, it is hoped, that our readers will appreciate and enjoy. New covers have been designed in line with the livery used by the Astrological Association for the *Astrological Journal* and also by *Culture and Cosmos*, the journal on the history of astrology. Preparations are currently under way to place *Correlation* in the libraries and departments of various universities and this 'new look' *Correlation* is very much in keeping with that objective.

- 05 C.Bagley - Research Group for the Critical Study of Astrology (progress report)
- 06 Sophia Fellowship at Warburg Institute (notice)
- 07 N.Campion - **The Start of the Age of Aquarius**
- 17 M.Harding - Prejudice in Astrological Research
- 34 K.G.Hawley - Testing for Isotropy in Circular Distributions
- 42 B.Denness - Thieves, Victims and the Zodiac (car thefts)
- 49 C.Bagley - Comments on Denness's findings
- 50 Errata - Correct layout of Dean's tables in 18.2
- 52 Review - Elwell's *Cosmic Loom*
- 55 Contents of *Les Cahiers du RAMS* No 8 March 2000

Correlation 19.2 December 2000

- 01 Contents
- 02 Volunteers needed for Mike O'Neill's lottery research project
- 03 Editorial - Astrology Under Un-Scientific Scrutiny
- 05 C.Bagley - Implications for Astrology of the Princeton Anomalies Research Group
- 09 Report on London Research Conference November 2000
- 13 AA Conferences September 2001 (notice)
- 14 S.Blackmore and M.Seebold - The Effect of Horoscopes on Women's Relationships
- 29 S.Fuzeau-Braesch - Sociability and Astrology: Results of a Psychological Test
- 36 Editorial invitation to enter Debate on the Gauquelin Data
- 37 S.Ertel - Tampering with birth dates: Scrutinies of G.Dean's parental tampering claim
- 1
- 47 S.Lovatt - The Influence of the Sun and Moon and the Forecasting of Hurricanes
- 54 M.Wackford - The Polar Horoscope (1st of 5 articles, see abstract in 23.1)
- 62 Letters - D.Elwell, B.Denness
- 64 Review - Heath's *Stonehenge*

Correlation 20.1 December 2001

- 01 Contents
- 02 Volunteers needed for Mike O'Neill's lottery research project
- 02 Data needed for Graham Douglas's research on birth order
- 03 Editorial - Philosophy and Research in Astrology
- 04 R.Bes - **Forecasting Political and Economic Cycles**

29 Editorial invitation to enter Debate on the Gauquelin Data
 30 S.Ertel - Births of Priests: Scrutinies of G.Dean's parental tampering claim 2
 37 E.Wunder - Comment on Ertel's article in 19.2
 42 S.Ertel - On Wunder's supporting Dean's cause
 53 P.Roberts - The Remarkable Gauquelin Distribution
 58 G.Douglas - Cosmic Influences: a new proposal
 67 Letter - G.Dean, R.Smit, W.Spencer (refereeing policy reduces *Correlation's* credibility)
 69 Reply by the editor
 70 Reviews - Park's *Voodoo Science: The Road from Foolishness*
 70 Phillipson's *Astrology in the Year Zero*

Correlation 20.2 June 2002

01 Contents
 02 London Research Conference November 2002 (notice)
 03 Editorial - The critical investigation of astrology in academia continues
 04 B.Brady - The Australian parent-child astrological research project
 38 Editorial invitation to enter Debate on the Gauquelin Data
 39 S.Ertel - Superstition over time: Scrutinies of G.Dean's parental tampering claim 3
 49 P.Roberts - The relevance of Bayes' theorem in probability theory
 58 S.Ertel - Comment on Blackmore and Seebold's Effects of horoscopes
 59 C.Renstrom - Comment on Blackmore and Seebold's Effects of horoscopes
 60 M.Seebold - Reply to Ertel and Renstrom
 63 Review - Guinard's *Manifesto* (PhD thesis)
 64 Errata - Hawley's article in 19.1

Correlation 21.1 December 2002

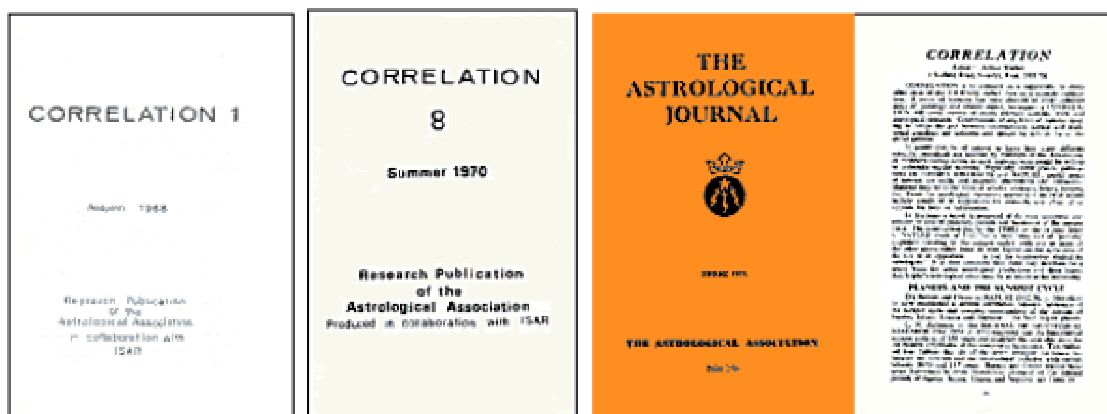
01 Contents
 02 London Research Conference November 2002 (notice)
 03 Editorial - The continued pursuit of standards in astrological research
 05 Research Group for the Critical Study of Astrology progress report
 06 Sophia Centre founded at Bath Spa University College
 07 M.Wackford - Polar houses
 14 M.Wackford - The polar arcs
 22 S.Fuzeau-Braesch - Causal or esoteric astrology? A review of symbolism vs science
 30 C.Bagley - Astrology, symbolism and science: a commentary
 34 Editorial invitation to enter Debate on the Gauquelin Data
 35 S.Ertel - Whence Midnight avoidance: Scrutinies of G.Dean's parental tampering claim 4
 40 K.Hawley - Harmonic origins of astrological qualities
 45 F.McGillion - The pineal gland and the ancient art of latromathematica (reprinted from *JSE*)
 62 Letters - K.Vandermoortel, K.Hawley, G.Dean (reply to Ertel), S.Ertel (reply to Dean)

Correlation 21.2 June 2003

01 Contents
 02 Appeals for data from K.Hawley and G.Douglas
 03 Editorial - Good scientific practice in astrological research
 06 Editorial by John Addey from AJ Autumn 1968 setting out aims for the first *Correlation*

Addey's editorial -- [The *Correlation* referred to appeared during 1968-1976, see picture below, and was the precursor of the present *Correlation*.] Another way in which we are celebrating the completion of our tenth year --

though it was not planned with that in mind -- is by the production of a regular research bulletin which will, if all goes well, appear each quarter with the *Journal*. The name *Correlation* was suggested for this publication by Mr Fleming Lee who has agreed to act as its editor ... We are certain that not only has astrology nothing to fear from the scrutinies of science or from the use of scientific methods, but that if it is to perform one of its most valuable potential functions in the present world -- that of demonstrating to modern science that the phenomena which it so loves are but symbols of an ideal and spiritual order which lies behind the manifested cosmos -- then we should fearlessly meet scientists on their own ground and show them that even by their own criteria astrology is magnificently true.



Original *Correlation* research bulletin published by the AA in collaboration with ISAR. From its launch in 1968 through 1970 it was a separate quarterly issued free to members of the AA and ISAR. In 1971 it appeared twice yearly in the *Astrological Journal*, then annually 1972-1976, after which it was discontinued following the publication of *Recent Advances* in 1977. Editor was Fleming Lee to 1970 (with help from Charles Harvey for issue 8), then Arthur Mather to 1976. Pictured are issue 1 Autumn 1968, issue 8 Summer 1970, and in the AJ Spring 1971.

- 10 Editorial invitation to enter Debate on the Gauquelin Data
- 11 S.Ertel - Three tests, whose hits: Scrutinies of G.Dean's parental tampering claim
- 22 M.Wackford - Polar meridians
- 37 P.Roberts - Going with the flow: The message of astrology
- 43 G.Dean - **On being properly scientific**
- 45 K.Hawley - The Cyclical Index 2001-2100 (Gouchon/Barbault)
- 53 Obituary: Marcello Truzzi 1935-2003
- 54 Letters - K.Hawley, G.Dean vs P.Roberts, G.Douglas vs P.Roberts
- 59 Reviews - Frost & Prechter's *Elliott Wave Principle*
- 59 Reviews - Prechter's *The Wave Principle of Human Social Behavior*
- 62 Errata - text omitted from Hawley's article in 21.1
- 64 AA Conference August 2003 (notice)

Correlation 22.1 June 2004 (guest editor Graham Douglas)

- 01 Contents
- 02 Appeals for data by S.Ertel and G.Douglas
- 03 Appointment of new RGCSA convenor (Susan High to replace Christopher Bagley)
- 04 Editorial - Astrology, a vibrant research programme
- 05 P.Harris - Astrology and individuality in chronic pain management
- 24 D.A.Goodman - First report of possible human 260-day unconscious rhythm
- 38 R.Bes - **War, prosperity, and the 500-year outer planetary cycle**
- 52 P.Simkhada and D.Simkhada - **Astrology and the sex-trafficking of girls in Nepal**
- 63 F.McGillion - Up in the air (an attack on Dean & Kelly's article in *JCS*)
- 68 D.Castille - The astrological heredity research project
- 70 Review - McGillion's *Blinded by Starlight: The Pineal Gland and Western Astronomy*

Correlation 22.2 December 2004 (guest editor Mark Urban-Lurain)

- 01 Contents
- 02 Editorial - On the need for scholarship
- 04 S.Ertel - Hopeful findings, unduly neglected, on stars and human affairs
- 20 D.Castille - Birth day effect on natality rhythms
- 33 J.Brockbank - Blackmore & Seebold in 19.2 and a new Awareness of Astrology Questionnaire
- 53 Report on Kepler Day November 2003 with these summaries of presentations:
- 53 N.Kollerstrom - Mare fertility and the Moon
- 54 P.Nockolds - Are the Sherlock Holmes stories constructed around Mercury-Sun conjunctions?
- 55 M.O'Neill - Developments in the lottery project
- 55 C.Roberts - Visions of the Virgin Mary
- 57 Contents of *Les Cahiers du RAMS* No 11 June 2003
- 59 Review - Vandemoortel's *Astro-Logics*
- 62 Letters - G.Dean and I.W.Kelly (McGillion's attack), F.McGillion (reply), S.Fuzeau-Braesch

Correlation 23.1 June 2005

- 01 Contents
- 02 Applications invited for *Correlation* editor (notice)
- 03 Editorial - is astrology a practical information system or something completely different?
- 05 Obituary: Theodor Landscheidt 1927-2005
- 07 S.Ertel - Gauquelin effects brought down to earth? On G.Dean's dealing with stubborn facts
- 34 N.Kollerstrom - How Ertel rescued the Gauquelin effect
- 45 M.Wackford - **Global horoscopes** (concludes a 5-part series)
- 64 G.Douglas - Replication of a Saturn effect with firstborns
- 67 S.Fuzeau-Braesch - Comment on Castille's Birth day effect on natality rhythms
- 68 Letter from G.Dean (on Brady's article in 20.2)
- 70 Reviews - *Papers from the Inaugural Conference of the Sophia Centre*
- 71 Fuzeau-Braesch's *Astrologic et Connaissance de Soi*

Correlation 23.2 June 2006

- 01 Contents
- 02 Kepler Research Conference May 2006 (notice)
- 03 Editorial - If it works, it can't be astrology
- 04 G.Phillipson - Modern science, epistemology and astrology
- 24 G.Douglas - Some unexpected solar patterns in the Gauquelin data
- 47 P.Roberts - The nature of the planets
- 53 G.Dean - Planetary effects and related matters in 23.1
- 58 S.Ertel - What is true and what is untrue? Response to Dean
- 62 D.Castille - Response to Fuzeau-Braesch's comments
- 64 Review - England's *Degrees of Flight: the Astrology of Aviation*

Correlation 24.1 May 2007

- 01 Contents
- 03 Editorial - what is this thing called astrology?
- 05 K.McRitchie - Astrology theory and the social sciences
- 21 G.Douglas - Grains of silver and gold [solar effects in Gauquelin data]
- 33 G.Douglas - The Gauquelin effect and birth order (abstract)

34 G.Phillipson - An interview with Mark McDonough
 41 P.Stapp - Perceptions of police staff of full moon influences
 66 Letters - D.Hamblin, R.Gillett, G.Phillipson
 72 Launch of e-group GeomagneticCorrelation@yahoogroups.com

Contents of *Astro-Psychological Problems* 1982-1995



Left to right: 1.1 December 1982, 7.1 March 1989 (first of three joint issues with the *NCGR Journal*), 11.1 March 1995 (last circulated issue). The first two issues were originally photo-reduced to form an A5 booklet, but were republished in the stapled-A4 form shown here that was to become the standard format. Original title *Astro-Psychological Problems* became the sub-title from 5.1 January 1987 under the new title *The Schneider-Gauquelin Research Journal*.

Aims

Limited by her separation and then divorce from Michel Gauquelin, but encouraged by the success of *Correlation*, Francoise Gauquelin launched *APP* in December 1982 specifically to provide a forum for the discussion of Gauquelin matters within its formal aim "to report empirical research into astrology", later "to report statistical investigations of astrology ... purely astrological articles will not be published".

Insistence on statistical approach

Francoise's many contacts within Europe, and her fluency in French, English, German and Italian led to *APP* having a higher European content than *Correlation* even though all articles were in English. Her insistence on the statistical approach led to many discussions of methodology (many more than in *Correlation*) and the same vigorous interchange of letters to the editor averaging nearly 3 per issue, nearly always accompanied by a reply from Francoise showing her clarity of expression and vast research experience.

Links with NCGR

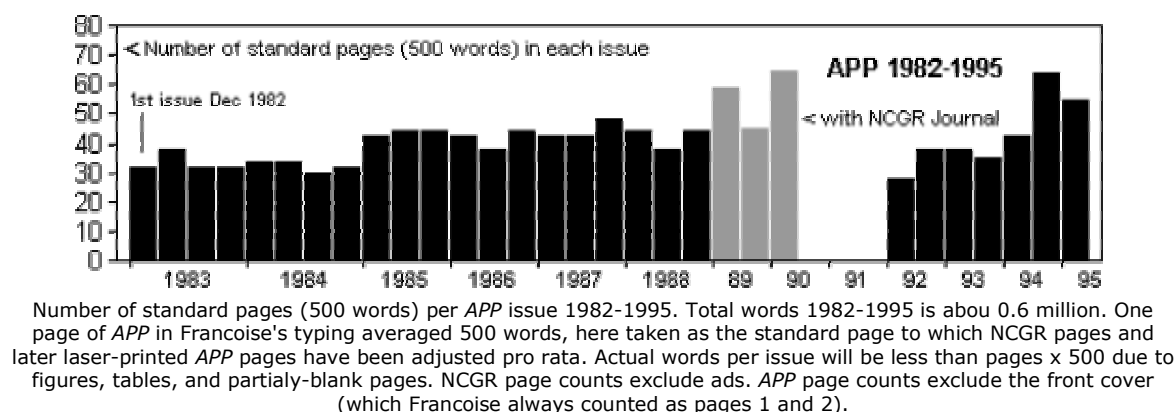
In 1989, following Francoise's temporary move to the USA, *APP* was published by the NCGR as alternate research issues of their now quarterly *NCGR Journal*. But the liaison lasted for only three issues. Rising printing and mailing costs, the heavy load on volunteer typesetters, and the death of Neil Michelsen (who had donated over \$2000 worth of ACS staff time to producing each issue), meant that four issues a year had to be reduced to two issues a year, leaving no room for *APP*. In 1991 Francoise returned to France and began publishing *APP* again in its original format until 1995, when ill-health forced her to discontinue.

Empirical studies and outcomes

Over the thirty issues of *APP*, empirical articles were roughly equally divided between Gauquelin and non-Gauquelin areas, and their respective breakdown was roughly 18+15 positive, 2+2 mixed, 8+12 negative, total 28+29 = 57. The 15 positive results in non-Gauquelin areas were as judged by their author and were often shown by Francoise and others to be due to artifacts. Again, the results in Gauquelin areas were before the discovery of social artifacts in the Gauquelin data. There was only friendly co-operation between *APP*, *Correlation*, and *AinO*, and often the same authors can be found in all three.

Size of each issue

As shown below, the size of each *APP* issue slowly increased over the years:



It was 4-issues-per-year for the first two years, 3-per-year for the next four years, and 2-per-year after that, a total of 30 issues until 1995, when ill-health forced Francoise to discontinue publication. A 31st issue had been prepared but was not published.

Price and circulation

Price in USD including surface postage was \$8 in 1983 (4 issues), \$10 in 1985 (3 issues), and \$15 in 1993 (2 issues), more if by air mail. The circulation is not recorded in *APP* but was probably about 150, less for the final few issues because some of Francoise's subscriber index cards went astray during her frequent trips between San Diego, Paris, and various conference sites (see *APP* 11.1 page 3).

Contents

The following list of contents covers all issues of *APP* and totals 383 entries, of which about one-third are editorials, book reviews, letters, and notices. It is based on the actual contents, not the contents pages, and provides details not given in the latter. Initially Francoise signed herself variously Francoise Gauquelin and Marie Schneider (her maiden name), eventually settling for Francoise Schneider-Gauquelin, see *APP* 4.2. To avoid confusion all variants in what follows are given as Francoise Gauquelin.

Contents were usually listed under subheadings such as *Current Events*, *Research Results*, *Methodology* and *Discussion Forum*, which subheadings have been omitted here to save space. Entries have been condensed where necessary to fit on to one line. The list includes excerpts from inaugural editorials. Abstracts of **entries in bold face** (N=17), expanded where necessary to provide more information, are in *Research results* on this website under Doing Scientific Research.

APP 1.1 December 1982

03 Editorial by Francoise Gauquelin

Editorial -- Astrological publications are numerous, but journals entirely devoted to research into the basic hypotheses of astrology are few. However *Correlation*, a research journal sponsored since the autumn of 1968 by the British Astrological Association, has proven that there are authors and readers enough in the astrological community for a publication of this intellectual standard. In the course of our investigations at the Laboratory for the Study of Cosmic and Psychophysiological Rhythms, we often regretted that some interesting outcomes did not find the place they deserved, in the published books. The publication of a quarterly research journal would give us and others more opportunity to describe new ideas, hypotheses, beginning research, circumscribed results not intended to form entire books. Our main problem was the language. Since our first publication in French, a quarter of a century ago, neither the scientists nor the astrological groups of our country [France] had shown enough interest in our work to sustain a research journal. Ten subscribers at the most, that was the little encouraging prediction of a French authority in this field. Therefore, despite our lack of fluency in English, we decided to choose this international language for spreading our ideas. Fortunately, in the scientific field, the style is less important than the results. With this idea in mind, may I ask our readers to be indulgent for errors of style, but very critical for errors of reasoning or of investigating a hypothesis? The criticisms, suggestions, corrections, will be acknowledged and discussed here with -- I hope -- an open mind. Each opinion has a value. But the liberty to criticize it seems to us the most important attitude for good scientific work.

- 04 *You, the Jury* a BBC emission commented by M.Freeman
- 07 Conference Reports by C.Harvey, M.M.Herm, J.Kampherbeek
- 10 Five Generations of Farmers and Jupiter Heredity by M.Bollen
- 14 Character Traits Analyses by F.Gauquelin
- 27 The Vernon Clark Experiments by H.Eysenck
- 30 The Legal Time in the World: Belgium, Holland by L.de Marre
- 34 Review of *Astrology: Science or Superstition?* by F.Gauquelin

APP 1.2 March 1983

- 03 Editorial
- 04 *You, the Jury*, Are Astrologers also prejudiced? (excerpts)
- 06 Comments by H.Eysenck
- 09 Reply by S.Best
- 10 Choose your Science (more on the above) by P.Curry
- 14 Happiness in Marriage Part I by H.Eysenck
- 21 Reductionist versus Wholistic Judgments of Horoscopes by B.Steffert
- 27 The Legal Time in Italy by G.Bordoni
- 29 **The Whole is more than the sum of its parts** by P.Niehenke
- 33 A theoretical prediction from the Gauquelins' findings by G.Douglas
- 35 Reply to Graham Douglas by F.Gauquelin
- 40 List of Gauquelin publications

APP 1.3 June 1983

- 03 Editorial
- 04 Letters - T.Weed, J.Reverchon
- 06 3rd London Research Conference report by S.Best
- 08 Good news from research (a new VC test) by G.Dean
- 10 Planetary types and ordinary people by W.Blaas
- 15 Happiness in Marriage Part II by H.Eysenck
- 20 The Legal Time in France by F.Gauquelin
- 23 The Starword Program by T.Dwyer
- 27 The problem of replicating astrological results by U.Mees
- 30 The practice of astrology by B.Dijkstra
- 33 Reviews of *Spektrum der Parapsychologie*, *Astrologia si Astrologia no*
- 34 Abell-Kurtz-Zelen admit mistakes (excerpts from *Skeptical Inquirer*)

APP 1.4 September 1983

- 03 Editorial
- 04 Letters - Z.Matthews, F.Jakubowsky
- 06 Results of research with the Starword Program by T.Dwyer
- 10 The Biggest Astrology Prize by G.Dean and A.Mather
- 14 Methodological errors by Critics of Astrological Claims by H.Eysenck
- 18 Identification of an artefact in Cosmo-planetary Research by G.Le Clercq
- 20 Time Changes in Austria by M.Prager
- 21 Drug Addiction and Horoscopes by W.Martinek
- 26 Comments by F.Gauquelin
- 29 Two notes for discussion by J.Reverchon
- 32 The two risks with statistics by F.Gauquelin
- 34 Reviews *Radical Astrology, Belief in Astrology* by F.Gauquelin

APP 2.1 December 1983

- 03 Editorial
- 05 Extraversion and Sun Sign by A.Smithers
- 12 **Research in astrological factors between married couples** by T.Shanks
- 17 Moon results with a projective test by F.Gauquelin
- 22 Problem of the time in previous centuries by A.Libranti
- 26 Summertime in Poland by M.Karlinski
- 28 The planets of the astrologers by F.Gauquelin
- 30 Letters - M.Startup, T.de Weert, R.H.Smit, B.Hansen, I.Naiman, J.Reverchon
- 36 Forthcoming conferences

APP 2.2 March 1984

- 03 Editorial
- 05 Astral Heredity by C.Discepolo, M.Mauro, F.Passariello
- 11 **A new test of zodiac signs** by B.Riley
- 15 Computer update by C.Miles
- 17 Time changes in Switzerland by M.Keller
- 21 Time changes in the USA by A.Blackwell
- 22 The Mars Effect and its evaluation by H.Eysenck
- 27 **Response to Eysenck's evaluation** by M.Truzzi
- 28 Critique of C.G.Jung's astrological experiment by J.M.Ashmun
- 33 Letters - R.Ostrander, M.Karlinski, J.Reverchon, A.Muller, F.Jakubowsky, R.H.Smit
- 35 George O. Abell obituary
- 36 Forthcoming conferences

APP 2.3 June 1984

- 03 **Editorial (opinions from a German conference)**
- 05 Planets and Happiness in Marriage by T.Shanks and B.Steffert
- 10 **The Validity of Astrological Aspects** by P.Niehenke
- 16 Birthday and Date of Death by Prof U.Mees
- 21 What is the Inventor's Temperament? by T.de Weert
- 26 Time Changes in Spain by J.L.San Miguel de Pablos
- 28 The Official Recording of Birthtimes by F.Gauquelin
- 29 Letter from F.Schneider
- 31 Conference report ISAR research week 5-15 March 1984
- 32 Review of M.Gauquelin's *The Truth About Astrology*

APP 2.4 September 1984

- 03 Editorial
- 05 Zodiac signs and Planets by F.Gauquelin
- 12 Time Changes in Germany by F.Gauquelin and F.Jacob
- 14 Astronomical Expectancy by J.Holden
- 17 A Study on Marriages by C.Kuypers
- 20 Comments by F.Gauquelin
- 22 Feyerabend on astrology research by J.L.San Miguel de Pablos
- 25 Astrology in France by J.Falbronn
- 28 The Myth of Saturn by G.Mirti
- 31 Letters - I.Grabmayr, C.Parsons, W.Holzhauser
- 33 Reviews of M.J.Startup *PhD thesis*, Bender's *matching experiments*

APP 3.1 January 1985

- 03 Editorial
- 05 Summary of recent research results
- 08 Report on 4th London Research Conference
- 11 Report on discussion of astrology at American Psychological Assoc Convention
- 12 Preliminary report on Lesbian study by L.Burmyn
- 15 The search for the Lesbians' planet by F.Gauquelin
- 19 A study on marriages: reply to F.Gauquelin by C.Kuypers
- 20 The nycthemeral expectancy by F.Gauquelin
- 24 More precision about Time Changes in Poland by J.S.Skepski
- 27 Algorithms for evaluating significance levels by G.Dean
- 34 The Myth of Jupiter by G.Mirti
- 37 Letters - K.McRitchie, S.Porter, G de Penguern, A.Richter, J.Halbronn, M.Startup, R.H.Smit
- 42 Reviews of Koberl's *MS thesis*, Gaynor's *PhD thesis*, Bordoni's *birth data*
- 43 Reviews of Ferguson's *Stars of Dance*, Steinbrecher *inner guide*
- 44 Forthcoming conferences

APP 3.2 May 1985

- 03 Editorial
- 04 A new look at aspects by F.Gauquelin
- 09 The origins of negativity and sexism in astrology by S.Jordan and J.Reynolds
- 11 Planetary position and personality, how tight is the relationship? by F.Stark
- 16 **Sixty-eight birth charts of terrorists** by L.Squitieri
- 22 Statistical studies into astrology (1) Clarifications by D.Valente
- 25 Time changes in Canada by J.Vosper
- 27 The case of Ontario by F.Gauquelin
- 29 Planets, statistics, alpha-errors, and Bayes by D.Wendt
- 33 Review of *Planetary heredity: a reappraisal on 50,000 subjects* by D.Nias
- 35 Reply by F.Gauquelin
- 42 Letters - T.Dwyer, T.Weed, G de Penguern, W.Blaas
- 45 Reviews of *Cahiers de l'Hermetisme, Introduction a L'astrologie*
- 45 Reviews of *Guide de la vie astrologique, Ponencias presentadas*
- 46 Data accuracy (checks on Gauquelin data)

APP 3.3 September 1985

- 03 Editorial
- 04 Reports (German TV programme, ISAR research week, Masterclass in astro research)
- 05 The Greek Error or Return to Babylon by F.Gauquelin

- 11 The Influence of Mercury on Contracts by B.Bonner
- 14 Mercury Retrograde and Divorces: a Reassessment by T.Shanks
- 18 Death by Traffic Accident by C.Kuypers
- 22 A control for the above by F.Gauquelin
- 25 The Chi Square Test by Francoise and Daniel Gauquelin
- 31 Subroutines: the Gauquelin Sectors by P.O.Hewit
- 35 More precisions about Gauquelin Sectors by F.Gauquelin
- 37 Time Changes in Greece by G.Archavlis
- 38 Data Accuracy (checks on Gauquelin data)
- 40 Birth certificates of John Glenn and Neil Armstrong by A.Blackwell
- 41 Letters - H.Braitsch, J.Hoen, G.Kaminski, K.McRitchie, T.Weed, T.Koberl, M.Gauquelin
- 45 Reviews of *Astrologie unter der Lupe*, Urban-Lurain's *MS thesis*
- 45 Reviews of Valliere's *almanac*, *Art of Mastering Astrology*
- 46 Forthcoming conferences

APP 4.1 January 1986

- 03 Editorial
- 04 **Summary of Carlson's double-blind test of astrology** by F.Gauquelin
- 07 **Critique of this test** by Prof H.Eysenck
- 09 **Critique of this test** by T.Weed Hamilton
- 13 Astronomical problems and aspects again by F.Gauquelin
- 26 Brief discussion of the Gauquelin research by Z.Dobyns
- 28 Student's t test by F.Gauquelin
- 30 Time changes in Denmark by C.Borap and N.Hasseloy
- 31 Time changes in Norway by L.Frederiksen
- 32 Time changes in Sweden by I.Wilhelm
- 34 Data accuracy (checks of Gauquelin data)
- 38 Letters - S.Ertel, G de Penguern, M.Pottenger, G.Douglas, M.Urban-Lurain, J.S.Skapski
- 44 Reviews of *International Atlas*, *Superprize winners*
- 45 The 1st Eysenck Research Seminar (programme)

APP 4.2 May 1986

- 03 Editorial
- 05 Drug addicts - a Replication by A.M.Costa Ribeiro, D.DeMarco, F.Gauquelin
- 14 Comments on the astrological aspects by Prof A.Muller
- 17 Astrology, the false testimony of the cosmos by P.Niehenke
- 22 The Critical Ratio by Francoise and Daniel Gauquelin
- 27 Time changes in Malaysia by K.C.Foong
- 26 Time changes in Australia and New Zealand by Doris E.Greaves
- 32 Data accuracy (checks of Gauquelin data)
- 34 Letter - Francoise Schneider-Gauquelin (explains name changes)
- 34 Letters - T.Weed, I.Wilhelm, R.Armstrong, G de Penguern, J.N.Goetz
- 40 Review of MG's *replication of the six geometric figures test*

APP 4.3 September 1986

- 03 Editorial
- 04 Report on 1st Eysenck Research Seminar July 1986
- 07 James Randi and Objective Research by Prof H.Eysenck
- 12 **How strong are planetary effects for ordinary people?** by F.Stark
- 18 **A test of sidereal sign delineations** by A.Blackwell
- 22 **Election to government ministries and transits** by G.Bordoni, C.Discepolo,

V.Grilli

24 The Moon's Nodes in Synastry by M.O'Neill

31 Comments on O'Neill's study by F.Gauquelin

33 Georg Tannstetter, pioneer of empiricism in astrology by F.Stuhlhofer

35 Time changes in Eire by S.Lindsay and D.Monks

37 Correlation coefficients by F.Gauquelin

39 Data accuracy (checks of Gauquelin data)

40 The computer as a tool for research by M.Pottenger

43 Personal perspective by Z.Dobyns

46 Reviews (no details because pages are missing from reference copy)

54 (back cover) Authors of the last two years of *APP*

APP 5.1 January 1987

03 Editorial

04 The Committee for Objective Research in Astrology (CORA)

06 Value of research by Prof H.Eysenck

09 A critical look at a recent study of aspects by M.Gauquelin

15 Reply to Michel Gauquelin's criticisms by F.Gauquelin

19 Analyzed by decades, the aspect effect increases by F.Gauquelin and T.Shanks

26 Modern births in Germany by L.Runnebeck-Zimmermann

32 Time Changes in British Columbia by J.S.Skapski and P.Commons

36 Data accuracy (checks of Gauquelin data)

40 Letters - S.Ertel, F.Stark, J.S.Skapski

44 Reviews of *Where to write for US records, Can the Gauquelin effect be confirmed?*

APP 5.2 May 1987

03 Editorial

04 Report On the 2nd Eysenck Research Seminar (with pictures)

06 Astrology's Image Crisis by R.Nolle

07 Guy de Penguern's "New Challenge" to CORA

10 **F.Gauquelin's analysis of its outcomes (negative)**

15 Replication of the "Gauquelin-effect" with ordinary people, by F.Stark

23 231 male homosexuals from Brazil by F.Gauquelin, A.Costa-Ribeiro, M.O'Neill

30 When the time of birth is not the natural one by F.Gauquelin

36 Local Apparent Time by A.Blackwell

39 Do you mean apparent? (comments on the above) by M.Pottenger

41 Update of time changes (international abbreviations for time zones)

42 Letters - J.Filbey, M.Gauquelin

43 Reviews of *NCGR Journal*, *Fraternity News*, Dean's article in *Skeptical Inquirer*

APP 5.3 September 1987

03 Editorial

04 Transcript of planetarium show mentioning Gauquelin results by K.McRitchie

05 3rd Eysenck Research Seminar in Italy June 1988 (programme)

07 Concluding on the Aspect Effect by F.Gauquelin

18 More data of Homosexuals by F.Gauquelin, J.L.Lehman, A.M.Costa-Ribeiro

27 **Transits and Abduction of Children** by D.P.Valentiner

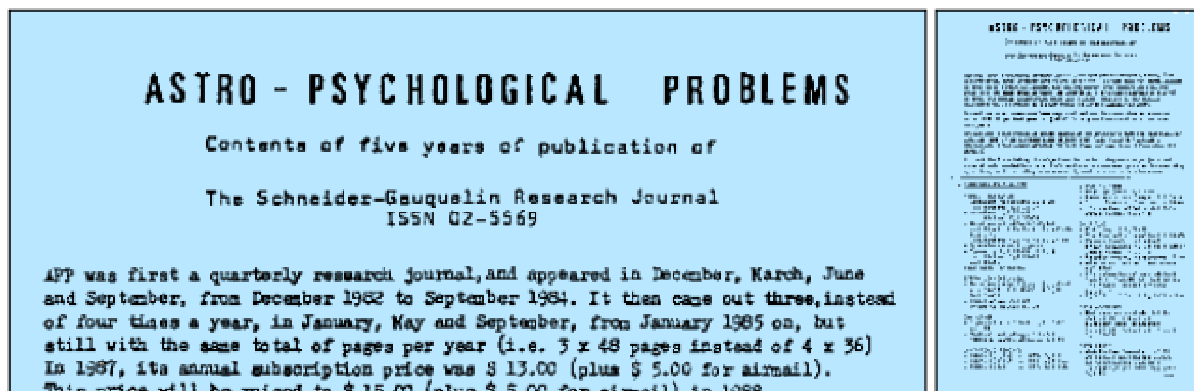
32 Astrological Research and Science: some wrong attitudes by P.Niehenke

37 Seasonal Distribution of Births and Solar Wind by H.Braitsch

38 Cyclic Events in the Planetary Motions by N.Kordts

42 Anecdotal vs Scientific Research: the difference by M.Urban-Lurain

47 Letters - R.J.Pestka, K.Irving, M.O'Neill, N.Kollerstrom, P.O.Hewitt
 50 Reviews of *Astrology - a Science of Space and Time*, Polish astro journal



At the end of 1987 Francoise Gauquelin issued the above cumulative index, which occupied seven A4 pages photo-reduced to A5. In it she gives a brief overview of the contents, ending with "Thus APP turns out to be a useful medium for remaining informed of current advances in astrological research, and communicating to others each researchers endeavors. It will try to go along these lines."

APP 6.1 January 1988

- 03 Editorial
- 04 One of the statistical pitfalls by Prof H.Tans Eysenck
- 06 3rd Eysenck Research Seminar in Italy June 1988 (programme)
- 09 Report of joint AA/NCGR London Research Conference Nov 1987
- 10 On resisting astrological claims by Prof V.Benassi
- 14 To the Editor, *APP*, by G.Dean (re review of his work in 5.2)
- 16 Reply by F.Gauquelin
- 16 Bias in the conduct of research by J.L.Lehman (attack on G.Dean, reply in 6.3)
- 19 Attempts at replicating Franz Stark's results by F.Gauquelin
- 26 **Traffic Accident Victims and Pluto Squares: Kuypers' results verified** by F.Gauquelin
- 28 Aspects to chart angles by M.Pottenger
- 34 Completed astronomical expectations for hard aspect effects by F.Gauquelin
- 36 **Methodological issues** (effect sizes are necessary) by J.E.Becerra
- 40 The fixed displacement control group (eg shifting date) by B.Riley

APP 6.2 May 1988

- 03 Editorial (APP to become NCGR Research Journal)
- 04 3rd Eysenck Research Seminar in Italy June 1988 (programme)
- 08 Interview of Seminar's organizers by G.Mirti
- 12 Planetary Relations with Female Notabilities by S.Ertel
- 16 Real Astrology Review by R.Nolle (the need for statistical research)
- 22 Research on 132 Murderers by L.Houston, M.Pottenger, F.Gauquelin
- 25 Diurnal Sector Calculations by M.Pottenger
- 28 Births in Brazil in 1969 by F.Gauquelin
- 30 Time Changes in Argentina by E.R.Dumon
- 31 Is the Moon or Mercury the traditional planet of writers? by F.Gauquelin
- 32 Letters - H.J.Eysenck, R.H.Smit, K.McRitchie, F.J.Onucki, D.Laboure
- 35 Letters - C.Kuypers, H.van Eysselsteyn-Kummer, A.D.Filo, J.Hoen

39 Review of *Kritische Astrologie, Psychologie der Planeten, Sintesi e Interpretazione del Tema Natale*

APP 6.3 September 1988

- 03 Editorial (more on APP to become *NCGR Research Journal*)
- 04 Interview with Maria Kay Simms (NCGR publications director)
- 07 NCGR, National Council for Geocosmic Research (details of)
- 09 Report on 3rd Eysenck Research Seminar by F.Passariello
- 14 Panel discussion on research methods (transcript)
- 18 Various Theories of Astrological Influences by R.Hand
- 23 **More about Uranus and Murderers** by L.Houston, F.Gauquelin, A.Muller, M.O'Neill
- 26 The MMPI Questionnaire and Planetary Angularity by E.Dinacci
- 29 Comments on Dinacci's article by F.Gauquelin
- 30 Letter from M.O'Neill and N.Kollerstrom
- 31 Reply to Lehman's attack on me by G.Dean
- 35 Review of Ertel's *Grading the Eminence*
- 39 Review of Hill & Thompson's redhead research
- 43 Why do astrological research and how to proceed by F.Gauquelin
- 47 Proceedings of 3rd Eysenck Research Seminar (how to order)

APP 7.1 March 1989 (as NCGR Research Journal)

- 01 Welcome by Maria Kay Simms, NCGR Publications Director

Welcome -- National Council for Geocosmic Research is pleased to present this first issue of *NCGR Research Journal* to be published on alternate quarters with *NCGR Journal*. The research issues will be entirely devoted to scientific research in astrology and to education in proper research methodology. For anyone interested in serious astrological research, our new editor Francoise Gauquelin needs no introduction. The vast and meticulous research of Francoise in collaboration with her former husband Michel Gauquelin is undoubtedly the most frequently cited work in support of an astrological effect. For several years Francoise has published *Astro-Psychological Problems*, a research journal modestly produced by xerox but highly respected for its content. Francoise has recently moved from Paris to make her home in San Diego, which is also my home. ... We welcome you, Francoise, to the United States and to our NCGR publications staff.

- 02 Summaries in German, French, Italian and Spanish
- 06 Editorial
- 07 An Interview with Neil Michelsen by F.Gauquelin
- 11 Principles of Research by Prof H.Eysenck
- 13 Report on 7th London Research Conference by M.O'Neill
- 17 Astrology and the Self-Attribution Process by P.L.Iacono
- 21 The Moon's Nodes in Marriage - a replication by M.O'Neill
- 27 Reversed Eminence Correlations by S.Ertel
- 33 Comments on Ertel's article by F.Gauquelin
- 35 Comments on Ertel's article by M.Gauquelin
- 37 Astrolabe and Astrological Research by G.Christen, R.Hand, P.White
- 41 Data Accuracy (checks of Gauquelin data)
- 42 Letters - R.Schulz, W.Heukelom, L.Houston
- 45 Review of Richard Nolle's *Birth Defects* by F.Gauquelin
- 47 Reply by Richard Nolle and F.Gauquelin's answer
- 48 Contributors

APP 7.2 September 1989 (as NCGR Research Journal)

- 02 Summaries in German, French, Italian and Spanish
- 06 Editorial (Guidelines for Potential Contributors)
- 07 An Interview with Rob Hand by F.Gauquelin

- 11 NCGR Research, New Orleans July 1989 by F.Gauquelin
- 13 Matrix/NCGR, Big Rapids July 1989 by J.L.Lehman
- 17 **Confirmation of Gauquelin Effects in 1288 Eminent Physicians** by Prof A.Muller
- 21 Ballet Dancers and Gauquelin Sectors by M.O'Neill
- 23 Venus-Pluto on the Occurrence Dates of Sex Murders by L.Houston
- 27 **Sun, Uranus and Demographics** by M.Pottenger (dramatic visuals)
- 30 Lorna Houston's Murderers Born More Often In Summer by Prof A.Muller
- 31 Gauquelin Heredity Data not OK as a Control Sample by M.O'Neill
- 33 How to Maximize the Validity of Your Statistical Tests by F.Gauquelin
- 35 How complex can demographic problems be? by F.Gauquelin
- 36 Data Accuracy (checks of Gauquelin data)
- 37 Letters - S.A.Celayir, S.Ertel, R.Tate, M.Gauquelin
- 37 Comments about Reversed Eminence Correlations by S.A.Celayir
- 38 Response to Celayir by S.Ertel
- 38 **On Astrological Patterns of 572 Nobel Laureates** by R.Tate
- 39 Some Precisions on the Spring Equinox Issue by M.Gauquelin
- 41 Review of Muller's article on *Accident Prone Drivers*
- 44 Contributors

APP 7.3 March 1990 (as NCGR Research Journal)

- 04 Summaries in Spanish and German
- 07 Editorial by J.L.Lehman (why do research?)
- 09 How to Do Research by J.L.Lehman (glossary, many figures)
- 27 Scrutinizing Gauquelin's Character Trait Hypothesis by S.Ertel
- 35 Planetary Patterns and Personality by T.Weed Hamilton
- 45 Pictures In the Sky by M.Harding
- 47 Letters - N.Kollerstrom, D.Van Toen
- 49 The Astrological Scene in Moscow by H.Glade
- 53 Answer Master by C.Hannon
- 54 Challenge! by C.Hannon
- 56 Contributors

APP 8.1 March 1992 (now back in Paris)

- 02 Announcing *Les Cahiers du RAMS*
- 03 Editorial by Francoise Gauquelin

Editorial -- Dear Readers, After a two years interruption due to the need to complete [in the USA] a long-due re-evaluation of the Gauquelin heredity effect, the Schneider-Gauquelin Research Journal is ready to be published again. ... Let us hope, thus, that restarting the publication of my research journal may further serious attempts to clarify whether the astrological theories really contain a factual core, what it is, how it can be explained in scientific terms. Let us hope also that it will help promote interactions between researchers in a positive way.

- 04 Michel Gauquelin in memoriam by F.Gauquelin
- 06 The New Astrology by K.Irving
- 09 Conference Reports (Melbourne Jan 1992, UAC Apr 1992, Euroskeptics Oct 1991)
- 11 Planetary Heredity: New Research Results by F.Gauquelin
- 22 Time Changes in Australia by K.Barrett
- 29 Message from CORA (offers free advice on research)
- 30 LERRCP Publications

APP 8.2 September 1992

- 03 Editorial
- 04 In Memoriam: Michel Gauquelin by Prof H.Eysenck

06 In Memoriam: Michel Gauquelin by R.Smit
 08 Bibliography of MG's publications by S.Ertel
 10 M Gauquelin's library available to researchers by F.Gauquelin
 11 List of LERRCP Publications
 12 Why I am interested in Statistics by C.de Cease
 15 **Unresolved problems (heredity, character traits, aspects, signs)** by F.Gauquelin
 17 Thirty-two Planetary Types (all possible combinations of MO,VE,MA,JU,SA) by F.Gauquelin
 27 The Gauquelin sectors by F.Gauquelin, M.Pottenger, F.Santoni
 37 Letters - D.Coe, T.de Weert
 40 Review of *Skeptical Inquirer* (magazine is diversifying)

APP 9.1 March 1993

03 Editorial
 04 Dutch Skeptics fail to explain Mars effect by W.Heukelom
 06 Moscow Association of Astrologers by V.Vaisberg
 07 Shall we believe in statistics, yes or no? by J.Halbronn
 09 Description of two extreme G types (out of 32) by F.Gauquelin
 22 Planetary effects with female notabilities by S.Ertel
 26 On rectification by the rule of Hermes by K.Tarvainen
 29 Time changes in Moscow by V.Vaisberg
 31 F.Gauquelin on the accuracy of birth time registration Part 1
 36 List of Articles by S.Ertel on Gauquelin effects
 37 List of articles by M&F Gauquelin together
 40 Update to Ertel's bibliography in issue 8.2

APP 9.2 September 1993

03 Editorial
 04 *Correlation* is coming out again
 05 The 9th London Research Conference (programme)
 06 MG's Planetary Temperaments vs FG's Pure Types by F.Gauquelin
 13 A Study of the Gauquelin Effect with 402 Italian Writers by Prof A.Muller
 22 Reply to Muller's negative study by F.Gauquelin
 29 F.Gauquelin on the accuracy of birth time registration Part 2
 34 The birthplanet transit hypothesis by T.de Weert

APP 10.1 March 1994

03 Editorial
 05 Report of 9th London Research Conference November 1993
 06 Ongoing research projects (brief details)
 07 Ordinary persons have significant angular planets by F.Gauquelin
 17 The problem of Pure and Mixed Planetary Types by K.Irving
 22 And Francoise Gauquelin's point of view
 26 Financial Reasons for Birth Date Shifting by K.Gillman
 27 Comments by F.Gauquelin
 28 More comments by K.Gillman
 30 Equality in Science for Men and Women by C.Smith
 31 For a Rough, Independant Farmer Family: Uranus Angularities by M.Bollen
 32 Comments by F.Gauquelin
 33 More comments by M.Bollen
 34 Reviews of West's *Case for Astrology* by S.Fuseau-Braesch and G.Dean.

37 Problems in computer-aided research by F.Gauquelin
42 Paris congress in March 1994 (advertisement)

APP 10.2 September 1994

03 Editorial
04 UAC-95 program now available, no research track foreseen
05 The Astro-Questionnaire Project by P.Roberts
07 Other projects in progress (brief summaries)
08 **8000 chart factors tested on the Gauquelin professional data** by M.O'Neill
23 The Character Trait Experiments by F.Gauquelin
32 Patrick Jerome's "Neptune Factor" discussed by P.Jerome and F.Gauquelin
48 Philippe Paquier's *The most Jupiterian of Saturnians* discussed by P.Pacpier and F.Gauquelin
56 Gauquelin sector Expected Frequencies by M.Pottenger
59 Time changes in Australia update by K.Barrett
60 Data accuracy (check on Gauquelin data)
62 Appeal to astrologers doing research to send details to German association

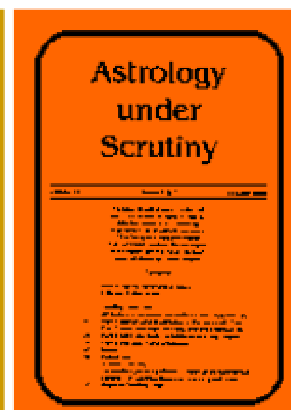
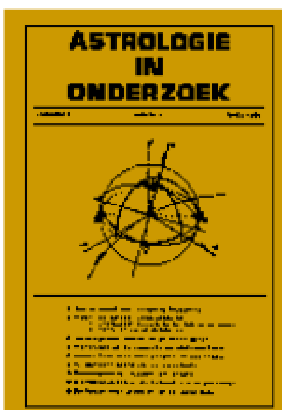
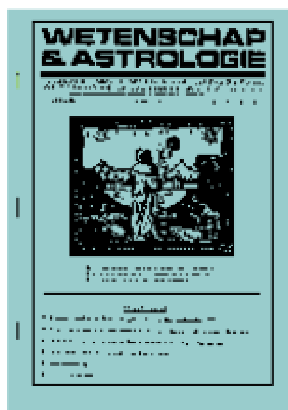
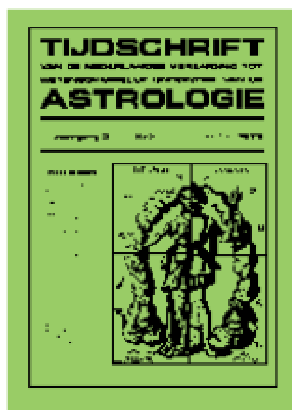
APP 11.1 March 1995

03 Editorial
04 The Euroskeptics Conference September 1994 by F.Gauquelin
07 The United Astrological Congress April 1995 by Marion D.March
08 CTH Yes or CTH No? by F.Gauquelin
18 **Testing for 7th House Rulership** by M.Tollefson
20 **Planets in Semantic Space** by G.Douglas
32 **Discussion of Douglas's results** by F.Gauquelin
33 Follow-up on The Neptune Factor by M.Pottenger
44 Fourier Analysis of Gauquelin data by C.Smith
50 ISAR conference July 1996 (notice)
51 Time Changes in Sweden by I.Wilhelm
54 Time Changes in Finland by K.Tarvainen

APP 11.2 September 1995

According to 11.1, the 11.2 issue was then nearly ready. But it was never published.

Outline of contents of *Astrologie in Onderzoek* 1977-2003

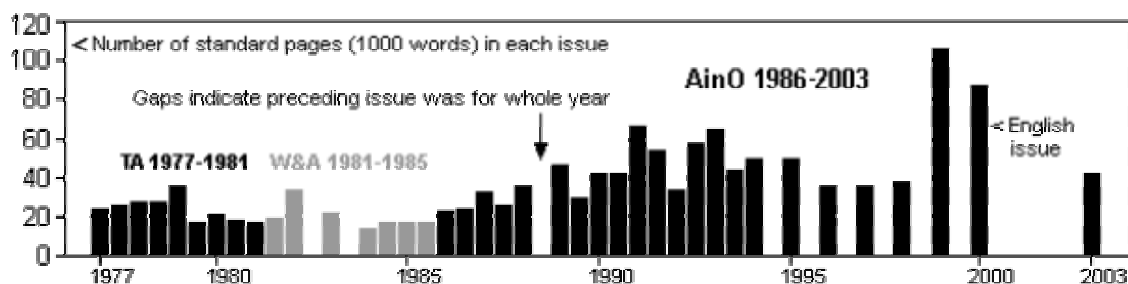


Left to right: *TA* 3.2 Winter 1979, *W&A* 5.2 Winter 1981, *AinO* 1.1 Summer 1986, and its first English issue 13.1&2 October 2000. Page size for all journals was A4. *TA* and *W&A* were stapled, *AinO* had thermal binding.

Several years before *Correlation* and *APP* there was *Tijdschrift van de Nederlandse Vereniging tot Wetenschappelijk Onderzoek van de Astrologie* [Journal of NVWOA, the Dutch Society for the Scientific Study of Astrology], published by NVWOA in the Netherlands. Known as *TA*, it began in 1977, changing its title in 1981 to *Wetenschap & Astrologie* [Science and Astrology] with the original title as a sub-title. In 1986 it was replaced by *Astrologie in Onderzoek* [Astrology under Scrutiny] published by Cygnea van der Hooning and Wout Heukelom as a separate venture, but issued free to all NVWOA members.

Aims and size

The aims of *AinO* and its precursors were similar to those of *Correlation* and *APP* but with more emphasis on philosophical issues and the problems faced by practitioners. Most of the material was peer-reviewed to maintain high standards. For such a small country (1990s population 15m) the breadth and depth of *AinO*'s contents was remarkable, as was the steadily increasing size of each issue over the first fifteen years as shown below:



Number of standard pages (1000 words) per *AinO* issue and its precursors 1977-2003. Total words is about 1.4 million. Until 1994 there were generally two issues per year. Up to 1988 the A4 pages were typed, and sometimes the typing was photo-reduced by as much as 60%, giving much economy of space. From 1989 the pages were typeset in two columns, giving around 1000 words per page, here taken as the standard page to which previous pages have been adjusted pro rata. Actual words per issue will be less than pages x 1000 due to figures and tables.

Friendly interchange

Unfortunately for English readers, *AinO* was written in Dutch and was therefore little known outside the Netherlands even though each issue contained summaries in English. Nevertheless there was a frequent friendly interchange of translated material with both *Correlation* and *APP*, largely due to Rudolf Smit and his position as typesetter and layout artist for *TA*, *AinO* (1989 on), and *Correlation* 1993-1998 when he was its editor. The friendly interchange is exemplified by this letter from Francoise Gauquelin published in *AinO* 1990, 5.1, 40:

"Dear Wout, Just a little note to tell you that I have received *AinO* [the winter 1989 issue] and find its presentation very well done and attractive. Like usual, its contents are full of interesting news, which the summaries in English help spot in a very convenient way. I cannot wait for the time when I will have time to restart *APP* and again exchange articles with *AinO*. Continue the good work! It is encouraging to see how your publication thrives and improves. And you manage to bring together an excellent team of collaborators. Compliments from Francoise, San Diego."

Price and circulation

Annual price 1977-1986 including surface postage was 22.50 guilders, then about \$US7.50 or £5.20. Then as size and production costs increased, the annual price steadily

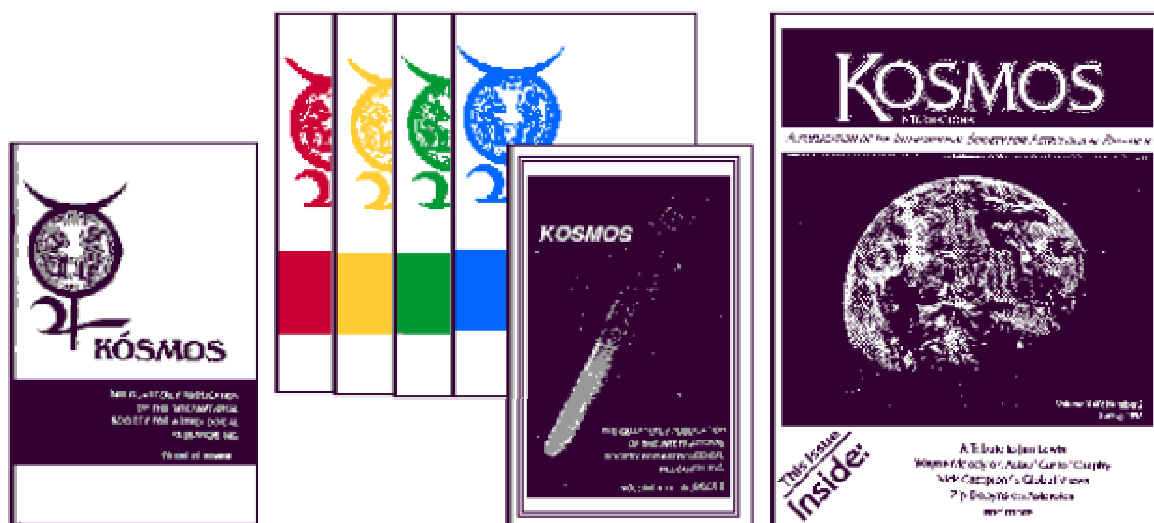
increased from 28 guilders in 1987-1990 through 36 guilders in 1994-1999 to 40 guilders in 2000. Annual price in 2003 was 18.15 euros, about \$US25 or £12.50. Circulation (nearly all within the Netherlands) was about 100 in the 1980s and 140 in the 1990s. Despite the excellence of its contents, the general lack of positive scientific findings in astrology led inevitably to a reduction in publication frequency from twice a year to once a year from 1994, and a virtual cessation from 2000.

Examples of *AinO* articles

The *AinO* articles that are abstracted in *Research Results* on this website under Doing Scientific Research are as follows (N=18):

Results of research group on marriage partners *TA* 1978
 Two tests of astrologers *TA* 1978 and 1979
 Sign of Venus and Mars in choice of marriage partners *W&A* 1983
 Horary astrology remains unreliable *AinO* 1989
 Science as a way to consensus *AinO* 1990
 Planetary aspects at 500 violent deaths *AinO* 1990
 1500 cases of death *AinO* 1991
 The devil and his advocate *AinO* 1991
 Birth time reconstruction *AinO* 1990-1992
 Sun sign at birth vs life span for 7136 people *AinO* 1992
 Sign and branch of study for 8379 university students *AinO* 1992
 Unprofessional tendencies in astrology *AinO* 1992
 Guessing sun, moon and ascending signs *AinO* 1992
 A prediction based on Uranus-Neptune conjunctions *AinO* 1992
 Jungian typology and astrology: an empirical test *AinO* 1993
 Waves and wars 1700-1992 *AinO* 1993
 Difficulties in attempting to study the meaning of Pluto *AinO* 1993
 Authenticity a precondition for tests of astrology *AinO* 1995

Outline of contents of *Kosmos* 1978-1995



Left to right: *Kosmos* volume 8.1 (1978) with a cover design that, other than colour, remained unchanged until 22.3 (1993). Size was 14x22 cm until 24.2 (1995), when it became 22x28 cm, all centre-stapled.

Aims and size

Kosmos is the quarterly publication of the USA-based International Society for Astrological Research founded in 1968. The aims of ISAR are "to assist in the development and use of astrological techniques, to encourage responsible astrological research and to establish high professional standards of competence in the field of astrology". However, *Kosmos* during 1978-1995 (the only years in our library) was more an astrological journal than a scientific research journal. There were generally 48 pages per issue with around 300 words of full-size typing per page, or 350 from 1992, a total of about 0.9 million words 1978-1995.

Price and circulation

The price of *Kosmos* was included in the annual ISAR membership fee of \$US15 1978-1987, and \$US20 1988-1995, which over 1978-1995 represents an increase of only 1.7% pa. Circulation in 1994 was about 450.

Examples of *Kosmos* articles

Most articles were reprinted conference talks by members with titles such as "Karmic destiny" and "Stress in the horoscope" containing uncritical statements such as "Fire thrives on harmony and agreement" and "One glance at X's fixed T-square shows ...". Few were empirical studies, and even fewer used controls. The *Kosmos* articles that are abstracted in *Research Results* on this website under Doing Scientific Research are as follows (N=14):

Chart interpretation: an alternative strategy for counseling *Kosmos* 1978

Professional astrology discussion *Kosmos* 1984

Planetary motions and the occurrence of earthquakes *Kosmos* 1985

A computer study of relationships *Kosmos* 1985

A test of house systems *Kosmos* 1987

Personal computers and the new astrology *Kosmos* 1987

Methodological issues *Kosmos* 1987

Research: Some concepts *Kosmos* 1988

A Sun/Moon sign analysis of football notables *Kosmos* 1988

Going a step FARther *Kosmos* 1989

An open letter to national public radio *Kosmos* 1990

Saturn-Uranus and the weather *Kosmos* 1992

Astrologically predictable patterns in work-related injuries *Kosmos* 1993

Mercury stations *Kosmos* 1994

Links

Useful websites for researchers into astrology

Abstract -- Almost all astrology on the Web is of little interest to scientific readers. News and chat sites feature social talk, superficial commentaries, and ephemeral news items. Astrology sites take the validity of astrology for granted and endlessly repeat the same unquestioned dogma. Skeptic sites tend to take the invalidity of astrology for granted and endlessly repeat the same old debunkings. As a result few sites are actually useful for researchers into astrology. Even the handful of sites that focus on scientific research tend to be incomplete or narrow or dated (some seem to have started out with good intentions only to be overwhelmed by the sheer volume of research now available), and none give you the comprehensive up-to-date overviews by experienced researchers that appear on the present site. Here we list the more useful sites that were active at December 2007. The total of unique sites on our list is now 98 vs 92 in July 2006. We welcome suggestions for inclusion.

At first sight astrology on the web is like asking for a glass of water and being handed the Pacific Ocean. Even if you restrict your Google search to URLs containing *astrology* and *science*, or *astrology* and *research*, you will still find a thousand or more sites requiring several full-time months to read. Astrology sites take the validity of astrology for granted and endlessly repeat the same unquestioned dogma. Skeptic sites tend to take the invalidity of astrology for granted and endlessly repeat the same old debunkings. Nearly all such sites are generally too busy with their own diversity to allow an in-depth scientific exploration of astrology.

Even the few sites that focus on scientific research into astrology tend to be incomplete or narrow or dated (some seem to have started out with good intentions only to be overwhelmed by the sheer volume of research now available), and none give you the comprehensive up-to-date overviews by experienced researchers that appear on the present site, rated "the most useful site for information on testing astrology" by the Astronomical Society of the Pacific website, and "the ultimate prophylactic against woolly thinking in astrological research" by the AstroDatabank website.

This article lists the more useful sites that were active at December 2007. There are four parts:

Part 1. Sites of general interest (N=39).

Part 2. Sites giving empirical test results (N=13).

Part 3. Pro-astrology sites with articles, data, references, resources (N=33).

Part 4. Skeptic sites with articles, links, references, podcasts (N=30).

Some sites appear under more than one heading. Total of unique sites is 98 vs 92 in July 2006. Hints on retrieving research findings are at the end of Part 2, with more in *Finding info* under Adroit Utilities on the home page.

Part 1. Sites of general interest

Astrology books for sale

<http://www.astroamerica.com> New and used astrology specialist. Search by author or title.

<http://www.astrologyetal.com> New and used astrology specialist.

<http://www.bookfinder.com> Just enter the title.

<http://CheapestTextbooks.com/> Searches US booksellers for best price, new and used.

<http://www.erraticimpact.com/> Finds books via Amazon and Powells.

<http://www.pricegrabber.com/index.php/> Compare our prices.

Each of the above typically has over 1000 titles in stock. Complete lists can be downloaded from astroamerica, no sun sign annuals, and from Powells, includes sun sign annuals. Bookfinder automatically searches for books worldwide and can often find a title not listed by the others.

Astrology courses in academia

<http://www.lamp.ac.uk/sophia/> The Sophia Centre for the Study of Cosmology in Culture, University of Wales at Lampeter. Previously at Bath Spa University near Bristol. Higher degree courses in cultural astronomy and astrology began at Bath Spa in 2004. Eleven students graduated in July 2005 with an MA in Cultural Astronomy. Recruitment was discontinued by the university in April 2006. In September 2007 the Sophia Centre moved to the University of Wales at Lampeter, where from January 2008 it will again be accepting students, but only for distance learning, mainly online supported by course packs, online seminars, and tutor contact by phone or email. There will be an optional residential period at Lampeter for a study school. Fee for the MA course is £3240 for students in the European Union, or £8856 overseas.

<http://www.kent.ac.uk/studying/postgrad/courses/religious.html> University of Kent at Canterbury. Details of their MA course in the study of mysticism and religion, which partly includes astrology, and their MA course in the cultural study of cosmology and divination, which emphasises astrology. Each course lasts one year full-time or two years part-time. Fee for a one-year full-time course is £3350 for students in the

European Union, or £9400 overseas.

<http://www.sophia-project.org.uk/> Details of courses funded by the British-based Sophia Trust from a million-pound bequest. "Latest News" has inactive links and is two years out of date.

<http://www.kepler.edu/index.html> Kepler College in Seattle, a liberal arts college that emphasises astrological studies. At BA level it offers five minors and two majors, namely Eastern and Western Astrological Traditions, and Mythology and Archetypal Astrology. MA courses are also available. A BA takes four years, fees including books are about \$US11,000 a year. Website is large, detailed, and includes audiovisual excerpts from lectures, but graduate numbers are small -- 8 BA students graduated in 2004, 8 in 2005, and 4 (including the first male) in 2006. More than 10,000 astrology books have been donated to Kepler College and are being catalogued. Abstracts of student papers are no longer online. Previously they were:

The decline of astrology in the 17th century. Paula Wagner 2000.

Main features of Ficino's hermetic astrology. Paul Saffell 2000.

Astrology in early Jewish history and culture. Janice Barsky 2000.

The evolution of ancient Venus images. Linda Birch 2000.

From gods to planetary archetypes. Maria Mateus 2000.

Astrology software and free chart calculations

<http://www.astro.com> AstroDienst. Top commercial computer site, multilingual. Enter birth data, receive chart, choose one or more interpretations eg personality, relationships, forecasts. Fast, accurate, with many other free options such as latitude/longitude and time zone data for more than 200,000 places. Unlike many other sites, it does not require your email address.

<http://www.astrodatabank.com/Links.htm#research> Excellent set of annotated links for software, data, research sites (including this one), correspondence courses, online classes, and general astrology links.

<http://www.astrologysoftwareshop.com/> Reviews, screen shots, choose from over 60 softwares. Revenue from the sale of software helps to support the work of AstroDatabank.

<http://www.astrowin.org/> Nine free astrology programs including electional and many other free programs including numerology. Has a useful list of the best free programs of all kinds (eg FTP) available on the web.

<http://www.isarastrology.com/> Includes shareware.

<http://www.khaldea.com/> Superb month-to-a-page midnight GMT ephemeris similar in appearance to Michelsen ephemerides. 600BC-2400AD, fast, free. Site includes an archive of Rudhyar articles and over 1000 celebrity data with birth charts.

<http://www.magitech.com/~cruiser1/astrolog.htm> Top-rated freeware by Walter Pullen. Includes useful links. Over 1m hits since July 1996.

<http://www.planetos.info/software.html> Kenneth Irving. Useful guidance on choosing software. Last updated September 2002.

Notable UK astrological organisations

<http://www.astro lodge.co.uk> Astrological Lodge UK's #2

<http://www.astrologicalassociation.com> Astrological Association UK's #1.

<http://www.astrology.org.uk/index.htm> Faculty of Astrological Studies. Since 1948 the Faculty has had more than 10,000 certificate and diploma students from 90 countries. The Faculty's diploma (DFAstroIS) is generally recognised as the industry standard.

<http://companyofastrologers.com/index.htm> Company of Astrologers.

<http://www.londonschoolofastrology.co.uk> "The student's choice for studying astrology". Founded 2000. Foundation course lasts one year costs £590. Diploma course lasts two

years costs £1180.

<http://www.professionalastrologers.org> Association of Professional Astrologers International.

Notable astrology sites

<http://www.astrology-online.com/index.html> Claims to be the largest site featuring daily and weekly horoscopes. Has nothing on research, is listed here mainly for its list of prophecies sent in by readers.

<http://www.astropro.com/features/conxions/> What's on in astrology world.

<http://www.mountainastrologer.com> *The Mountain Astrologer* "widely recognised as the best English-language astrological magazine in the world today" and carried in more than 2000 stores worldwide. Online are 19 top TMA articles including Why Astrology Works (a response to critics) by Brad Kochunas, and a pdf classified index to over 1500 TMA articles by 480 authors 1990-2006. Includes a list of 95 favourite links but none focus on serious research.

<http://www.renaissanceastrology.com/index.html> Top site, many annotated links.

<http://www.robhand.com> Robert Hand. Association for Retrieval of Historical Astrology Texts (ARHAT). Traditional methods, well annotated links.

<http://www.skyscript.co.uk> Deborah Houlding. The best site for quality astrology by quality astrologers, and therefore with no hint that astrological claims are without empirical support. Nearly 300 articles under the headings Angles and Houses, Aspects and Numerology, Decumbiture and Herbs, Electional, Historical/Biographical, Horary, Mundane, Natal Studies, Planets, Psychological Astrology, Reviews (mostly books), Signs, Stars and Zodiac Systems, and Working as a Professional Astrologer. About 200 well annotated links to Articles, Books and Magazines, Chart Calculation Tools, Consultant Directories, Data Collections, Home Pages of selected astrologers, Organisations and Schools, Specialised Subjects (eg herbs), Traditional Astrology, and 70 online mostly classical texts including Ptolemy's *Tetrabiblos* (both Ashmand and Robbins translations) all available for free download. Site is especially strong on horary.

<http://www.solsticepoint.com/astrologersmemorial/> Brief biographies of nearly 300 deceased astrologers, most with pictures. Meet the humanity behind the famous names. A site managed by Donna Cunningham that all researchers should visit.

<http://www.stariq.com> Considered by astrologers to be one of the best.

<http://www.uraniatrust.org> The best online guide to astrology worldwide (last printed version 2002) organised by region UK, Europe, North America, Australasia, Rest of World. Site includes a list of 11 books published by the UT, a list of 14 awards and prizes available in astrology (mostly UK and US), and 5 articles unchanged since our previous listing in June 2003. An online library is under construction.

Many links to general astrology websites

None are complete or free from inactive sites. We have already searched these links for sites relevant to scientific research into astrology.

<http://www.astrologie.pagina.nl> In Dutch but easily followed. Includes shareware and databases.

<http://www.astrologix.de/> In German, includes find your astro-twin.

<http://www.astrology-search.com> Lynn Evans. Over 3500 links, mostly commercial, includes 160 lists of links. Search engine gave 32 hits (including the present website) for "research".

<http://www.astropro.com> Richard Nolle. Huge site, masses of links to everything including organisations, bookshops, online services, what's on, and other sites (no sun signs), all well organised and annotated. Includes an archive since 1996 of Nolle's website of the week, all with links and reviews, most not directly astrological and many

inactive. The best site for links to humour sites, go Netselect > Entertainment > Humour. Site is difficult to navigate (to enter click on right arrow, then on the key icon) and has irritating streaming text.

Many links to individual astrologer websites

<http://www.astrologers.com/> American Federation of Astrologers. Has links to 25 AFA astrologers. A new website is coming soon.

<http://www.isaraastrology.com/> International Society for Astrological Research.

Part 2. Sites giving empirical test results

Sites that cite empirical studies without giving results, or without giving abstracts, or which are accessible only by members, are not listed here (look in Part 3). Altogether about 180 empirical studies are cited, mostly as abstracts. None report effect sizes commensurate with the claims of astrology. Hardly any involve tests of astrologers (an exception is the last entry). Tests of astrologers are summarised on the present website in *Meta-analyses* and *Research Results*, both under Doing Scientific Research.

<http://www.astrodatabank.com/SiteMap.htm> The AstroDatabank is a computerised collection of 28,000 timed charts and case histories originally collected by the Church of Light in Los Angeles, and later expanded by Lois Rodden, inventor of the famous Rodden system of classifying birth data from Accurate to Dirty Data. Site contains research articles and empirical results obtained using birth data from AstroDatabank. More than 70 selected and well-annotated links on software, data, research, and education. Articles (many with comments from readers) and empirical results include:

Research Design. Terri McCartney.

Astrology Compatibility Research Results. Five astro-compatibility programs failed to distinguish between 49 failed and 49 successful marriages.

An AstroSignature for Alcohol Abuse. Terri McCartney. Of 30 chart factors tested on 100 alcoholics and 1000 controls, only one reached $p=0.05$, namely MO opposition NE, found in 9% of alcoholics vs 5.1% of controls.

(In a previous study by Mark McDonough of 57 chart factors using 213 alcoholics the top factor was an afflicted Mars.) Sarah Klein's study. Results did not replicate using a large Swedish database of 3000 persons and 2400 timed accidents.

Klein's original study can be found at <http://www.safire.net/sara/>

An AstroSignature for Psychic Ability. Terri McCartney. An analysis of 31,000 chart factors using 80 psychics and 800 controls.

An AstroSignature for Mathematical Ability by David Cochrane (N=27) is at

<http://www.astrosoftware.com/Proveast.htm>

Every astrologer a researcher via AstroDatabank. Mark McDonough.

Characteristics of public figures with an excess or lack of FEAW. MMCD.

Do public figures have more planets above the horizon? Mark McDonough.

Sociopathic personalities and serial murderers. Joanne Wickenburg.

Venus-Neptune aspects in public figures. Donna Cunningham.

Children involved in the Dunblane massacre. Ken Gillman.

Astro Sleuthing rectification challenge. Jeffrey Wigand.

Practical significance vs statistical significance. Jose Becerra.

<http://astrofaces.com/astrofaces/> A project started in 1998 to see if people who share the same Sun/Moon/Ascending sign resemble each other. Has collected nearly 2500 facial photographs covering 70% of the 1728 possible combinations, with 28 covering SMA in same sign (5 each of Virgo Sagittarius, 4 of Scorpio, 3 each of Taurus Cancer Libra, 1 each of Aries Gemini Leo Capricorn Pisces, 0 of Aquarius). Site will display all photos for any selected Sun/Moon combination but is hard to navigate and is necessarily slow to download. In general there seem to be no obvious resemblances.

<http://www.astroinvestigators.com> Alpee Lavoie et al. "A group of astrologers dedicated to the scientific scrutiny of long held astrological concepts". Website is poorly designed with intrusive backgrounds. Some areas are accessible to members only. Has an interesting online experiment launched in 2007. Online are the following results:

- (1) Novile (40°) and binovile (80°) aspects orb 1° between 800 married couples.
- (2) Counts for hundreds of factors in the charts of 320 astrologers born 1602-1968. Each count has a chi-squared value calculated against random samples.
- (3) Counts for hundreds of factors in the charts of teachers.
- (4) The same for 368 religious people.

Earlier projects were:

- (5) Marriage Synastry. N=749 timed males & noon partners, 829 timed females & noon partners.
- (6) Careers via thousands of scientists, musicians, actors, soldiers, teachers, sportsmen. Uses 75% of sample to educate computer's neural net and 25% to test findings.
- (7) Left-handedness N=1239.
- (8) People named Barbara. N=285 timed charts revealed a strong Sagittarius/9th theme.

The outcome of the above research, and of the similar research listed under AstroDatabank and elsewhere, is usually a long list of ranked factors, eg in (5) the top two contacts in each direction were his Vertex conjunct her North Node, his Ascendant square her Ceres, her Vesta sextile his North Node, and her Pluto opposition his Chiron. None are in the top ten contacts predicted by tradition or by synastry textbooks. But something has to come first and second even in random data, so do these contacts mean anything? Would working astrologers ever use them?

<http://www.astrologyresearchjournal.org/> A site begun in August 2002 by astrologer Robert Marks. Dedicated to providing controlled studies that validate astrology. Not updated since August 2002 and presently contains only one incomplete study of 140 murderers from the AstroDatabank with no conclusions.

<http://www.astrology-research.net> Research Group for the Critical Study of Astrology, University of Southampton. Previously funded by the Sophia Project but not any more. Despite its name the group is more uncritical than critical, which is unsurprising since its deputy convenor's website sells astrology as an aid to choosing fashionable clothing. The site's opening preamble is misleading, wrongly claiming that eg the Mayo-Eysenck sun sign results have "not found alternative explanations". Includes 217 abstracts of research articles (about 100 are empirical studies) from the scientific literature and the astrology research journal *Correlation* through 2004, but retrieval is cumbersome and the abstracts are often unhelpful. Site includes 8 links to "research into astrology sites and resources" (all of them included here), which despite RGCSA's claim to promote collaboration does not include the present website. Lists one PhD project (personality and birth experience vs birth time), and one MSc project (Mars and Saturn cycles vs employment changes). Two previous projects (Jupiter vs alcoholism, birth charts vs life events) are no longer mentioned.

<http://www.astrovdm.com> Koen Van de moortel (writer of astrological and scientific software) and Dragana Van do moortel (astrologer). Perhaps the only individual astrologer site that is critical and research-oriented. Bright green with a choice of English, Dutch, French, German, Serbian. Articles in English include general hints for research (1200 words), an intriguing test of synastry (369 people he met on the street tended to have more synastry aspects if they seemed attractive, 1500 words), a critique of Dennis Elwell's *Cosmic Loom* (800 words), and an account of Geoffrey Dean's 2001 lecture in Utrecht (700 words). For sale is the book *Astro-Logics*, a critical look at astrology including a selection of research results, most of them negative, and guidelines for doing research. Links (some briefly annotated) include 41 astrology-or-

parapsychology research-oriented, 40 general-or-specific astrology, 12 lists of links, and 8 databases.

<http://www.aureas.org/rams/default.htm> Website in English and French of *Les Cahiers du RAMS* (RAMS = Recherches en Astrologie par des Methodes Scientifiques), an annual publication founded in 1993. Six of the actual articles, four also in English, are on the CURA website. From issue 13 (September 2005) the entire journal has been published online. Few links but has more than 100 abstracts of RAMS articles in both French and English, of which about one third are of substantial articles such as the following.

Test of yoga teachers fails to replicate. Decourt & Fuzeau-Braesch 2005.
Resemblances in Western, Chinese, Mayan astrology. Noel Decourt 2004
Behaviour and astrology in cloned cows. Suzel Fuzeau-Braesch 2004.
Directional tests better than chi-squared. Noel Decourt 2003.
Astrology a causal or esoteric discipline? Suzel Fuzeau-Braesch 2002.
Astrology, statistics and C.G.Jung. Didier Castille 2002.
Transits and horse races. Pierre Parradin 2001.
Astronomical contributions to explaining astrology. Irina Predeanu 2001.
Primary directions in 1000 cases of death. Herve Delboy 2000.
Planetary configurations present at marriages. Didier Castille 2000.
Indicators of life and death in SIDS. Suzel Fuzeau-Braesch 2000.
The astrological signifiers of AIDS. Maurice Charvet 1998.
Neptune and musicians. Christian Guellerin 1998.
Transits for 636 career events of 145 politicians. Herve Delboy 1997.
Speech therapy criteria and astrological factors. Hubert Brun 1996.
Personality test (427 cases) vs chart factors. Pierre Dicharry 1993.

<http://cura.free.fr/index.html> About 400 pro-astrology articles in English, French, or Spanish, of which about 10 are empirical studies, none involving tests of astrologers. A more detailed description of this site in in Part 3.

<http://hdelboy.club.fr/index.html> Large site in French mostly on alchemy. Astrology part has English summaries of statistical tests by Herve Delboy including primary directions at death, and transits in the lives of Pierre Boulez, Honore de Balzac, Albert Einstein, Jules Verne, Maurice Ravel, Arnold Schoenberg, 118 French politicians (a total of 38,000 transits), and 315 actors. Primary directions of Sun to natal MC at the appointment of 524 magistrates peaked around 90 (not 0, 180 or 270) degrees, transits of Jupiter to natal Sun peaked at 120 degrees. Distribution of planets and angles at birth and death of 1430 individuals. Most results are presented graphically. Has examples with screen dumps of analysis by ASTROPC software (options are so numerous that positive-results-by-fishing seem inevitable). Two of the articles (in French) are on the CURA website.

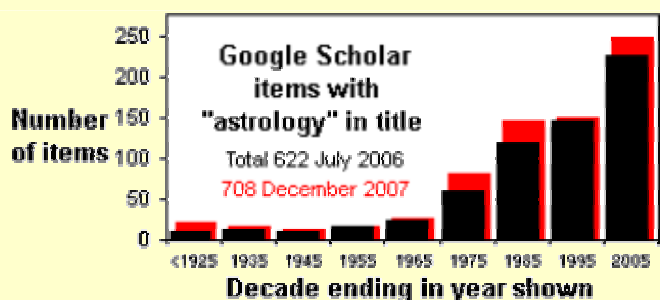
<http://www.scientificexploration.org> Society for Scientific Exploration, founded 1982, a non-profit organisation with 800 members worldwide for exploring topics ignored by mainstream science or that unnecessarily limit scientific inquiry such as restrictive world views. Its quarterly *Journal of Scientific Exploration*, established in 1987, subscription \$US70 pa, considers any topic provided the investigation is scholarly. Abstracts of all articles are available including four on astrology (matching test by McGrew & McFall, time twins by French et al, astrology and sociability by Fuzeau-Braesch, pineal gland by McGillion with comments by Dean) and ten on the Mars effect (1 by Gauquelin, 1 by Muller, 3 by skeptics, 5 by Ertel). The SSE's Young Investigators Program (still in its early days) provides information re the scholarly study of SSE topics including details of academic programs (mostly in the USA, nothing on astrology), conferences of interest, recommended reading from JSE (nothing on astrology), and links to online resources (9 general eg CSICOP, 3 altmed, 23 psi, 2 NDE, 6 UFO, none on astrology).

<http://www.skepsis.nl/astrot.html> A 1996 Dutch test of astrology, designed with the help of astrologers, in which 44 astrologers matched 7 charts to their owners. Half the astrologers predicted complete success, but the average success was actually worse than chance. The experienced astrologers did no better than beginners. 2500 words, 13 references.

Finding articles and research results on the Web

<http://vivisimo.com/> Just enter author, title, or keyword.

http://scholar.google.com/advanced_scholar_search Google Scholar searches the scholarly literature (peer-reviewed papers, theses, books, abstracts, articles) by title, author, or keyword in seven broad research areas (life sciences, finance, chemistry, engineering, medicine, physics, social sciences including arts and humanities) presently totalling over one million items and growing. It finds papers, abstracts, citations. Gives title, author, source. If *[Title]* or *[Cached]* appears in the listing it links to the abstract or the complete article; *[Cited by]* links to references that have cited it; *[Web search]* searches Google for more information on the item; *[Library]* indicates where you can find it. In June 2006 Google Scholar retrieved from 170,000 social science, arts and humanities items more than 620 items with "astrology" in the title, and more than 14,000 with "astrology" in the text. The other six research areas gave a total of more than 120 items with "astrology" in the title. By December 2007 these counts had increased to 840, 26,000 and 170 respectively, an average increase of 50%. The same reference can be repeated across several sources so the above counts are inflated. Because Google Scholar accesses articles via citations as well as directly, it reaches journals not otherwise abstracted. Thus it presently lists a dozen articles from *Correlation*.



Breakdown by decade of Google Scholar items with "astrology" in title retrieved from social sciences, arts, and humanities July 2006 and December 2007.

Part 3. Pro-astrology sites with articles, data, references, resources

Listed here are pro-astrology sites that provide articles, data, references, and general resources. (Those that also give empirical test results are in Part 2, while skeptical sites are in Part 4.) We have already searched their lists of links and have included any relevant sites below. We welcome suggestions for inclusion. Be aware that the sites below will collectively overwhelm you with hundreds of articles, thousands of references, and many thousands of data. They are also either incomplete or narrow or dated or second-hand or leave you to do all the work, and none give you the comprehensive up-to-date overviews by experienced researchers that appear on the present website.

Articles, studies, references

Be aware that essays-for-sale sites exist whose essays or "term papers" (at prices of \$US50-100 each) include several on astrology and science. Avoid these scams. There are better essays available for free in academic libraries and on the present website.

<http://www.answers.com/topic/astrology> Good general reference on astrology with profuse internal links to more detail and 70 external links. Main entry is from the user-contributed Wikipedia. Includes the case for and against astrology but is mostly description rather than case.

<http://www.astrologimuseum.dk/> Astrologisk Museum, the Museum of Astrology in Copenhagen, is a "non-profit science centre committed to presenting documented knowledge of astrology to the public, both as a profession and as a socio-historical phenomenon". Website is in Danish with some English translations, and is divided into Services, Library, Collections, and Research. The last is sub-divided into Historical, Danish, International, and Academic, but much of the information previously online such as a searchable bibliography of nearly 1000 articles and books seems to have been removed. The data plotted below are from this bibliography. Since 2003 the Museum has published *Cornelius* (after Cornelius Agrippa), a quarterly web-based journal in Danish on documentation and research (usually historical) in astrology. The 8 issues for 2003 and 2004 are available in pdf format, generally 1Mb or more per issue.



Danish astrology publishing exploded in the 1970s and is now about ten new titles every year in a population of 5 million, or about the same in proportion to population as in the UK. Data are from the above website.

<http://www.astrologyweekly.com/dictionary/> Entire 1947 Nicholas deVore *Encyclopedia of Astrology* online.

<http://www.astrozero.co.uk> Astrologer Garry Phillipson's companion to his book *Astrology in the Year Zero*, which attempts via interviews with astrologers and researchers to resolve astrology's many inconsistencies and contradictions. Both his book and website seem more interested in presenting opposing views no matter how uninformed than in actually resolving anything. Has 16 interviews with astrologers including sun sign columnists Campion and von Strunckel, and an index to 17 sites covering Nick Kollerstrom's work on Newton, Galileo, Kepler, discovery of Neptune, alchemy, metals, planets, lunar planting, lunar fertility in mares, astronomical essays for astrologers, crop circles, and ancient units of length. Also online are 21 articles or exchanges including:

Elwell vs Randi; Brockbank vs Mather; Marks vs Dean.
Elwell vs researchers; Phillipson vs researchers (interview).
Astrology and doubt. Garry Phillipson.
Astrology and magic. Rob Hand.
Astrology in the USSR. Boris Izraitel.
Divination in astrology (update). Kirk Little.

Astrology, scepticism, and knowledge. Elwell and Phillipson.
 History of *as above so below*. Judy Hall.
 How Ertel rescued the Gauquelin effect. Nick Kollerstrom.
 Modern science and astrology. Garry Phillipson.
 Morphogenetic fields and Uranus. Faye Cossar.
 Newton and astrology. James Frazier.
 Pluto RIP 1930-2007. Nick Kollerstrom.
 Police perceptions of full moons. Petra Stapp
 Prejudice in astrological research. Mike Harding.
 Testing Elwell's multicongruence. Robin Heath.
 William Lilly and the fire of London. Maurice McCann.

<http://www.cultureandcosmos.com/abstracts.htm> Abstracts of articles in *Culture & Cosmos*, edited by Dr Nick Campion, "A Journal of the History of Astrology and Cultural Astronomy". Scholarly peer-reviewed journal with an international editorial board largely composed of academics. Concerned with the impact of astrology on culture past and present, not with issues of astrology's validity. Empirical studies of astrology are not covered except historically. Site gives abstracts of articles from Volume 1 (1997) through Volume 8 (2004). Volumes 1-6 (30 articles) are available for £60 postfree within the UK or £70 overseas. Volume 8 is a double issue with 35 articles from an August 2003 symposium *Inspiration and Astronomical Phenomena*.

<http://cura.free.fr/index.html> Dr Patrice Guinard. The full text in French and English of his PhD thesis (see *Guinard's Manifesto* on this website under Philosophy) plus 400 contributed pro-astrology articles in English, French, or Spanish listed by date and title, or (in the Social Index) by topic without date. No annotations or abstracts so you need to read the whole article to discover its content. Breakdown is roughly 50% history and philosophy, 15% techniques, 15% sociology and Nostradamus, 15% bibliographies and book reviews, 5% empirical studies (none involving tests of astrologers). Site includes the entire Gauquelin database (N=143,860) online including latitude, longitude, and birth times converted to standard time, few original unconverted times. Contributed articles were temporarily discontinued in November 2004. Later articles are on Nostradamus and are mostly in French. Site has a keyword search engine that lists the relevant articles, each with the keyword frequency. Example articles:

The Gauquelin effect and birth order. Graham Douglas 2004.
 After Symbolism. Dale Huckleby 2003.
 Astrology and Science. Jesus Navarro 2003.
 Sources of astrological belief. Gordon Fisher 2003.
 Historians of astrology. Lester Ness 2003.
 French astrology in the 20th century. Patrice Guinard 2002.
 A dialogue between astrology and science. Maarit Larento 2002.
 Astrology and the new paradigm. Dennis Frank 2002.
 Astrology reality and common sense. Sirman Celbyir 2002.
 Rudhyar's reformulation of astrological theory. Dennis Frank 2002.
 Top 10 English and French astrology books. Patrice Guinard 2002.
 Astrology's paradigm - axioms and implications. Richard Vetter 2001.
 Astrology of Ficino: divination or science? Angela Voss 2001.
 Astrological research and Similarity. Peter Niehenke 2000.
 The problem of astrology. Robert Schmidt 2000.
 Why astrology works [Seymour/Gauquelin/Nelson]. Jackie Slevin 2000.

<http://www.faqs.org/faqs/astrology/papers/> A list of 59 academic sources to 1997. Titles only, no annotations, with hints on obtaining abstracts. Not updated since 1997 and therefore of limited value.

<http://finblake.home.mindspring.com/xresearch.htm> (Note no www) Blake Finley and The Uranian Institute. Promotes the use of eight hypothetical planets and is thus critical

of ordinary astrology. Listed page has brief but useful descriptions of 8 research-oriented books and 16 links.

<http://home.planet.nl/~brui5679/astrolit/astrolit.htm> Lex Bruining's AstroLit, the world's largest bibliographic database of literature related to astrology. The site has English, Dutch and German versions in hard-to-read black or pink on bright blue. Regular searches of books including early books and incunabula, and 610 journals including 25 astrology journals, has resulted in over 14,000 references (author, title, source, year of publication, and abstract if available). Where a reference has only a short section on astrology, the section is included with the abstract. The database includes all the Gauquelin works, information on 50 incunabula and their location, descriptions of about 150 astrology journals many now defunct, and tables of contents of astrology journals. It can be purchased as a searchable software package for 14 Euros or £10 or USD15. The site includes free downloads of 3000 assorted records 1998-2002 (1.5Mb), and 250 references related to astrology and research (6 are before 1950, the rest are before 1997, about 60 are empirical studies, 30 are general reviews, and the rest are mostly historical essays or discussions of astrology as a pseudoscience, 140 kb).

<http://www.isidore-of-seville.com/astdiv/> No articles but has links to over 215 scholarly sites on ancient astrology and divination. Run by a non-believer for those wishing to avoid psychic and sun sign sites.

<http://www.msu.edu/~urban/kepler/symposium2001/> The 65 slides (no commentary) on astrology research presented by Mark Urban-Lurain at a 2001 Kepler College symposium. Concludes that more research is needed, which is understandable because he ignores 90% of the published tests of astrologers.

<http://www.planetos.info/> Kenneth Irving. Articles on Gauquelin planetary effects (11K words), a brief chronology (2K), answers to six common objections (3K), and 15 related links, but dated (nothing after 1997) although site was last updated in September 2003. Readable but scientifically uninformed and therefore often misleading. Reference to an Ertel and Irving article in *Skeptical Inquirer* is incorrect, it appeared in the *Journal of Scientific Exploration*.

<http://www.valentino-salvato.net/Astrology/index.htm> Valentino Salvato is a maths teacher and astrologer from Wilmington NC, now based in the UK. Site is pro-astrology, pro-intelligent design, and aims to "provide information for the curious and to help the exchange of resources and ideas in Astrology". The site's own research involves three projects (using a questionnaire to identify sign keywords, testing the effect of Mercury in charts using analysis of speech sounds, and studying financial cycles using two new planets), no results so far. Online are 71 articles pirated from usually unacknowledged sources including copyright journals and the present website, a list of 14 post-graduate dissertations from the UK and Ireland on astrology 1982-2003 (mostly historical, none involving the testing of astrologers), 14 abstracts of articles on astrology (mostly Gauquelin) from the *Journal of Scientific Exploration* 1988-2002, images of 68 astrology-research-related books under Books and images of 55 science-related books under Science, none with descriptions or reviews, a list of 13 astronomy resources and 10 others, none of them annotated, 5 free eBooks including the *Tetrabiblos*, and nearly 70 links covering classic astrology, journals, near-death experiences, organisations, research groups, and software, again none of them annotated. Indeed, the whole site is without overviews of its often haphazard contents and is thus unhelpful and user-unfriendly. Home page has been redesigned several times, usually for the worse.

<http://www.widgetsworld.co.uk/free/astrology-research.php> Widgets World of Astrology. Huge commercial site with over 1000 (uncritical) articles on astrology by astrologers. Entering "research" into the quicksearch box returns 31 titles with option to see full article, but only a few involve serious research and many are inactive.

Databases, statistical calculations

<http://www.astrodatabank.com/Links.htm#research> The AstroDatabank is a computerised collection of 28,000 timed charts and case histories categorised into 660 behavioural traits, each trait being a potential research topic. See Part 2. This particular page lists 15 sites with up to 27,000 celebrity birthdays and biographies. One or two sites provide sources and times.

<http://www.astrologiezentrum.de/forschung9.html> Peter Niehenke and the German Astrological Society's (DAV's) database of 30,000 well-known people and 10,000 ordinary people. Most are from Gauquelin. Database is on CD and costs 25 euros. Page is in English.

<http://www.famousbirthdays.com> Large listing, categorised, annotated.

<http://cura.free.fr/gauq/17archg.html> Gauquelin data online. See CURA entry in Part 2.

<http://www.iol.ie/~taeger/director/director.html> Hans-Hinrich Taeger's large and frustrating New Age site on which 600,000 visitors are said to have got lost since 1998. The astrology sections are a small part of the site and include Taeger's archive of birth and biographical data taken from over 160 international data archives, from astrology books, other data collections, and over 40 periodicals. It totals over 100,000 birth data (about 80% famous people, 10% world events, and 10% other). Data cannot be purchased but two records are free for every one donated. By 1998 about 10% of the data had been checked and published in book or CD form, of which about 30% have biographies extracted from a total of 500 reference sources. Online articles in English include important overviews of data collections worldwide, the reliability of data, the problems of data collection, and the 1998 status (see above) of the Taeger archive. No downloads are available except a data-free list of 20,000 names. Last update May 2001. That is not a misprint.

<http://www.khaldea.com/> Over 1000 celebrity data with birth charts.

<http://StatPages.org/javasta2.html> Links to 600 sites including 380 sites that do statistical calculations online, and sites with free software packages. Excellent descriptions and guidance.

<http://www.socialresearchmethods.net/> Guidance on social science research including which statistical tests to use. Often technical.

Organisations and projects

<http://www.astrology-research.net> Research Group for the Critical Study of Astrology, University of Southampton. See Part 2.

<http://www.businessastrologers.com/> International Society of Business Astrologers. A research-oriented site whose preamble says: "[Most] astrological knowledge turns out to be without substance when tested empirically. ... The ISBA Research and Science

Committee wants to improve this situation." But the articles, book details, events, member interests, projects, and links are available only to ISBA members (ie they need a password, membership costs \$US55 pa), so for non-member researchers the site is of almost no value. The critical articles on ISBA and business astrology previously posted on the *New England Journal of Skepticism* website are no longer available.

<http://www.geocosmic.org> National Council for Geocosmic Research. Mostly an astrological organisation that is not as research-oriented as the name might suggest. Has 2500 members, mostly in the USA. Site includes general remarks about research, 7 general articles including "Why astrology works" [Seymour/Gauquelin/Nelson] and "Objectivity in astrology", 8 links to articles on other sites, 6 links to organisations and resources, links to NCGR certified astrologers, a long wordy 2003 article "The Newtonian Merry-Go-Round" by Bernadette Brady (she finds that astrologers have little or no grasp of current research, but her own is little better, so her conclusion that non-quantitative research might save astrology is misconceived), and details of a free program (1.2 Mb with 0.1 Mb manual) that analyses sets of birth data to see if your nominated factors are significant. Projects previously listed but no longer mentioned are:

A Case Study on Weather and Sunspots.
Heavy rainfall and the Moon.
Charts of people named Nancy, Barbara, Lisa, Carol, and Jennifer.

<http://www.igpp.de/english/welcome.htm> Institut für Grenzgebiete der Psychologie und Psychohygiene. Founded 1950 by Hans Bender for research on anomalous phenomena such as ESP. Includes paranormal belief systems (eg UFOs, magical rituals) and their social properties. Astrology is no longer a research topic (it was once), nevertheless the research pages may provide ideas for research into astrological beliefs.

<http://www.isaraastrology.com/> International Society for Astrological Research. Site is not very informative about research. It includes 13 articles by members including "Astrology standards and professional licensing" by Ruth Potulin 2000, 15 articles from the ISAR journal of research *The International Astrologer* formerly *Kosmos* (none are on serious research), 5 book reviews including one on Enrique Linares's book "A scientific approach to the metaphysics of astrology", contact details for 190 ISAR certified professional astrologers in the USA and 12 other countries, and the following list of 5 research projects:

Our lives and Jupiter's jives. R.Ramakrishnan (India).
Planetary aspects and earthquakes. Brian Johnston (Canada).
The differing fates of birth date mates. R.Ramakrishnan (India).
Mundane trends of the comet Hale-Bopp. Sergey Smelyakov (Ukraine).
Heredity research project. Castille, Martini, and Ramakrishnan.

Previously included but now removed are:

Dates of birth of British police. Paul Westran (Great Britain).
Studies in childbirth. R.Ramakrishnan (India).
The September 11 Attack. Sergey Smelyakov (Ukraine).

<http://www.scientificexploration.org> Society for Scientific Exploration. See Part 2.

Sites with hints of small research grants

<http://www.astrology-research.net> University of Southampton.
<http://www.isaraastrology.com/> Sponsors empirical research.
<http://www.sophia-project.org.uk/> Historical research only.
<http://www.uraniatrust.org> Michel Gauquelin research fund.

Part 4. Skeptic sites with relevant articles, links, references, podcasts

Not from the Latin *scepticus*, doubter, but from the Greek *skeptikos*, to look about, consider, observe. Skeptics insist that no inferences or conclusions may be made unless preceded by a thorough evaluation of the evidence. Skeptics go wherever the facts may lead. The skeptic sites listed below contain material that is relevant to astrology either directly, or indirectly via their emphasis on critical thinking.

Skeptic sites directly relevant to astrology

<http://aries.phys.yorku.ca/~mmdr/1800/astrology-faq-synopsis.htm>

(If this URL fails to work the item can be accessed via "Critique of alt.astrology-FAQ" on www.stelling.nl, see below.) In 2003 the 11 most scientifically-challenging of alt.astrology's answers to FAQs were analysed by students from many disciplines in a first-year class at Toronto's York University. Of all the defences of astrology on the Web, this was judged to be the most credible and well-written. But was the defence convincing? Absolutely not. Answers to FAQs 4000 words, synthesis of the students' analysis and comments 3000 words.

<http://www.astrosociety.org/education/resources/pseudobib.html> Andrew Fraknoi and the Astronomical Society of the Pacific. Selected resources for the critical study of fringe astronomical beliefs. Page 1 is on astrology and consists of a 200-word introduction, with references to 5 critical books and 20 critical articles, some briefly annotated.

<http://www.astrosociety.org/education/publications/tnl/11/11.html> is the Fall 1988 issue of the ASP's newsletter for astronomy teachers, devoted to a readable critique of astrology (four references), and to simple tests that students can make of newspaper horoscopes and of the claims of sun sign astrology 2500 words.

<http://www.astrosociety.org/education/astro/act3/astrology.html> Activities with astrology. Sets out the above simple tests in more detail for the classroom. Aims are to help students think critically about astrology, and to introduce the use of statistical tests. Includes Fraknoi's famous *Astrology Defense Kit* covering critical responses to astrological claims, ten questions to ask, and research results. 3500 words (kit alone is 2400 words).

<http://www.astrosurf.com/nitschelm/astrolog.html> Versions in English, Danish, Spanish and Italian of *L'astrologie au crible de la science* [When astrology is tested by science], a 1994 article by astrophysicist Christian Nitschelm that is cited on many European websites. A typical case-against-astrology diatribe by an opponent who ignores astrology's merits. 500 words on science, 3000 on astrology covering physical incongruities and a few test results, concludes that astrology cannot claim to be a science.

<http://www.crank.net/astrology.html> 24 links to astrology sites considered to be crackpot (but they seem no different from the rest).

<http://www.csicop.org/si/online.html> Online index to all articles in *Skeptical Inquirer*, the world-famous quarterly skeptic magazine published by the Committee for Skeptical Inquiry (formerly CSICOP) based in Amherst NY. The magazine began in 1977 and the issues now occupy nearly one shelf-metre. Index has 80 critical entries on astrology of

which 50 are articles or book reviews. Site includes about 500 online articles and book reviews from *SI* (nothing very useful on astrology, palmistry, numerology, graphology or tarot) but most have references. The online coverage is good from 1996, moderate from 1991 (typically 5 per issue), and infrequent before 1991. The index can be searched for words in titles. All entries allow you to "buy this issue now". Site also has a full list of the mailing and email addresses of skeptic organisations worldwide.

<http://www.johnankerberg.org> Ankerberg Theological Research Institute. 2000 online articles usually with a choice of html or pdf. Those on astrology cover astrology, spiritism, and dangers; some are new, the rest are excerpts from Ankerberg and Weldon's books *Encyclopedia of New Age Beliefs* 1996 and *Encyclopedia of Cults and religions* 1999. Articles 12K words, notes 2.5K words including 100 unduplicated references mostly to astrology sources to 1988. Together they provide one of the most readable and informed critiques of astrology (albeit somewhat dated) of those available from the sites listed here.

<http://www.ntskeptics.org/FACTSHTS/astrolog.htm> North Texas Skeptics fact sheet on astrology (3000 words, 9 references) aimed at general readers. An example of informed skeptic opinion. Concludes that astrology lacks scientific credibility but can be socially useful. No changes since our listing in June 2003.

<http://www.phact.org/e/astrolgy.htm> (astrolgy not astrology). Eric Krieg of the Philadelphia Association for Critical Thinking gives views for and against astrology (1000 words) and submits both to critical thinking. Includes 26 references (mostly without annotations) and 41 links, many of which are inactive. Calls itself "a look at the evidence" but is now very dated. No changes since our listing in June 2003.

<http://www.randi.org/joom/content/view/38/31/> James Randi's million dollar challenge to those who make claims of paranormal ability. Demonstrate your claim in a test devised by yourself, under mutually-agreed test conditions that permit a yes/no conclusion, and you will win \$US1 million. Since 1997 there have been over 400 attempts, none of them successful, mostly because the challenger had no idea how to devise a preliminary test. For Randi's account of some bizarre attempts see <http://www.undeceivingourselves.com/S-mill.htm> which includes an astrologer who claimed to accurately judge a person's sun sign (he nominated the test conditions, was happy with them, but performed no better than chance). A more recent challenge by an astrologer foundered due to privacy restrictions on the birth data needed. On 1 April 2007 the rules were modified to limit applicants to those whose powers have been mentioned in the media and are supported by written testimony from an academic. "You have a paranormal claim? Great! Demonstrate it successfully, and the Million Dollar Prize is yours. It's really that simple."

http://www.simonyi.ox.ac.uk/dawkins/WorldOfDawkins-archive/Dawkins/Work/Articles/1995-12romance_in_stars.shtml Richard Dawkins's celebrated two-page article *The real romance in the stars* in the British *Independent on Sunday* 31 December 1995 attacking astrology as "neither harmless nor fun, and we should see it as an enemy of truth", with three later notes. From believers it prompted a frenzy of outraged comments, most of them rhetorical, evasive or irrelevant.

<http://www.skeptdic.com/> A skeptic dictionary site by Robert Todd Carroll, a professor of philosophy at Sacramento City College. Over 500 essays on strange beliefs from abracadabra to zombies, and how to think critically about them. Most essays have

references and further reading. Some include responses from readers and Todd's replies. Regularly updated. Especially useful are the entries on how our eyes and ears can deceive us, for example hidden persuaders (under H), magical thinking (under M), and subjective validation (under S). Probably the best and most readable site for those new to astrology. The critical essays on astrology appear under:

Astrology (traditional astrology, 2000 words, 11 references, 10 links).
Astrotherapy (psychological astrology, 1300 words, 5 references).
Cosmobiology (Ebertin midpoint astrology, 400 words, 3 references).
Responses from readers and Todd's replies (6000 words total).

<http://www.skepticfiles.org/skeptic/validast.htm>

A list of 33 astrology references up to 1990, half are annotated.

<http://www.skepticreport.com/general/index.htm> About 200 articles under 13 headings, each with an attractive graphic. About half are on the paranormal and several are on astrology. Articles are listed by clickable title with a description, so browsing is easy. Site is based in Denmark and contains mostly European material, which makes a useful change from American sites.

<http://www.skeptics.com.au/> Australian Skeptics in Sydney NSW. Recent Australian happenings and links to top skeptic sites. Online articles from *the Skeptic* (no relation to UK magazine of same name) were discontinued after all back issues became available on CD, which has nearly 80 items on astrology although few are substantial. CD contains over 5000 searchable pages and can be bought online for \$A55.

<http://skepticwiki.org/index.php> About 600 articles under 18 headings including several on astrology under New Age. Articles are listed by clickable title without a description. Most articles link to related topics on site, and a few have references for further reading. Since the articles are generated collectively by contributors, they tend to be comprehensive, but due to contributor bias they may not be entirely reliable or informed. Thus the articles on astrology give no hint that many hundreds of empirical tests exist.

<http://www.stelling.nl/simpos/astrology.htm> Netherlands Foundation for Information on the Social Consequences of Occult Tendencies. Lots of skeptic links to each of 96 paranormal topics such as astrology and Sai Baba. Listed under astrology are 43 links to sites critical of astrology (22 are in English). The best are included here. Site is available in English, German and Dutch.

<http://www.unice.fr/zetetique/biblio.html> Henri Broch, University of Nice-Sophia Antipolis. The word *zetetic* means *skeptical seeker*. Bibliography of about 1000 books and articles on paranormal topics. Titles without descriptions are listed by author or subject, no annotations. 62 are on astrology, of which 24 are in French. Most of the English ones can be found on other sites, but here is a good opportunity to practice your French. Under *Zetetics?* on the home page is an account with many graphs, of French research showing that belief in the paranormal increases (not a misprint) with education and decreases with age. A shorter version in English is available if you can find a page with a clickable *English*.

Podcasts

<http://skepticwiki.org/index.php/Podcasts%28index%29> Lists nine of the best podcast

sources in skepticism ready for you to tune in. (Podcast is short for iPod broadcasting.) Most podcasts are radio broadcasts but some are video recordings. If your computer has the ability to receive podcasts, then hearing and sometimes seeing the leading players in skepticism and science are just a click away. Skeptical podcasts bring you many hours of challenging interviews, features, and commentary on the paranormal, pseudoscience, science, and alternative medicine, most from overseas, and all for free.

Skeptic sites indirectly relevant to astrology

<http://www.butterfliesandwheels.com/> Website of British philosophers aimed at fighting fashionable nonsense such as the idea that truth is unimportant. Named after ideas wrongly seen as so inconsequential that their discussion would be like breaking a butterfly upon a wheel. Don't miss their *Fashionable Dictionary* ("Evidence: best ignored in case it conflicts with our ideas") and *Woolly-Thinking Rhetoric* ("Be careful not to be explicit, otherwise your errors will be obvious"). Site has only infrequent articles on astrology but is full of comments, articles, and links of interest for critical thinkers.

<http://www.indian-skeptic.org/html/index.htm> Website of Indian Skeptics, the guru busters. They have a 100,000 Rupee prize for demonstration of paranormal abilities. Can statues drink milk? Can gurus really perform miracles? Is Sai Baba genuine or a fraud? Find out here. Fast, readable, but nothing specifically on astrology.

<http://www.quackwatch.org/> Your guide to health fraud, quackery, and intelligent health decisions. Loads of articles on health-related frauds, myths, fads and fallacies, arranged under 37 topics from acupuncture and homeopathy to questionable books and weight control products. Articles often contain information that is difficult or impossible to get elsewhere.

<http://www.randi.org/> James Randi Educational Foundation. On home page, at top left under *Navigation*, click *Media > Encyclopedia* to see James Randi's online *Encyclopaedia of Frauds, Hoaxes and the Supernatural* with over 700 entries from Abaris to Zombie. Includes corrections sent in by readers, and is enlivened by Randi's dry wit, for example "[X] is an ideal new age notion in that it cannot be examined, proved, or disproved".

<http://www.skeptic.com/> Award-winning site of Michael Shermer and the Skeptic Society in Altadena CA. Skeptic books for sale, contents of back issues of *Skeptic* magazine, sample articles, and online versions of *Jr Skeptic* magazine for children. Site has nothing specifically on astrology but includes a list of 150+ skeptic titles recommended by readers, a survey of views on the benefits of skepticism, and online press interviews of Shermer. On home page click *Reading Room* to list 8 topics (debates, skepticism, science, science history, pseudoscience, religion, social forces, pseudohistory) with a total of about 150 articles, often book reviews, of which nearly 20 are on pseudoscience. Articles are listed by clickable title with a description. Site includes details of a 16-page *Baloney Detection Kit* designed to improve critical thinking skills, price \$US5.00 plus postage.

<http://www.skeptic.de/index.php3> A German bookshop (pages are in English) listing over 400 skeptic books and periodicals sorted A-Z by author with prices in euros. Can also sort by year. Covers over 230 selected fringe subjects including astrology (34 titles) but few titles are more recent than 2002. The advantage of this site is that clicking on *More* against a title takes you direct to reviews in English, whereas most similar sites merely take you to Amazon.

<http://www.skeptic.org.uk/> Good coverage of skeptic topics, resources, and bibliographies, including contents of back issues of *The Skeptic*, but only a small section on astrology (has book reviews).

<http://www.skeptic.ws> Links to 135 skeptic organisations, and to many sites on critical thinking.

<http://www.skepticalinvestigations.org/> Association for Skeptical Investigation (founded by Rupert Sheldrake). User-friendly site is rather more pro-paranormal than other skeptic sites, for example its associates include believers in Uri Geller, and it is openly skeptical of established skeptics, dismissing them as "dogmatic" (the compliment would doubtless be returned). Site is divided into five topics -- investigating skeptics, includes biographies of leading skeptics; controversies, eg extraterrestrials; open-minded research, includes biographies of leading players; scientific objectivity including fraud; resources including 7 links illustrating the good guys and bad guys in skepticism, and booklists for 13 authors sympathetic to the site's aims eg Rupert Sheldrake (such authors seldom appear in skeptic booklists). Each topic has about half a dozen articles nicely presented, most with abstracts. A good place for biographies and for finding what skeptics are supposedly not telling you, but tough going for readers unfamiliar with the territory.

<http://www.snark.ca/pseudo.htm> About 200 links to sites on and against pseudoscience, "the abuse of reason by the intellect".

Reference alert 1900-2007

Nearly 1700 references with author, title, source

Abstract -- This article provides nearly 1700 references to astrology obtained in December 2007 by entering the keyword *astrology* or *astrolog** into ten online academic databases selected for relevant content and covering journals, books and theses in the fields of arts, biology, business, history, humanities, medicine, psychology, science, and social sciences. The databases are Biological Abstracts, British Theses, Current Contents, ERIC, Medline, Ovid Journals, Proquest Dissertations, PsycINFO, Sociological Abstracts, and Web of Science. Each reference (author, title, source) has been condensed to fit one line without overflowing the screen. References are listed by year, then alphabetically by author. About 94% of references are from 1970 onwards. Purely empirical studies are about 10% of the total. Abstracts are not included but may be obtained from the relevant online database.

The 1674 references to astrology listed below were obtained in December 2005, and updated annually (most recently in December 2007), by entering the keyword *astrology* or *astrolog** into ten online academic databases selected for relevant content, see next section. The references are to journals, books and theses in the fields of arts, biology, business, history, humanities, medicine, psychology, science, and social sciences. Retrieved are works that mention the keyword anywhere in the work, so some retrievals may be trivial. Purely empirical studies are about 10% of the total. Not covered are ordinary astrology books (except in a few book reviews) and astrology journals including *Correlation* because they fail to meet the high standards needed to be abstracted by abstracting services. However the article **Journal cumulative contents** under Adroit Utilities lists the contents of the astrology research journals *Correlation* 1981-2007, the now defunct *Astro-Psychological Problems* 1982-1995, and (briefly) *Astrologie in Onderzoek* 1977-2003 and *Kosmos* 1978-1995. The article **Research results** under Doing Scientific Research gives comprehensive abstracts of 91 articles from these four journals. An increasingly comprehensive source of references is Google Scholar http://scholar.google.com/advanced_scholar_search described in detail in *Links* on this website under Adroit Utilities.

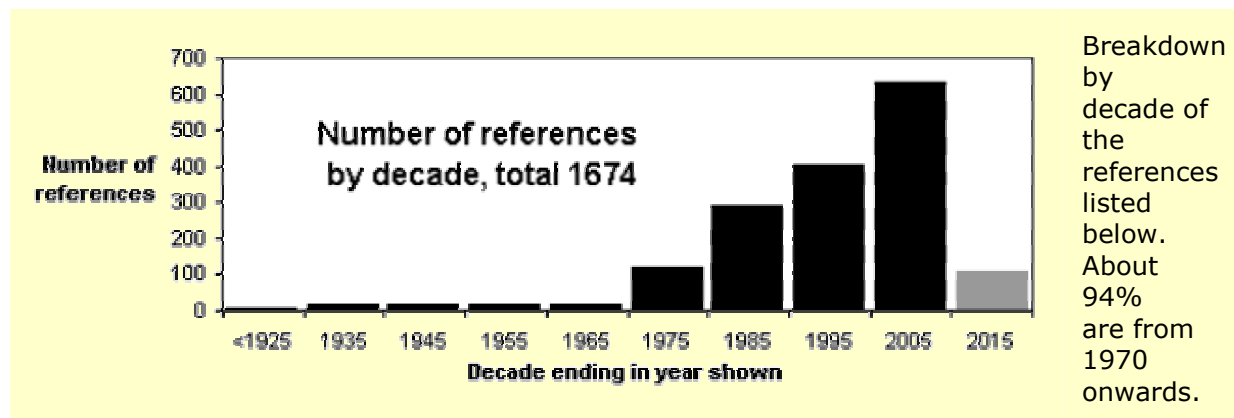
Breakdown of references by source

The number of unduplicated references from each database (in order of citation preference, eg if the same reference is given by both p and m then only p is listed) as at December 2007 are:

- p PsycINFO from 1867, >1300 serials, >2m abstracts, N=275.
- m Medline from 1902, N=231.
- s Sociological Abstracts (Social Sciences) from 1955, N=216.
- b Biological Abstracts from 1969, >4000 serials, N=12.
- e ERIC (Education Resources Information Center) from 1945, N=9.

j Ovid Journals from 1990, N=213.
 c Current Contents from 1995, N=209.
 d Proquest Dissertations and Theses, >1.6m since 1861, N=194.
 t British Theses, 0.5m since 1716, N=29.
 w Web of Science from 1980, N=286.

Total 1674, 89 more than the total at December 2006. All except Web of Science usually provide abstracts, which may be obtained by searching the database online at a university. More than 300 duplicates have been omitted after retaining the preferred source. The figure below shows the breakdown by decade.



References up to December 2007

References are listed below by year, then alphabetically by author after the source code. Journal titles are followed by volume, issue number (in most cases), pages, and sometimes date of issue. Entries have been automatically condensed by computer to fit one line without overflowing the screen. et al indicates more than one author. \ indicates truncation to fit space.

1898

p Bolton HC. A Relic of Astrology. J Amer Folk-Lore XI 113-125

1906

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1912

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1918

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1920

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1926

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1927

p Goddard HH. Two souls in one body? xiii 242 pp Oxford England Dodd Mead

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1928

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1930

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91 117-118

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Aires 3 249-302

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1945

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Site philosophy

Includes aims, history, how to contact us

Abstract -- Provides readable articles on scientific research into astrology that are also sensitive to astrology's merits. The authors are mostly researchers who, unlike astrologers, have no vested interest in the outcome. Articles are rigorous, impartial, and have passed peer review. All have two levels of abstract to save your time. All are in plain English. On average about ten new articles have been added each year but this number is now decreasing to keep articles concise and updated rather than forever multiplying. Website began in July 2000 and is updated roughly twice a year. Currently it has 70 articles (over 26 hours of reading) and receives over 16,000 visitors a year. Our email address is in the Netherlands, see text for details. We welcome your comments. All comments will be acknowledged.

Site aims

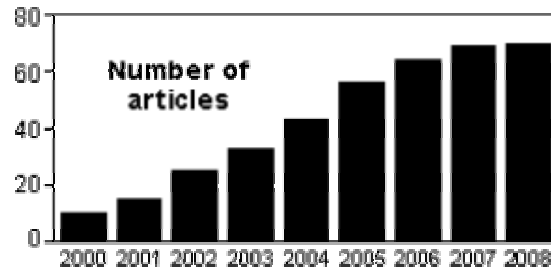
Astrology has been tested in more than 600 scientific studies. But the results are rarely mentioned in astrology books or on astrology websites, nor are they treated fairly by debunkers. For most people the results are hard to find. So this website was started in July 2000 by former astrologer Rudolf H Smit from Zwolle in the Netherlands. The aim is to provide articles related to scientific research into astrology. The authors are mostly researchers who, unlike astrologers, have no vested interest in the outcome.

Site philosophy

On this website you will find articles sensitive to astrology's merits as well as articles devoted to its scientific exploration. Articles are rigorous, impartial, and have passed peer review. All have two levels of abstract to save your time. All are in plain English. On average about ten new articles have been added each year but this number is now decreasing to keep articles concise and updated rather than forever multiplying. On this website the reader's interest comes first.

Site history

The design of the website began in late 1999. The site name was secured in February 2000 and the first astrology-and-science website went online in late July 2000 with 10 articles. The number of articles has since grown to 70 in 2008, see plot below, a total of half a million words taking more than 26 hours to read. Since 2004, in keeping with the site philosophy, more than a dozen articles have been updated every year, and several have been discontinued or replaced.



Site usage

The counter was added in September 2000. After two years the site had received more than 10,000 visitors mainly from North America and Europe. Currently it receives more than 16,000 visitors a year. Since 2000 the visitors have come from North America 48%, UK and Europe 28%, Asia 12%, Australasia 4%, South America 3%, Africa 1%, Central America 1%, unknown 3%. About 60% arrive via a search engine.

Astrologer meets client

Tricks of the trade

Jacques Halbronn

An abridged translation of *L'astrologue face a son client: les ficelles du metier*
2nd edition, Editions de la Grande Conjunction, Paris 1995.

Abstract -- The present emphasis on tradition, techniques, and speculation, should be reduced in favour of making astrologers more aware of what happens during a chart reading. Astrologers should not be deceived by the apparent success of their experiences. Such success is due not to any inherent truth in astrology but to their strategies and tricks of the trade, or what scientific researchers would call artifacts. We should avoid training astrologers who become entrapped by bad habits. Article is illustrated with ten cartoons.

Preface

This work is about astrological consultation and tricks of the trade. For you, astrology may now lose its magic. But astrological consultation is more a massage of the client's ego than a message from the stars. Tricks of the trade are necessary to keep the client happy.

There are three parts -- the underlying astronomy, astrology as knowledge, and the consultation itself -- with a postscript on teaching. The text is addressed to astrologers and students of astrology. Ten cartoons drawn by Larissa Halbronn to my captions illustrate the key issues.



1

Client: I have a life without meaning.
I need a model I can identify with.

Astrologer: I have a model that does
not correspond to anything. I need the
experience of life to give it meaning.

1. The underlying astronomy

Astrology as divination could have developed without the stars. But as an organised "speech encyclopedia" it had to have an organised structure based on astronomy, which continues today. But what men say does not have a source in the stars. Astrology merely imposes a cosmic dimension on what is happening. An astrological speech introduces the stars via the birth chart into an environment in which they are normally absent.

The birth chart is both your badge of authority and a necessary component of astrological speech. Today this trick of the trade is calculated by computer, which avoids your becoming too emotional about it. It also makes you look erudite in a field that is not strictly astrological. The jargon, the cabalistic signs on paper, its actual validity, none of these matter provided the client is led to believe that the service you provide depends on the care you have taken in preparing his birth chart.

If necessary you must of course display your knowledge of astronomy, even though this is mere rhetoric, for you are not concerned with astronomy as a science, only with astronomy as something to distinguish you from the fortune-teller. What matters is your public image, what the client perceives. Without astronomy, the astrologer is naked. You are purveying a reassuring well-regulated universe whose truth is good or bad to hear, a parallel world that your client wants to be truer than the real world.

An important part of the trick is your attitude to astrology. You must understand that astrology is a means of communication, not a source of knowledge. The chart tells you only that your client shows an interest in astrology and is open to any speech that pretends to be based on astrology. So the important thing is not your ability to read charts but your ability to exploit this interest. You must understand why people want to believe that such an irrational tool can allow a certain psychic intimacy. Your aim is to be trusted by your client as an astrologer. As we explain below, there are many more tricks for achieving this.



2

I have spent 3 hours on this chart. I know
this person as if I had known her forever.

Who cares if what he says is true or not
-- I just love the way he talks about me.
Such intimacy! I could almost believe it!

The need for precision

Nowadays the computer has made astrology calculations accessible even to those unable to add up a grocery list. This precision is a valuable trick. It provides a focus to distract the client from more serious deficiencies. It is a little powder around the eyes necessary to maintain credibility.

Another trick is to discuss the precision of time, the nature of time zones, and so on, in front of your client so that he smells confidence in your abilities. For example you need to point out that although France for one century had only one time zone except during the Occupation, the hour in Strasbourg in the east is not the same as the hour in Brest in the west. The task of finding the "true" hour hidden under time zones, daylight savings, and other compromises is highly symbolic for the client, who sees this as further reinforcement of your abilities. Of course the more books you can consult the better for your image.

Customer satisfaction is further improved by your finally managing to complete his cosmic portrait. Even though it is not yet interpreted, the fact that it is now known is already a moment of philosophical significance and a great psychic relief. It prompts the client to see you as an all-knowing astrologer even if you have no skills.

The freedom to manoeuvre

Until now, the trick has been to emphasise precision. You now tackle the question of combining the various factors. You stress that there are many factors to choose from and many ways they can be combined, so the reading of a topic can vary from one astrologer to another, and also, for the same topic, from one client to another. The tricks here are numerous.

For example you can make it known that house position is not as simple as sign position. Not only are there differences between house systems, it is generally allowed that a house influence can extend beyond its cusp. Against this sudden imprecision you can mention that aspects are not a concept invented by astrologers. They can be found during centuries in the treatises of astronomy, where they make it possible to locate one star compared to another. And so on.

Your freedom to manoeuvre allows you to configure the topic to your advantage without letting the client know, because you have the privilege of "forgetting" to interpret any particular factor. This trick is especially valuable. It is normal to use it constantly.



3
Please sir, just tell me, which
astrologer is suitable for me?

Her question is OK. But which
method should I use to answer it?
(He can use stars, clairvoyance,
tarot, I Ching, dice, hands...)

2. Astrology as knowledge

Here we enter the scientific field where our message is addressed to astrologers who wish to avoid mystical interpretations.

Clients want to know what parts of astrology are reliable. Some astrologers believe this cannot be known because astrology cannot pass systematic examination. Some even think it necessary to inform their clients of this. We disagree. We think you should behave as if you had extraordinary knowledge along with your astronomical and mathematical luggage.

The trick here is to use whatever reliable knowledge you have, supplanted by the panoply of astrology. Here a planetary typology is useful because it looks rigorous and scientific, and need not be based on the birth chart. You merely identify the planet that best matches the client.

For example, if you reformulate the findings of Michel Gauquelin, you can allocate Saturn to the organiser, Moon to the artist, Jupiter to the leader, and Mars to the controller. Or you can simply rely on current language, where Mars people are martial, Jupiter people are jovial, and so on. Or you can match planets to age, where faster planets are the first part of life, and slower planets the second.

This matching of planets to what is already known is an infinitely better trick than using signs, which have the defect of not satisfying tests of validity. Better to use something that cannot fail than use something devoid of any utility except that your client knows about it. It is also better to present as specific for your client that which applies to everybody, since this will spare his ego.



4
With your Mars retrograde in Gemini
it is normal for you to have problems
in communication.

I don't understand a word but it seems
very exact.

Signs and houses

Signs and planets are well known to the cultivated layman, but houses make sense only to the initiate. For example why should the 8th house of death be above the horizon? Nevertheless houses are an indispensable trick because they allow a whole range of activities to be mentioned when no particular question is asked, thus reinforcing your claim to extraordinary knowledge.

Despite what we said above, the client often requires you to say more about signs. But once again this can be done without approaching the birth chart. Thus the sign can be seen as the need for membership, not for individuality, which is the birth chart itself. That is to say, as a model to be followed rather than a reality to be explored. In astrology you have to be pragmatic.

The act to expect

Astrology as we conceive it must evacuate a great part of its traditional postulates. This means that you should not explain your working methods because your model may then seem too general and too simple. Your claim to extraordinary knowledge will be eroded.

But here we leave the scientist for the artist, for you have an embarrassment of tricks for mixing the colours and making them gleam in front of your client. It is a question of alluring the client with a drop of Bull, a slice of Lion, a pinch of Capricorn. The cocktail is made ready to drink.

Please drink this little cocktail of planets and zodiac made specially for you, which nobody has tasted before.

Here we arrive at the final stage, the intelligent management of astrology. Our first two parts are frankly not useful enough to provide the consultation your client awaits, even though they contain the tricks needed to confer a certain legitimacy on your actions. What matters now is your ability to engage personally with your client while preserving your horoscopic frontage. You have to avoid appearing too general and not specific enough, yet you want to focus on overall truth rather than individual truth since it is much easier and safer.

144



6

I am using this lady to test my new theory of Jupiter transits.

What I like about astrology is that it never changes over the centuries.

Astrology as language

Of course you have to learn a certain astrological language, but only as a foreign language is learned. It is not itself truth, only a means to be better heard by your client, a means of saying the same things differently for better or worse. To release yourself from a certain intellectual terrorism, you have to speak astrology but not think astrology.

You have to say more than can be seen in the birth chart, but in such a way that the customer has the feeling of being in good hands, as when calling a client martial or jovial, even when this does not correspond to anything in the birth chart. You must deform the astrological language and make it serve his impressions, so it is merely a way of saying things and ceases to be an access to a transcendental knowledge.

Do not forget that your client will read into whatever you say as if it applied only to him. So do not search for specifics but instead try general philosophies that he can build on. In this way he will know of what you speak! Do not send your client on a "great adventure"!



7

Madam, everything I tell you is in your chart. I invent nothing.

I love people who do not blurt out whatever is on their mind. (She does not realise she is now a prisoner of her chart.)

Profile of the client

You should learn as much as possible about your client so you need not rely on astrology to give answers. On one side of the table is the astrologer who speaks astrology, on the other side is the client who speaks his problems. What the client wants is not astrology but relief from his problems. It is an antiseptic, if not dehumanised, situation.

In short, the client needs protection against astrology. He needs to explain his request for astrology so that you can deal with it in terms of psychology. For example some event may have happened to explain his attraction for astrology, and knowledge of the event may be more helpful than knowledge of astrology.

Profile of the astrologer

You are not there to project on to astrology your own problems or to use it as a means of personal expression. You are the priest of a religion in need of close supervision. And you need to be credible. Here certain tricks are at your disposal. First, you must admit to using certain basic methods, shared with others, before claiming any originality.

Next, you should not crush your client under a flood of words. Just because he came to you with a certain aim does not authorise you to go beyond what was wished or what was imagined, wrongly or rightly. The only thing that matters is client satisfaction. You are seen as someone with particular assets that could possibly justify confidence. You are the interlocutor of the last chance before despairing of living in the world.



8

So madam, this is your portrait when you were born, your life story, before society puts its imprint on you.

Alas, I have changed a lot. I'm not Dorian Gray.

Profile of a consultation

First, make sure you can be seen to deliver what the client wants. A certain minimum behaviour is needed to persuade your client that they are dealing with traditional astrology. So receive your client surrounded by astrological symbols and complicated documents. Be warm, be smiling, and do not hurry the preliminaries. If they are well carried out, the remainder will follow easily.

Remember that the client needs the strangeness of your astronomy and mathematics and extraterrestrial links, to agree to listen to you. Just receiving the birth chart can be more decisive than its interpretation, see Part 1. But the birth chart cannot tell you about a client. At best, it merely provides a focus that allows therapy by conversation to proceed, in the same way as the idea of previous lives might do.

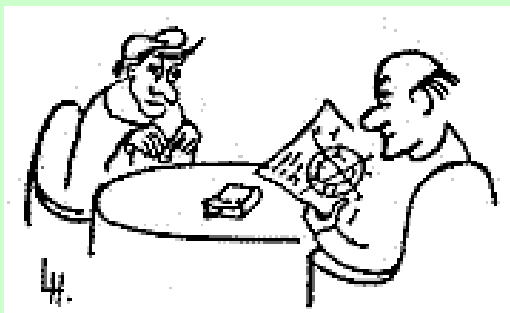
Another trick. The astrologer should not be as negative as his client. It is vital for you to have a positive philosophy that will cope with the client instead of leaving it to astrology. Without imposing morals on your client, you are there to reconcile him with the world of men, not to reconcile him with the stars. In fact you should here ignore astrology altogether.

So start by talking about the problems of living, its loneliness, its uncertainty, and anything else that you have found to apply generally to clients. Stress that, thanks to astrology, such problems are well encircled and solvable. Start a conversation and keep it going until feedback is occurring. That way you will know in advance what the client wants to know and what the answer should be. You do not want to be dependant on astrology.

Of course, you avoid giving this impression, and you avoid giving the impression that you have done it all before with other clients. Your client needs to feel special. Once his

confidence has been obtained by your general attitude, astrology can gradually grow blurred, leaving you to focus on the feedback. Soon you and your client will be closely joined in a dialogue, and astrology can mostly be ignored except as a convenient means of changing the subject.

In this way, by excavating the past, your goal is not to prove the validity of astrology but to locate the traumas that will reinforce his interest in astrology. The unknowing client will see this as exorcising his past, leaving him free at last and very satisfied with the consultation.



9

My astrologer is going to tell me who I am and what is going to happen, which are things I have no idea about.

I hope she understands what I am saying because I certainly don't.

Postscript: Teaching astrology

What of those who wish to teach? The difference between consulting and teaching is quite distinct. In consulting, the client receives information in a more or less passive way, and there is generally only one meeting. In teaching, the pupil actively wants to learn and ask questions, and there are generally many meetings. In the former the relation is with an astrologer, in the latter with astrology. In both cases it is advisable to respect a certain appearance. The teacher must thus have the same luggage as described in Part 1.

Just as the client wants the astrologer to have extraordinary knowledge, so the pupil expects astrology to solve the mysteries of Man and Life. But because astrology cannot do this, it is important to resort to pretence. You pretend that the fit between chart and person (which can always be found even if they are unrelated) is remarkable and striking. You pretend that any interpretative failure is the fault not of the stars but of the astrologer. Such pretences prove exceedingly positive for the dynamics of the course.

Astrology is mainly an imaginary science. It is a pseudo-competence resting on tricks of the trade. To us, many teachers seem dangerous, irresponsible, and unconscious of what they convey, because their personal relation with astrology is too strong. They are a fanatic of astrology. They see reality where there should be pretence, so they lack antidotes. They should revise their values and give up their naivety.

The problem is that the majority of astrologers are unable to hold such views. For twenty years we have organised conferences devoted to rebalancing their views, but with little effect. The paradox is that such rebalancing would establish their detachment and credibility. Had they been trained properly in the first place they would not have developed such bad habits.

We plead for a homeopathic low-dose astrology, whereas most astrologers give their clients and even more their pupils an extreme high dose. We should avoid training

astrologers with bad habits who become trapped by situations for which they are not prepared. Astrological consultation is more a massage of the client's ego by an involved caring astrologer than an all-knowing message from the stars. What matters is the astrologer not the astrology.



10
Strikes, paralysis!
No mail, no public transport!

It's all due to Saturn!

Further reading

Alexander C. Rae. *Bluff Your Way in Astrology & Fortune Telling*. Revised edition, Ravette Books, West Sussex 1992. The way to instant erudition without having to know anything. Has "enough details to pass yourself off as an expert and to allow you to charge extortionate fees for your readings."

Astrology my passion

My life, my personal disaster

Rudolf H. Smit

A slightly expanded version of an article due to appear (in German) in a German anthology.

Abstract -- Rudolf Smit, founder of this website, describes how, as a teenager, he was an ardent amateur astronomer with many technical books on astronomy in his library. Nearly all of them stressed that astrology had no scientific validity, which led him to believe that astrology was nonsense. Later, in his first job, he argued with his boss about astrology, and was told that he should first study astrology before opening his mouth. So he read about his sun sign and was astonished to find how accurate it was. He then had his birth chart read, not once but twice, and in each case was astonished to find how well it fitted his character and circumstances. From then on astrology became his passion. He taught himself how to read charts for his friends (everything fitted perfectly), formed the first society of professional astrologers in the Netherlands (this was in 1977), and set up as a part-time professional astrologer (he soon had many clients and the future looked rosy). But one day he accidentally used the wrong chart for a client, who was nevertheless happy with the reading. Two years later it happened again. Very puzzling -- weren't horoscopes supposed to be unique? Later, with a computer, he spent several years testing the statements made in astrology books, especially statements about events, and found to his horror that almost all could not be confirmed. But he had many happy clients so why worry? Then in 1984 came the crunch. He became aware of the many ways in which clients could be convinced that astrology was true even if it wasn't. And all of them were used by him. Just being warm and caring would do the trick. Worse, any chart would do, hence also the wrong chart. So his happy world of astrology collapsed. He closed his practice and fell into a clinical depression that lasted three years. Without astrology his life had lost its meaning. Afterwards he regained his interest and became editor of the research journal *Correlation* for six years, trying to find out which statements of astrology were true. Then in 2000 he set up this website for those who wish to know more about scientific findings in astrology, but always remaining sympathetic to its beauty and appeal. This is a true story that anyone interested in astrology should read.

Astronomy has been part of my life since I was a boy of nine growing up in several towns and cities in the Netherlands. In our living room there was a big bookcase, and since my parents were not so fond of novels, it contained above all popular scientific works. One of these books was titled *Mijn Sterrenwacht* [My Observatory]. It was a lucid account by P.G.Meesters, one of the well-known Dutch amateur astronomers of that time (I am talking about the 1930s and 1940s).

Thanks to his enthusiastic writings I became an ardent amateur astronomer. I began asking my parents not to give me toys for my birthdays but, instead, books on astronomy. When I was 12 years of age, I had already about 20 books on astronomy and quite a few of them contained pretty heavy stuff.

Anyway, virtually all of those books had one thing in common: They told readers that although astrology was once an offshoot of astronomy, in our modern times it has no basis in scientific fact, therefore its practitioners are, at best, gullible but well-meaning people or, at worst, hopeless and dangerous charlatans.

Since I was only 12 or so I was quite willing to believe what all those illustrious authors had written, so I sincerely believed that astrology was hogwash and astrologers were dangerous charlatans. And if anybody at the time would have said "mark my words, you will soon be an astrologer yourself, and an ardent defender of astrology at that", no doubt I would have thought "you must be nuts".

But although nobody had ever pronounced such a prophecy, it did happen anyway. This is the story of how it all began, how it unfolded, and how it ended in disaster.

My story begins

It was 1968 and in that year I became technical editor of a journal on photography. My immediate boss was the editor of this journal. He was an academic with a distinguished background in chemistry and (photographic) education. A highly critical and erudite, warm and humorous person for whom I soon developed great regard.

But one day, this same man said something that made my stomach turn in disgust. The director of our publishing company had come into our office, apparently with the only purpose to blow off steam -- he was grappling with a problem, but could not decide what to do, and so on, and so on. When he had left, my boss said: "See, a typical Libra, finds it hard to make decisions". I could not believe my ears and was horrified. My boss, an academic of some standing, was daring to say such silly things! So I pulled out all the stops and argued that this was all nonsense, because the stars were too far away to exert any physical influence whatsoever on human lives, and so on, and so on.

My boss listened to me patiently and then asked: "have you ever studied the subject?" I was utterly astounded: "Of course not, why would I waste my time with such silly stuff?!" His answer was: "If I were you, I would devote some of your time to astrology, because only then can you start to judge it properly."

I discover that my Sun sign fits me

This was a crucial moment in my life, because I realised that he was as right as one could be. I was judging with lots of authority something I had no real knowledge of. This kind of attitude is, indeed, quite irresponsible and also somewhat reprehensible.

So, in the end I overcame my disgust and bought myself a booklet about my Sun sign. It was from a series of twelve booklets written by the well-known French astrologer Andre Barbault. And yes, I have to admit that much of what I read did for a great deal pertain to me. I was truly astonished. Inspired by this unexpected positive outcome, I made the relatively simple calculation for the Ascending Sign, which as a matter of fact seemed to be right on the cusp between two signs. I bought Barbault's description for these two signs, and yes, it was "me" again! (Actually the consecutive sign seemed to fit me better, and a year or so later I found out that it was in fact my Moon sign. So there you are!)

But at that point some skepticism crept in. What if I would buy all the other nine star sign booklets? I took a personal bet that after reading those booklets I would discover in each of them descriptions that would fit me. And indeed, so it occurred, although I had to admit that the fitting descriptions were not equally divided over all twelve signs. That is, some signs fitted me much better than others. In any case, it was reason enough to shelve the lot for a while. This all happened in the late 1960s.

And so does my horoscope

But then I happened to visit the parents of someone I knew. In their living room was a big bookcase, and having in mind the famous adage "show me your books and I know who you are" I began inspecting the content of this bookcase, and soon discovered two text books on astrology. Pleasantly surprised I asked the couple which one of them was interested in astrology. The woman confirmed her interest, and she and I had a brief exchange which led to her promise to cast my horoscope. Two days later I found in my mail a nicely drawn up horoscope figure, as well as a few written lines, which made me feel flabbergasted. She had written things which were quite specific to my character and situation in life, and which she could not have known.

But I was still not fully convinced. So I did something else: I sent my birth data to a well-known astrologer and asked him to write an analysis purely based on those data, hence without ever seeing me. Six weeks later I received his nicely structured, six-page description which fitted me miraculously well. I was elated and the die was cast: from now on astrology had me firmly in its grip! This was the beginning of an exciting time.

In those years astrology text books were fairly hard to come by, but after some searching in shops for secondhand books I found a few and also an ephemeris. Next I taught myself the casting of horoscopes, and of course the first thing I did was casting my own. Again, there was that wonderful feeling (which I have discussed further in *Moment Supreme*) of having encountered a miracle.

The elation of seeing astrology work

But I did not limit my investigations to my own horoscope. Virtually everyone else in my circles became victim of my thirst for knowledge about astrology. I asked them to provide me with their birth data, calculated and drew up their horoscopes on the spot, and began to interpret them using the recipes in those old text books. To my great satisfaction virtually everyone agreed with "their" descriptions. Occasionally even the profession of such person was written up in the textbooks! This was truly astonishing, and I felt elated.

It went further and further. During 1975 and 1976 I even wrote articles on astrology for the popular magazine *Aarde & Kosmos* [Earth & Cosmos], which were re-published in November 1976 in a book called *De Planeten Spreken* [The Planets Speak]. It included what I thought at the time was good evidence for planetary influences such as the findings of Gauquelin, and had over 300 pages.

To cut the story short, I had sought contact with the few astrologers that, at the time, were active in the Netherlands, and found out that in particular one of them was making predictions of the worst kind and with dire consequences, namely that his clients got upset and so terrified with fear that they had to seek help elsewhere. I felt that this was highly unethical, and I decided to mobilise the few good professional astrologers I had met, and asked them to help me set up what was to become the NGPA, the first Society of Practising Astrologers in the Netherlands. In other countries such as Britain and the USA, similar societies concerned with ethics had been existing for many years, but until now in the Netherlands there had been little concern.

My astrological handbook for beginners

Not only would this society make sure that its members would deal with their clients in a truly professional manner, but their behaviour in this regard would be based on a properly designed ethical code. And so it happened. This society was founded in 1977

and I was appointed its first chairman. I also wrote an astrological handbook for beginners and became founding editor of the magazine of NVWOA, the Dutch society formed in 1976 for the critical study of astrology.

A wonderful time followed. Everybody was full of optimism and felt that it would be only a matter of a few years before astrology was fully accepted by society. As for my own astrological endeavours, I had set up practice as a part-time professional astrologer and was receiving many clients, so the future looked rosy.

It turned out greatly different.

Being right with the wrong charts

It was in this period (around 1978) that I had my first major mishap. I had a client, let us call her Ms Johnson, for whom I did a reading. All seemed to go pretty well; she was nodding all the time while saying, "yes, yes, you are so right" or words of a similar meaning. But then I said something like: "well Ms Johnson, we...." She interrupted: "Sorry, my name is Petersen, not Johnson." I then experienced a terrible sinking feeling, because I then saw before me the horoscope of a Ms Johnson, but the person before me was surely not this Ms Johnson! Apparently I had taken the wrong chart from my file cabinet!

Truly, I have forgotten how I got myself out of this most embarrassing terrible mess, but apparently I had managed the situation pretty well, because she went away a happy client.

After seeing her out I sat in my study, confused thoughts racing through my mind. How is it possible to do a correct reading based on a wrong chart? Did not all textbooks tell us that a horoscope is unique, that is, only fitting its native and no one else? If so, how on earth could I have made correct delineations based on a totally wrong chart? I was completely puzzled. In the end I let the matter rest, but from now on I was on the alert! And not without reason, because a few years later a similar mistake occurred to me, but then I noticed it in time.

My dormant skepticism reawakens

In any case, it won't come as a surprise that from that moment onward the skeptic who had been dormant within me for several years, was about to wake up again. No matter that I had many clients whose satisfaction was loudly proclaimed after I had done an astrological reading for them. Despite all this positive feedback I felt that I could not trust any longer the astrological text books I had consulted. They were too often in disagreement.

As a matter of fact, my whole attitude towards astrology was gradually changing to the extent that I was becoming a pain in the neck for my fellow astrologers. I was now critical of the "anything goes" attitude of so many of them, and of how they tended to believe anything that prominent astrological authors had written, be they ancients or from more recent times. For example, whenever I questioned a particular astrological statement, their response tended to be: "It is so, because (famous author) says so." (Note the present tense: *says* so, not *said* so, even when the famous author had been dead for many years!) If I asked: "how does he know?", they replied "well, er, by experience". If I then asked: "Experience, based on what? On empirical research?", their eyes usually went blank."

Enter the computer

It was also the time (the final three years of the 1970s) when the first home computers entered the scene. I bought one of them, the Commodore PET 3032 (a forerunner of the later famous C64) and the astrological software for it was developed by a friend of mine, who had also bought such a machine.



With my Commodore PET computer at the FAA Conference in Melbourne 1984

Thanks to this machine and its software I was able to test a multitude of horoscopes on a great variety of astrological statements found in astrological text books. It took me a number of years to carry out these projects. I succeeded, but to my great chagrin the test results were contrary to all hopeful expectations. One did not have to be a professional statistician to find out that many, if not all, statements in astrological text books, fell flat when tested on a great number of horoscopes.

For example, I tested the statement that in the charts of people who had died an accidental death, there would be a remarkable incidence of Progressed Ascendant to Mars, or of Progressed Mars to the Ascendant. Sure, there were a few (but the word says it all: a *few*), hence not an overwhelming number which could confirm the textbook statement. And so it went on and on. And one can imagine that my views on astrology had sobered down somewhat. Yet, I was still a believer, simply because I had happy clients, who tended to come back. So why complain!? Until the day when the penny dropped.

I meet Geoffrey Dean

In February 1984, I met face to face with Dr Geoffrey Dean, a man whose researches into astrology were already having an impact on the astrological scene. In 1979 I had bought a copy of the book *Recent Advances in Natal Astrology* that he had compiled with Arthur Mather and many others, and was deeply impressed by it since, for one thing, its findings corroborated my own investigations.

Anyway, we both had been invited to lecture at the yearly conference of the Federation of Australian Astrologers, and I took the opportunity to ask him to stay at my home. (Since 1980 I was living near Melbourne, where I took on the agency for Matrix software until 1985.) We had many inspiring discussions and during those he showed me a fairly thick packet of paper; in fact, a long draft article on astrological counselling that he was circulating for comment. In it he had brought together much relevant information taken from orthodox sources (it had 87 references) that was almost never found in astrology books. It also incorporated comments on two previous versions from about a dozen astrologers and psychologists

He asked me whether I was willing to give it a thorough read and then forward my comments. Of course I agreed. Accordingly, shortly after Dean had left for his home town Perth in Western Australia, I began reading this paper. As usual his writings were highly informative. One chapter though gave me that terrible sinking feeling again.

Not because he had written something wrong, but because there was the sense of immediate awareness that he was so right! And that was the moment when the penny dropped. The sudden realisation how I had been doing my readings and why I had been so successful. And that was not thanks to astrology, but instead thanks to various things that I seemed to be pretty good at. Let me explain.



A typical ad for my astrological services in *Astrological Monthly Review* August 1982

The art of "Cold Reading"

The chapter that affected me was called *Chartside Manner: Non-astrological Factors in Personal Validation*. In this chapter Dean discussed about 20 factors that affect "personal validation" or the way a client personally assesses or validates an astrological reading. (The number of factors later reached 34, see *Artifacts in reasoning* on this website under Doing Scientific Research.) These factors included things like the Barnum effect (seeing specifics in generalities) and selective memory (ignoring errors), most of which I did recognise, that is, I had the strong feeling that indeed I myself had been a victim of most of them. However, the things that gave me that terrible sinking feeling were the effects described under "Cold Reading", and now I quote Dean in full:

"Cold Reading Effects, or how body language tells the story. Here the reader uses non-verbal cues (eg pupil dilation and hand movements) leaked by the client to home in on the truth. In a counselling session a great deal of non-verbal communication goes on, often without anybody being aware of it, so obviously it pays to give added weight to what is sensed. [Dean later told me that "paralinguistic cues" (the tone and loudness of the voice, and the effect of anxiety on the voice owing to constriction of the throat muscles), can be just as important as non-verbal cues.]

"The intuitive astrologer will attend to client reactions automatically, which helps to explain why many astrologers claim that intuition is important for maximising accuracy.

"The key points of cold reading are as follows:

1. Watch the eyes and hands for signs that they say yes and no.
2. Make the reading happy and positive
3. Be a good listener
4. Loosen the client's tongue with flattery
5. Discover the problem and then tell the client what she wants to hear.

"Of course an astrologer may be using cold reading without knowing it. Neher [here there is a reference to *The Psychology of Transcendence*, McGraw-Hill 1980] concluded from observations of astrology/palmistry/tarot/etc readers that they were often 'astute, sensitive individuals who pick up subtle clues leaked by the client. Usually neither the reader nor the client is consciously aware of this communication process, which therefore can result in a reading that seems mysteriously perceptive.'

"The point is that a skilled cold reader can produce a totally convincing reading very similar to a chart reading (and probably more accurate) but without using a chart. In which case it cannot be claimed that astrology plays an essential part in the reading process."

So far Dean et al.

The penny drops

Well, apparently, but without ever having been consciously aware of it, I had been an excellent cold reader -- which is what I realised on that fateful day in February 1984. It was mainly thanks to these cold-reading skills and to my unfailing desire to help my clients that I had an excellent rapport with them, and thus had sessions which were, almost without exception, successful in the sense that both my client as well as myself were happy. So, the only good thing supplied by astrology was the beautiful mandala called horoscope and its symbols. The rest was due to my being caring, attentive to the client's needs, and sensitive to what Dean calls the client's "paralinguistic and non-verbal cues".

Now it also became devastatingly clear why I had had excellent sessions based on the totally wrong chart. Sympathy, cold reading, and the nice astrological symbolism had done the trick, not astrology itself. Conclusion: A warm, caring, perceptive reader can work with any chart, hence also the wrong chart. Thus, in reality, I had been dealing with a beautiful and perfect illusion. Yes, perfect and grandiose, but an illusion, no matter how beautiful, remains an illusion.

My happy world of astrology collapses

This harsh realisation, on top of all the negative statistical results of the many serious studies (including my own) into astrological claims, had a devastating effect on me. My happy world of astrology collapsed. It felt as if the bottom had been kicked away from under my existence.

This was the beginning of a terrible time. First of all, due to this awful new knowledge that it all had been an illusion I felt compelled to close my astrology-practice. After all, I had been dealing in illusions, and hence felt it unethical to continue selling such illusions.

If that had been all, it would not have been so bad. But since astrology had been my great passion, which now all of a sudden had turned into a great disappointment, it was as if I had fallen into a big black hole. When trying to look forward, I saw no horizon, no future. I had invested my whole existence on the rosy promises of astrology, and on its certainty that one's life has a definite meaning and is inseparably linked with the universe. But now I saw only a terrible never-ending blackness. A clinical depression ensued which would last for some years and which, for one thing, cost me my marriage.

Only after I had returned to the Netherlands in 1987 and had to find a way to begin a new life (I found a new wife and a good job) did my sorrow about the loss of astrology slowly fade away.

I was not alone

It was little consolation that I was not alone in discovering that astrology was an illusion. When I was living in Perth I visited Geoffrey Dean many times, and he showed me letters his clients had sent him when he was a practising astrologer in the late 1970s. They said things like "very accurate" and "so true it is amazing" and "you know me inside out". One letter I remember especially was from a lady client who had found an hour or so of chart reading more helpful than six months of psychiatry, and voluntarily doubled his fee. His clients were every bit as happy as mine had been.

Then in 1980 he found to his amazement that clients were just as happy with a reading that was the opposite of the authentic reading. Like me he had discovered that any chart would do provided the astrologer is sensitive and caring. And like me he immediately stopped reading charts for money. Later I discovered that one or two other astrologers had abandoned their astrological practice for the same reason as I had (for example David Hamblin, a former Chairman of the AA, see *Astrology as Religion* under Philosophy). So I was not alone.



In my office in the Netherlands in 1995 with Geoffrey Dean (right)

A new beginning

It seems to happen quite often that people who have lost a belief, whether it is a religious belief or say a belief in astrology, tend to develop a revulsion against their former conviction. Not so with me. Astrology still has my interest, but the focus is now mainly on the big question why astrology still exerts so much attraction to so many people. In other words, why do astrologers still go on believing whereas the evidence against it is mounting and mounting?

I have discussed this question at length in my article *Moment Supreme*, where I conclude that astrologers go on believing because the apparent match between horoscope and client is such an extremely persuasive situation that it is easy for them to ignore every evidence against astrology -- as indeed it seems they have always done.

Other factors may also apply depending on the astrologer. Thus astrology has undeniable appeal, and satisfies the longing of many people to be part of an all-encompassing *whole*, to feel part of the *universe as a living entity*, and to know that one's life has a definite meaning since it is part of that living entity. For is this not exactly the Big Question for most people -- has my life meaning, why am I here, where am I going? For many, and that included me, astrology seems to provide an answer. My devastation when I discovered that this answer was a Grand Illusion should therefore not come as a surprise.

The pleasures of astrology re-visited

I have learned to live with this sobering knowledge. And, in addition, I have set up my own website (Astrology-and-Science) which is a fountain of knowledge for all those people, astrologers and skeptics alike, who wish to know more about recent scientific findings about astrology. In contrast to what hostile skeptics do, we (that is, my collaborators and myself) do not ignore the good side of astrology. We simply supply the facts as they are. And as regards astrologers, we do not consider the great majority to be charlatans, since most astrologers tend to be nice people whose only sincere desire is to genuinely help their clients.

As for me, after twenty odd years I have taken up again the reading of charts (now and then, that is), if only to experience again the wonderful feeling when such a reading turns out to be successful. However, I am not asking money for such sessions, and I tell my new "clients" in advance that I am offering them a Grand Illusion, which may be helpful nonetheless. If it is helpful, it is not because astrology itself is helpful, but because astrology sets a scene that helps me to be helpful.

Basic statements about astrology

Revising a 1983 consensus

Geoffrey Dean

An expanded version of a submission to the Discussion Forum on Basic Statements about Astrology planned for *Zeitschrift für Anomalistik* in 2005. Reproduced here with permission of its editor.

Abstract -- In 1983, Peter Niehenke, then president of the DAV (Union of German Astrologers), obtained agreement among the various German astrology groups on seven basic statements about astrology. In 2004 the German journal *Zeitschrift für Anomalistik* invited forty leading astrologers and a dozen critical researchers to update these seven statements. What changes should be made? The aim was to reach a consensus. Commentators were free to make their own judgements. According to Dean, the original statements of 1983 imply that astrology has been proven true and works for reasons unknown. Today these statements are easily attacked by critics. They do not resolve the disagreements that exist everywhere in astrology, nor do they resolve the dependance on ancient beliefs that are not sufficiently valid. They are also not necessary for the acceptance of astrology by astrologers. All of these problems can be avoided by rewriting the seven original statements as six new statements that can be summarised as follows: The historical importance of astrology cannot be denied. But hundreds of studies suggests that the chart is merely a cloud in which astrologers see faces and pronounce it miraculous. Astrology may therefore be seen as a useful fiction whose benefit to the client lies in the quality of the astrologer as a wise and caring person.

Niehenke's basic statements about astrology

My thanks to Peter Niehenke for confirming that the following summaries of the original statements made in 1983 "get the central issues quite well":

1. Astrology says the heavens at birth are meaningful.
 2. The meaning rests in the whole chart and can be read by astrologers.
 3. Astrological claims have been proved by scientific research.
 4. The actual mechanism is unknown. Seasonal effects are not enough.
 5. There are various techniques, all needing consensus and verification.
 6. Experience shows that tropical is generally superior to sidereal.
 7. The birth chart indicates potential, not actuality, and can be a guide throughout life.
- Its interpretation is based on symbolism.

Niehenke's statements are among several attempts to obtain consensus among astrologers, for example AFAN in 1988, NGPA on 1992, and my four Key Topics in 1994-1999, see **Notes 1,2,3**. In each case the outcome depends largely on the attention given to scientific research.

Memo to reader: Notes need not be referred to as they occur. They can be read more conveniently, and without loss of relevance, as a whole at your leisure once the main text has been read.

Do Niehenke's statements need revising?

Scientific research into astrology has progressed much faster (300 studies since 1980) than most astrologers realise. Today Niehenke's statements 1 and 5 still seem reasonable. Yes, astrology says the heavens at birth are meaningful; and yes, there are

still many ways to discover its meaning, all of them in need of verification. But the other statements seem in need of revision as follows:

Statement 2 (on meaning) might be better as "astrologers claim to understand the heavens." The claim that astrologers can read the whole chart seems incompatible with human cognitive skills. **Note 4**

Statement 3 (proven by science) was reasonable in 1983 when research findings seemed to support some astrological claims. But today, with improved research techniques, the findings have been found not to support astrology to the extent required. **Note 5**

Statement 4 (mechanism is unknown) might still apply if we could show that astrology provides benefits beyond those due to non-astrological factors. But studies have generally failed to show this. When non-astrological factors are prevented, astrology seems not to work. **Note 6** In which case the mechanism is not unknown, it is actually well known, albeit not to most astrologers.

Statement 6 (tropical better than sidereal) might be the experience of most Western astrologers but it does not seem to be the experience of most Eastern astrologers.

Statement 7 (potential not actual) says nothing that isn't also true of tea leaves. By definition, no potential can be shown to be wrong, and even faces in clouds could be a guide to life. The dependence on symbolism is both a weakness and a strength. **Note 7**

In summary, the original statements of 1983 imply that astrology has been proven true and works for reasons unknown. Today such claims are easily disputed by critics. **Note 8** Also, the original statements do not resolve issues such as the endless disagreements and contradictions within astrology **Note 9**, the discrepancy between astrological claims and empirical outcomes **Note 10**, and the neglect of astrology by scientists and philosophers. **Note 11** Nor do the original statements seem necessary for the acceptance of astrology by astrologers. **Note 12**

The original statements were meant for astrologers only. But I think this focus must be changed. Unless the statements are meant for critics as well, the divide will remain, and nothing will be achieved. We need new statements that accommodate the above issues and other issues such as what kinds of astrology to include.

Suggested new statements

Below I suggest six new statements meant for astrologers, researchers, and critics. The six new statements cover the claims, historical importance, disagreements, mechanism, research, and value of astrology. The reasons for my changes have already been given in **Notes 4-12**.

1. Astrologers claim that the heavens at birth are meaningful, and that they can tell from the birth chart what the heavens mean. But critics are not convinced; to them the evidence from hundreds of studies suggests the chart is merely a cloud in which astrologers see faces and pronounce it miraculous.

2. Whatever our view of astrology, its historical importance cannot be denied. For two thousand years its ideas were compatible with the best knowledge of the world then

available. But by 1700 the scientific revolution had destroyed the world view on which astrology depended. Today, modern works of science or philosophy rarely mention astrology, largely because it has been unfruitful in guiding enquiry. Which is not to say that, like poetry and music, astrology cannot provide personal and spiritual meaning.

3. Disagreements and contradictions abound. Astrologers disagree on what a birth chart should contain, how it should be interpreted, and what it should reveal. They feel it is meaningful to describe isolated factors but meaningless to test them; that sun signs are valid but a five-minute error in birth time can make all the difference. They claim success for techniques that cannot possibly be mutually true. And they have made accurate readings using wrong charts. Here are possible clues to the true nature of astrology.

4. The majority view among astrologers is that astrology operates at a non-mechanistic level. The birth chart provides personal meaning, not concrete meaning. So the reading can never be captured by rules, and the impersonal mechanistic approach of science will always fail. But critics disagree. They claim there is nothing mechanistic about testing whether a chart fits its owner, and in any case astrologers do it all the time (how else could they know whether astrology works?). Anything less must surely reduce astrology to absurdity because no conceivable outcome could prove it wrong, and no conceivable outcome could prove it right either.

5. Since 1975 advances in relevant areas (astronomy, psychology, statistics, research design) and a decisive technology (home computers) have put astrology under the microscope as never before. The results to date suggest that the benefit of astrology to a client may lie solely in the quality of the astrologer as a wise and caring person. The birth chart and the astrology itself, of whatever kind or cultural background, seem to provide merely a focus with no apparent benefits beyond those due to non-astrological factors. Thus astrology "works" without needing to be true, and what works best is whatever the astrologer likes best.

6. Astrology may therefore be seen as a useful fiction, personally satisfying but not objectively true. If astrology encourages people to explore life's problems and to express spiritual values, and if it provides a bridge between a person of wisdom and a person in need, then these qualities deserve study as much as any objective claim would.

Notes

Note 1. In 1988 the Association For Astrological Networking AFAN published a lengthy position paper on astrology in North America. It was drafted by Michael Munkasey assisted by myself and others, and was rewritten by Noel Tyl. It covered history, popularity, legal and religious issues, training, misconceptions, and scientific studies (mainly Gauquelin). It noted that such studies tended to support astrology whereas scientists still opposed astrology, therefore "astrologers seriously question whether the problem lies with astrology as a discipline or with science itself in defining what it will or will not allow as an expansion of knowledge." It also noted that in the USA "under the First Amendment [protection of free speech] there is no such thing as a false idea."

Note 2. In 1992 the Dutch Society of Practising Astrologers NGPA surveyed 19 of its members. The views they agreed on were as follows: there is an ordering principle in life; its influence can be assessed by astrology; the birth chart shows a person's inner

life, dispositions and future tendencies but not abilities, morals or IQ; the indications can be overruled by free will (Van Assem et al 1993).

Note 3. During 1994-1999 the astrological research journal *Correlation* published a series of articles under my direction in which a total of 30 astrologers (out of more than 100 invited) and 10 scientists attempted to reach consensus on key topics. The topics included an introduction in volume 12(2), the relevance of the scientific approach in 13(1), conceptual problems of astrology in 14(2), theories of astrology in 15(1), non-astrological factors in 17(2), and totalled more than 120,000 words and 200 references. For a summary see *Four key topics* on this website under Doing Scientific Research. The outcomes have been incorporated in the present work.

Note 4. Astrologers claim that isolated chart factors are meaningless because everything influences everything else; only the whole chart will do, and it must be judged holistically. Ruscio (2003) points out that holistic judgment is generally not possible because human cognitive skills are not up to it. This view is supported by a huge literature. He notes that holistic judgment "constitutes an approach to professional practice that is unnecessarily and unattainably complex, often misguided, and potentially unethical."

Note 5. For example a claimed correlation between planetary positions and radio propagation quality (Nelson 1951) was due to the close but unequal spacing of planet days, which meant that the positions were bound to occur close to disturbed radio days (Meeus 1982, Martens and Trachet 1998:174-179). Apparent support for astrology in the birth charts of married couples (Jung 1960) arose because the charts had come from the files of an astrologer, whose advice to the couples had nudged the sample into conformity; the effect did not replicate with artifact-free data (Dean 1996). Claimed success in matching charts to case histories (Clark 1961) was consistent with the use of tiny samples, typically 10 birth charts, whose disproportionately huge sampling variations were mistaken for genuine effects (Eysenck and Nias 1982:86-87), a point confirmed by later studies and meta-analysis (Dean 1986). An apparent correlation between sun signs and extraversion (Mayo, White & Eysenck 1978, Smithers & Cooper 1978) disappeared in later studies when the subjects had no prior knowledge of astrology, which showed that prior knowledge can shift a person's self-image in the direction of astrology (Eysenck & Nias 1982:50-60, van Rooij 1999). A tiny but consistent surplus or deficit of rising or culminating planets at the birth of eminent professional people in the nineteenth and early twentieth centuries (Gauquelin 1983) was consistent with parents adjusting birth data to suit popular beliefs, which in those days could easily be done without detection (Dean 2002). For a review of the progress of research into astrology since 1975, including meta-analyses of astrology versus other techniques, see Dean & Kelly (2001).

Note 6. Non-astrological factors can persuade astrologers and clients to see truth and validity where none exist. These hidden persuaders include the Barnum effect (reading specifics into generalities), cognitive dissonance (seeing what you believe), cold reading (let body language be your guide), nonfalsifiability (nothing can count against your idea), the placebo effect (it does you good if you think it does), illusory correlation (finding meaning where none exists), selective memory (remembering hits and forgetting misses), operant conditioning (heads you win, tails is irrelevant), and the Dr Fox effect (blinding you with jargon as in this sentence). A total of 34 hidden persuaders relevant to astrology are listed by Dean & Kelly (2001:199), and also in *Artifacts in reasoning* on this website under Doing Scientific Research. Each creates the illusion that

astrology works, and none require that astrology be true. In technical terms hidden persuaders can be described as "statistical artifacts and inferential biases."

Astrologers invariably teach astrology without reference to hidden persuaders, which is like teaching arithmetic without reference to multiplication. Hidden persuaders explain why tens of thousands of Western tropical astrologers can say that in their experience Scorpios really are intense, while hundreds of thousands of Eastern sidereal astrologers can look at the same piece of sky, which they call Libra, and agree that in their experience it is not intense but relaxed. And what goes for signs goes for all the other factor over which there is disagreement, which is most of them. For more on hidden persuaders and how to avoid them, see Dean, Kelly & Mather (2002), and Gambrill (1990).

When hidden persuaders are prevented, astrology generally fails to work, as for an American astrologer who publicly challenged skeptics to test his predictions of appearance (Ianna & Tolbert 1985), a French astrologer who claimed to diagnose medical conditions (Gauquelin 1987), and when guessing sun signs was found to depend on cue leakage (Dean 1983). Offering cash prizes made no difference. For example the \$US5000 superprize was offered for "convincing evidence that the accuracy of chart interpretations cannot be explained by non-astrological factors"; of 34 entries from 7 countries only one was successful, but this was a fake entry entered to test the allegation that the prize was unwinnable (Dean & Mather 1985; Dean, Mather & Kelly 1996:71). In 1927 thousands of US astrologers attempted to win \$US1000 (then roughly the average annual wage) by correctly describing three people from their birth data, but the result was conspicuous disagreement -- "they not only contradicted themselves, they were unanimously unsuccessful in describing the three people" (Miller 2002). More examples are given later in note 10.

Note 7. In medieval times people believed that events occurred not by cause and effect (which was a notion unknown before the 17th century) but by mysterious forces and invisible beings, notably God and Satan, including planets "the great visible gods." Nothing was morally neutral, and nothing was actually explained except in religious terms. Thus famine and pestilence had no explanation except as punishment for sin. But people also believed that everything in the cosmos was joined by a process called correspondence, so that things could be understood by looking at whatever corresponded to them. Thus man was just a smaller copy or microcosm, of the larger universe or macrocosm, and for every part of the human body there was a matching item in the macrocosm. For example the four humours were matched by the four elements, and in cases of ill health (thought to be caused by an imbalance of humours), it was normal for the physician to consult the heavens for guidance.

The same symbolism underlies astrology today. Thus Mars the red planet indicates blood, anger and war, and by extension anything vaguely red, hot, or aggressive. This has the advantage of flexibility, of being easily adjusted to fit the facts. On the other hand we have no way of knowing where to stop. Is Mars unfortunate because blood = war/death or fortunate because blood = life? Furthermore this kind of reasoning is now known to be fallacious. No longer do we believe, as Aristotle did, that death can occur only at low tide. No longer do midwives open the door to ease a painful labour. As noted by former astrologer Terry Dwyer (1986:98) "Symbols are ten a penny; reality is harder to come by." For example the Water element might manifest as ambergris, breasts, crabs, fluctuation, gardens, ink, insecurity, the Moon, music, navigation, Neptune,

pearls, poetry, pumpkins, sensitivity, tridents and turquoise, to mention only a few, all to do with the watery principle. Can an educated person really believe this?

Many other problems, contradictions and anomalies of astrological symbolism have been identified by Kelly (1997), who concludes that astrology lacks the conceptual resources needed to deal with them. Instead it proceeds by "rhetoric, hyperbole, and bluff", becoming a kind of psychological chewing gum, satisfying but ultimately without real substance. For example former astrologer Charles Strohmmer (1988) notes that when astrologers talk about planets they are actually talking about planetary gods; so the principles of astrology have "nothing to do with planets but with superstitions and imaginings relating to mythical deities... The imaginary-ness of what is behind what is being said is overlooked. It is covered up." A sort of Astrology-gate.

Astrologers respond to such criticisms in two main ways. (1) They argue that astrology need not rely on symbolism. That is, the planets could work directly via geomagnetic effects or pineal effects or Bertalanffy's systems theory or Bohm's implicate order or Pribram's holographic order or Sheldrake's morphic resonance or Tiller's higher dimensions (and so on). Which is like arguing that levitation could explain why airplanes fly. Until the steps in the argument are spelled out and validated empirically, it remains circular -- astrology is made possible by the kind of thing that, if it existed, would make astrology possible. Also, how could direct influences work when the subject is a company or a country or a question? Indeed astrologer Robert Hand (1988) argues that an astrology based on direct influences would no longer be astrology.

(2) They argue that such criticisms miss the point; what matters are the images conjured up by astrological symbolism, which can then be used to help the client. So imaginary-ness and even contradictions are of no consequence. Thus Koch (2002) argues that contradictions such as Mars = life or death lead to new images, something not previously there, which (he says) is useful.

Similarly Niehenke (2002) points out that, unlike Eastern astrologers, most Western astrologers see the chart not as a schedule of fate but as a guide to becoming oneself. It shows not the facts but what they mean to that person; not money but what money means (is it security, material possessions, social position?); not where the person is but where they should be going. Reconcile a person with their nature and harmony will replace distress. But what if reconciliation means moral dangers? What if harmony for an afflicted 12th house means hurting others? The answer, says Niehenke, is to adjust the reading to avoid such things. Adjustment is not difficult because chart symbolism is always flexible, especially when contradictions are present. But to be effective the astrologer will need empathy, wisdom and experience.

Most astrologers would agree with Niehenke. Cornelius et al (1995:93) say "Use whatever you know about the person as the context to flesh out the symbolism." Noel Tyl (1975:1) says "it is the human being who makes astrology work and *not* the planets or their symbols." You can forget about technique because "a question to the client [about what the chart means] will provide the answer. Time and time again, individuals ... will reach beyond even the wildest established orb to create a supportive aspect between two symbolic energy dimensions, to make things happen in a specific way at a specific time" (pp.132-133). Jacques Halbronn (1995) puts it even more directly: "You must understand that astrology is a means of communication, not a source of knowledge ... You must scramble the tracks, note the contradictions, play the subtle planetary mixtures, and choose whatever best fits the client ... [For] the birth chart cannot tell you

about a client. At best, it merely provides a focus that allows therapy by conversation to proceed ... Without imposing morals on your client, you are there to reconcile him with the world of men, not to reconcile him with the stars. In fact you should here ignore astrology altogether." In such a situation, as pointed out by Niehenke (1989), the astrologer needs empathy, wisdom, and experience of life.

In effect the client makes the chart work by choosing hits from unrestricted guesses and general ambiguity, which hits are then put to good use by the astrologer. Put that way, the process seems ludicrous. But it succeeds because an essential feature of astrology is ignorance about what is really happening. All we need for success is to know the symbolism in advance (which is what learning astrology is all about), and to remain resolutely ignorant of hidden persuaders (ditto). Or as Terry Dwyer (1986:99) puts it: "Clients are incredibly gullible (almost as gullible as astrologers) and will accept anything provided we deliver it as if we knew what we were doing. Several astrologers (myself included) have conducted experiments where the interpretation of a completely wrong chart has been accepted willingly as a true description. ... It is well-known that ingenious astrologers can read anything they want from any chart, indeed you have only to read the *Astrological Journal* or *Transit* for a few issues to see them doing it." In other words (to summarise a rather long note), astrology does not need to be true. This point is recognised by some astrologers, for example Rudhyar (1979), and is followed up in the next note.

Note 8. Claims of truth and unknown mechanisms in astrology are easily disputed by reference to the hidden persuaders discussed in note 5. Testimonials that "astrology works" are of no avail, as can be seen if we look at phrenology (predicting from head shape), which in the 19th century was more popular than astrology is today. Like astrology it encourages you to assess yourself via its principles to achieve harmony with the world. Like astrology it attracted people of intelligence and a vast literature wherein every criticism was furiously attacked. Like astrology it flourished because practitioners and clients saw that it worked. Many thousands of testimonials based on experience attested to its accuracy and value as in the following examples:

"35,000 testimonials" says a large sign in the window of a London phrenologist (pictured in Parker & Parker 1988). "I never knew I had an inventive talent until phrenology told me. I was a stranger to myself until then" said Thomas Edison, inventor of the telegraph, phonograph, incandescent lamp, and many devices for distributing electricity. "The phrenologist has shown that he is able to read character like an open book, and to lay bare the hidden springs of conduct with an accuracy that the most intimate friends cannot approach" said Alfred Russel Wallace FRS, one of the most eminent scientists of his time and co-founder with Charles Darwin in 1858 of the Theory of Evolution. "Not to know yourself phrenologically is sure to keep you standing on the Bridge of Sighs all your life" said Andrew Carnegie, steel magnate and creator of the Carnegie Peace Fund. (All quoted by Severn 1913).

Few testimonials for astrology have reached this level. Yet we now know that the claims of phrenology are wrong, and that a certain head shape cannot mean what it is supposed to mean. So the above testimonials say nothing about truth and everything about hidden persuaders. The implications for astrology should be obvious. As noted by Dean & Mather (1985): "Astrologers are like phrenologists: their systems cover the same ground, they apply them to the same kinds of people, they turn the same blind eye to the same lack of experimental evidence, and they are convinced for precisely the same reasons that everything works. But the phrenologists were wrong. So why

shouldn't critics conclude for precisely the same reasons that astrologers are wrong?" That was twenty years ago. To date there has been no response from astrologers, which to most critics will speak for itself. The common claim that astrology is unassailable (because it is experience-based) is mistaken -- its supposed strength is actually its weakness.

Note 9. Astrologers themselves have noted how "In astrology there are many grandiose claims, endless arguments between astrologers, but little testing. Which is understandable -- astrologers can make more money telling fortunes than doing research, and they make no enemies by adopting the view that all techniques are equally valid" (Conrad 1997). Speculations are "accepted uncritically without question" (Nolle 1980). Even in horary astrology experience-based opinions tend to disagree, so "something is wrong with the way most astrologers draw conclusions from experiences" (Van de moortel 2002). Even after twenty centuries of practice, astrologers still cannot agree on what a birth chart should contain and how it should be interpreted. They do not even agree on what a birth chart is supposed to indicate. Fifty years ago they tended to settle for minds, feelings, physique, health, wealth, vocation, relationships, events, destiny, or mostly everything. "There is no area of human existence to which astrology cannot be applied" say Derek and Julia Parker in their astrology bible *The Compleat Astrologer* (1975:60). Today the astrologer seems to have retreated in the face of research, settling instead for hidden potentials and other unobservables that are more secure from disproof. But the problems don't end there.

In 1973 the US astrologer Zip Dobyns noted that "astrology is almost as confused as the earthly chaos it is supposed to clarify" (Dobyns & Roof 1973). In 1986 nineteen well-known US astrologers concluded that US astrology was in a sorry state, plagued by bickering, and ignorant of relevant disciplines; the main need was for thorough testing and scientific research (*Astro*Talk*, May/June 1986). The confusion is made worse by glaring contradictions: Astrologers have claimed that it is meaningful to describe isolated factors but meaningless to test them; and that newspaper horoscopes are valid but a five-minute error in birth time can make all the difference. They cite Gauquelin but never his conclusion that "the majority of the elements in a horoscope seem not to possess any of the influences which have been attributed to them" (Gauquelin 1991). Indeed, "techniques that cannot possibly be simultaneously true will do equally good jobs of interpreting the chart" (Hand 1988). And "some of the best readings have been with wrong charts" (Phillipson 2000), a point confirmed by Dwyer (see end of note 7).

More contradictions are discussed by Kelly (1997), who notes how most astrologers ignore the confusion, defend their beliefs to the point of silliness, and show no interest in research. The same view is held by US researcher T Patrick Davis (1997), who introduced Astro Sleuthing Contests aimed at reaching consensus on what works best in astrology. Each contest was based on a case similar to those commonly encountered, had clear-cut outcome, and had birth data of the highest quality. Six contests held during 1992-94 confirmed that astrological methods were in a state of "total confusion." Astrologers whose methods clearly failed continued to use them, while superior methods were ignored. Further contests had to be abandoned due to lack of interest. As Davis noted, "this is no way to run a 'profession'."

Note 10. Meta-analysis of more than fifty controlled studies suggests that astrologers are unable to perform usefully better than chance even on the more basic tasks such as predicting extraversion. Those who claim to use psychic ability perform no better than those who do not. The results are no better when astrologers design the tests. Meta-

analysis of twenty-eight studies suggests that astrologers do not usefully agree when interpreting the same charts. See *Case for and against astrology* on this website. A test of 2101 persons born less than 5 minutes apart found no hint of the similarities predicted by astrology (Dean & Kelly 2003). Astrologers typically counter such findings by misreporting them, often to an absurd extent, for examples see Dean & Kelly (2004); or by arguing that chart interpretation is not a one-way process (A means B) but a two-way system where person and interpretation interact (A may not mean B after all) so nothing is definite enough to be tested, which cannot be true because it would stop astrologers knowing anything about astrology; in psychology the problems of interaction have not hindered testing, eg see Buss (1977). Equally implausible are appeals to the difficulty of research, which cannot be true when astrologers are so easily convinced that astrology works.

Astrologers also claim that researchers get negative results because they are ignorant or hostile. But when Niehenke (1984) gave 3150 German subjects a 500-item questionnaire designed to test astrological claims, the results were completely negative even though he was a professional astrologer and president of the DAV (Union of German Astrologers). For example subjects with four Saturn aspects (which are supposed to indicate heavy responsibility and depression) felt no more depressed than those with no Saturn aspects. To claim that Niehenke's astrology stopped working just because he changed hats clearly won't do; a much more plausible explanation is provided by hidden persuaders. Niehenke (1996:55) notes that "The only support left for our conviction that astrology works is our success in the counselling situation ... As long as the processes characterizing this counselling situation are not fully understood, research in astrology will continue to stagnate." This is precisely where hidden persuaders come in. Until astrologers themselves address hidden persuaders, their 2000-year-old quarrels (about how astrology works, whether other realities apply, why critics are always wrong, and so on) would seem to be premature. Like invoking the end of the world to explain a power cut.

Note 11. Astrologers see astrology as a better model of reality than alternative models, and attribute its neglect by scientists and philosophers to prejudice and vested interests. In fact astrology is neglected largely because it has been spectacularly unfruitful in guiding enquiry, and because astrologers never say precisely what their model predicts, the criteria by which it could be tested, and the evidence they would accept as showing it had failed. As will be apparent from the preceding notes, findings in the relevant areas of astronomy, biology and psychology seem to deny that astrology could work in the way claimed by astrologers; the findings also suggest plausible non-astrological reasons for supposed astrological effects; and they provide competing theories that have more explanatory power and are more consistent with other areas of science. The renowned biologist Edward Wilson (1998), in a sensitive wide-ranging and beautifully-written book, shows how the explanations most likely to survive in art, science, and religion are those that are consistent with each other. In his view astrology is a pseudoscience built on faith in sympathetic magic, personally satisfying but with neither the ideas nor the means to contribute anything to a genuine unity of knowledge. The philosopher Bernulf Kanitscheider (1991) notes that criticism of astrology is pointless because "astrology fills an emotional human need ... the motivating force behind astrology has always been a person's need to deal with life."

Note 12. In principle astrology can provide benefit in two separate ways: (1) Because it is *meaningful*; its ideas have beauty and depth that provide spiritual support in a chaotic world, just as they did in medieval times. (2) Because it is *true*; people with X in their

charts really are more X-ish than those without X. Astrologers tend to argue that, because astrology is meaningful (item 1), astrology is also true (item 2). But (1) and (2) are not related. In their day bloodletting and biorhythms and phrenology were seen as meaningful even though (as we now know) they were untrue. To be meaningful they did not need to be true. The same applies to astrology. By keeping (1) separate from (2) we can avoid the problems due to invalid beliefs, disagreement, and so on, simply because they are no longer relevant. Just as we accept that myth, poetry and fiction can enrich our lives without needing to be true, the same with astrology. This view is supported by Weidner (2002), who argues that astrology should be accepted as a useful fiction.

Failure to keep (1) separate from (2) creates much unnecessary dispute even between astrologers. For example in 1997 a 4400-word internet debate between Michael Erlewine (USA) and Christine Turner (Australia) can be summarised as follows. Erlewine: Techniques that work for one astrologer do not work for another because astrology is an oracle with elaborate rituals. That the rituals differ is of no consequence, it is the reading we are after. What matters is what we experience and what we learn about ourselves. Turner: A chart is like a piece of sheet music. People may play the music differently but the melody and harmonies do not change. The same applies to astrology otherwise it becomes useless. Why bother learning to play if we cannot get the melody right? Note how the debate boils down to Erlewine's quest for meaning (astrology need not be true as long as it feels good) versus Turner's quest for truth (astrology needs to be true otherwise why bother?). Similarly Willis & Curry (2004) devote many pages to abstruse attacks on scientific tests of astrology, all based on their belief that astrology is to do with meaning, not facts. But their attacks are meaningless, simply because they fail to keep (1) separate from (2).

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The Concepts of Modern Astrology A Critique

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This 2005 update has a few minor additions and improved section headings and sub-headings.

Abstract -- Most research reviews are concerned with empirical findings. This one takes astrological concepts, the ideas on which astrology is based, and submits them to expert critical thinking. It covers recent shifts in astrological ideas, how astrologers avoid dealing with criticism, and the problems associated with (in turn) the fundamental assumptions of astrology, the origins of astrological ideas, modern psychological astrology, astrological world views, astrological symbolism, non-falsifiability, and magical influences. To be plausible astrology needs sound ideas with sound origins, and sound methods for verifying those ideas. But none of the possible origins of astrological ideas (revelation, paranormal, analogy, observation, theory) are plausible. Astrologers can explain away wrong chart interpretations by blaming the symbolism, chart factor, method, data, astrologer or client. They can also dismiss the interpretation as misguided (it used to be visible events, now it is invisible inner meaning). So astrologers could never know if astrology was wrong or which of their explanatory theories could actually apply. Central ideas such as "as above so below" and "interconnectedness" and the "whole chart" are too poorly developed to amount to anything useful. There is little agreement on basic issues and on how to resolve differences among astrological techniques and ideas. Astrological symbolism is unsystematic and based on metaphors, analogies, verbal associations, and mythology, which are developed in different ways by astrologers with no clear way of evaluating them. The philosophies and worldviews associated with astrology are underdeveloped or poorly described. Consequently astrology does not have, and never will have, the resources to put its house in order. Astrology seems quite unlikely to deliver anything beyond what non-astrological factors (eg cognitive and perceptual biases) can account for. With copious quotes from leading astrologers and nearly 250 references.

This critique of the concepts of modern astrology is long and detailed. It looks first at the awareness of problematic concepts, recent shifts in astrological ideas, and how astrologers avoid dealing with criticism. It then looks at the problems associated with, in turn, the basic ideas of astrology, the origins of astrological ideas, modern psychological astrology, astrological world views, astrological symbolism, non-falsifiability, and magical influences. My conclusion is that astrological concepts are deeply problematic from beginning to end, and that astrology will never have the resources to put its house in order.

1. Awareness of problematic concepts

Since Newton, the views of astrologers and scientists have become increasingly opposed. Astrologers today still hold that the connection between celestial and earthly phenomena is so strong that knowing the heavens allows us to explain and/or predict the earthly happenings. But scientists and philosophers disagree. The terrestrial and cosmological sciences, including the life sciences and social sciences, even though no less interested in extraterrestrial relations with earthly events, do not provide any support to these realms of our existence as advocated by astrologers (see Kelly & Dean 2000). **Note 1**

Memo to reader: Notes need not be referred to as they occur. They can be read more conveniently, and without loss of relevance, as a whole at your leisure once the main text has been read.

Furthermore, the symbolism, mythology, analogies, metaphors, and verbal associations that underpin astrological claims are fraught with very problematic methodological issues. For one thing, much of astrological lore conflicts with what we have discovered about the solar system. The planet Venus is associated with aesthetics, love, and an individual's sense of internal harmony. However, we now know that Venus is more like Hades with its blistering high temperatures, lava-covered landscape, and sulphuric acid clouds. It is even hotter than Mercury, although twice as far from the sun.

The point is that most of the symbolism modern astrologers use was created in times when the then astronomer/astrologers had no idea whatever about the physical characteristics of the planets. There is little worldwide agreement on central tenets of astrology, let alone agreement on how astrological issues can be resolved. Surveys of research into astrology have provided no evidence that astrology does work, at least not in the way and to the extent claimed by astrologers.

Facts are hard to find

Of course, every time we wake up with the sun, or plan barbecues on moonlit nights, or go fishing at high tide, we are showing how celestial bodies have real impact on our lives. But this is very different from the symbolic connection claimed by astrologers. Other channels of relationship might exist and science is certainly open for unexpected discoveries (including celestial effects on human behaviour). But in the sciences, tradition and authorities are not deified as they are in astrology. Astrologers (unlike scientists), in general, can be characterized as less interested in discovering the truth of their assertions, and more interested in making a case for propositions already accepted in advance (check out magazines like *The Mountain Astrologer* or astrological web sites like Stariq 2000).

Leahey & Leahey (1983) note that "Most popular works on astrology today do not even attempt to defend it but simply teach their readers how to use it" (p.39). Similarly, Nias & Dean (1986) note that "nobody should be surprised to learn that the hardest things to find in astrology are facts" (p.357). But if you know where to look they can certainly be found.

Emergence of critiques

Before 1950 very few scientific studies of astrology existed. Most critiques of astrology over the centuries focussed on the problematic nature of astrological theory or the gap between the claims of astrologers and their actual performance (Long 1982). Something like a dozen major statistical compilations by astrologers had appeared since 1900, notably in France, Germany, England and the USA, but none were widely known, and in any case their methodology was too poor (eg no controls) for meaningful results. Not surprisingly, the few published critiques were confined mostly to historical surveys (eg Thomen 1938, Bok & Mayall 1941; Eisler 1946). The only extensive scientific critique available was by the French astronomer Paul Couderc (1951/1974).

Then in 1955 Michel Gauquelin published his landmark *L'Influence des Astres*, the first rigorous study of astrological claims, with generally negative results but with what seemed to be provocative exceptions (Gauquelin 1955). The research interest that Dean and Mather (1977) stimulated led to the foundation in 1981 of *Correlation*, an international peer-reviewed journal devoted entirely to scientific research into astrology, followed in 1982 by *Astro-Psychological Problems*, oriented more to Gauquelin interests.

Enter computers

By then the advent of home computers in the late 1970s had revolutionized astrological practice and research. Calculating a birth chart (as well as the often required complementary charts, such as progressions, transits, etc.), once took anywhere from an hour to a day; now it could be done in seconds, allowing researchers to do studies that were previously unthinkable.

Today there is a scholarly research base that covers most of the basic claims of astrology. Even sun sign columns have been tested (Dean & Mather 2000). The outcome from all this, in what probably amounts to well over two hundred person-years of research, is almost uniformly negative (Dean, Mather & Kelly 1996). Unfortunately, much of this work is neither widely known nor easily accessible.

Critiques since 1980

Critiques of astrology in the light of research findings, post 1980, include those by psychologists Eysenck & Nias (1982), astronomers Culver & Ianna (1988), Crowe (1990), skeptics Martens & Trachet (1998), and Bible scholars Ankerberg & Weldon (1989) and Bourque (1997). The most recent reviews and the first to include meta-analyses are by Kelly, Dean & Saklofske (1990) and Dean, Mather & Kelly (1996). Critiques of philosophical, religious or social aspects of astrology include Kelly & Krutzen (1983), Leahey & Leahey (1983), Thagard (1980), Kanitscheider (1991), Dean (1992), Dean & Loptson (1996), Kelly (1998), and Spencer (2000).

Reviews of the arguments of astrologers include Kelly, Culver & Loptson (1989), Dean, Mather & Kelly (1996), Dean (1997), and Kelly (1999, 2000). Theories of astrology (including Jung's synchronicity theory) are critically examined in Dean, Loptson & Kelly (1996) and Dean, Ertel, Kelly, Mather & Smit (2000). Descriptions of the Gauquelin work include Gauquelin (1983 1988), Ertel (1992) and Dean (2000), for the most recent

description see this website under Gauquelin. The cognitive and perceptual biases that can underlie belief in astrology are briefly reviewed by Dean (1992) and in detail by Dean, Kelly, Saklofske & Furnham (1992), and Dean, Kelly & Mather (1999).

The social-psychological reasons for belief in astrology are described by Durant and Bauer (1997), Lindeman (1998), and astrology along with other paranormal phenomena in Goode (2000b). Recent critiques of the occult that cover astrology include Couttie (1988), Hines (1988), and Neher (1990). There is of course an extensive and ongoing literature on the history of astrology, for example ancient astrology (Baigent 1994; Barton 1994; Stewart 1996), medieval psychology (Kemp 1990), pre-19th century astrology (Tester 1987, Spencer 1997), and 19th century astrology (Curry 1992). The recent scholarly journal *Culture and Cosmos* edited by Nick Campion is an important contribution to the history of astrology across the world.

Why the present article?

Since the mid-1970s psychology journals have averaged a total per year of about two empirical studies of astrological claims, plus an equal number devoted to related topics such as the acceptance of astrological statements or the prevalence of belief in astrology, all of them easily accessible via PsycLIT, the American Psychological Association's computerized abstract database. But for every such empirical study there are at least four more of equal quality in journals not accessible via PsycLIT. Fortunately most of the major reviews listed above cover this wider information base. On the other hand, the reviews are generally more concerned with empirical findings than with paradigms and conceptual arguments. The present article focusses on the latter, and brings together previously scattered material.

2. Recent shifts in astrological ideas

Classical (traditional) astrology was associated with prognostication and relatively specific, testable hypotheses about planetary configurations and human activities (Barton 1994; French 1996; Genuth 1997; Grafton 1998). Until the twentieth century, astrologers have held that the stellar connection mainly reflected actual outward human behaviour, but today among the influential group of psychological astrologers there is the tendency to put main weight on Jungian archetypes and (usually psychoanalytic) structures underlying personality. To appreciate the shift in claim, consider first the view of Charles Carter, who was the leading British astrologer in the mid-twentieth century:

Practical experiment will soon convince the most sceptical that the bodies of the solar system indicate, if they do not actually produce, changes in: (1) our minds. (2) Our feelings and emotions. (3) Our physical bodies. (4) Our external affairs and relationships with the world at large (1925, p.14).

Although every birth chart was different, and many astrological factors had to be assessed (often with mutually conflicting indications) it was conceded that there was an observable, relatively specific something in common that should be exhibited by people with a particular planetary configuration in their birth chart (horoscope). As the Dutch psychologist Jan van Rooij points out:

If one takes 100 people with the sun in Aries, they should have something in common, irrespective of other astrological factors. And this commonality should be different from the common factor in 100 people with the sun in Taurus, irrespective of additional factors (1994, p.55).

On this basis we should not expect to see the influence of a particular factor on a particular person. But examining large groups of people should allow commonalities to be detectable, if they exist.

Modern ideas

Contrast the above with the views of psychotherapist and astrologer Dr Glenn Perry, one of the leading proponents of modern psychological astrology (also known as astro-psychology and archetype astrology) in the United States today:

Astrology does not deal with quantities that can be objectively measured ... the [birth] chart depicts the structure and dynamics of consciousness ... [it] shifts the emphasis from predicting outcomes to interpreting the meaning of outcomes as they relate to the inner life of the person (1993, pp.7,8,9).

Further, "astrology only plays a role in the mental plane and does not express itself consistently or systematically in events or behavior" (Terpstra 1994, p.42). Here Carter's direct connection with outward behaviour and external events is played down. Instead the emphasis is with theoretical psychic structures that are symbolically connected to the planets. **Note 2**

In the latter half of the twentieth century, many astrologers thought scientific investigations could confirm many of the claims of astrology. Since the 1950's many studies were conducted by both astrologers and researchers sympathetic to astrology. The picture that emerged out of this research, as pointed out, was mostly bad news for astrology. But negative studies, even when they are cumulative, have been explained away and dismissed in many different ways by astrologers, such as the stars incline but not compel, or the astrologer or the technique is not infallible, allowing them to maintain their belief in astrology whatever the evidence or criticisms (see Kelly 1998).

3. Dealing with criticism the astrological way

Reactions to bad news in the astrological camp include ignoring it, moving the goalposts, retreating into metaphor, invoking subtlety, being dogmatic, blaming faulty methods, and assuming the truth. In more detail these strategies are as follows:

Ignore bad news

First of all, bad news and unwelcome findings can be ignored or played down. As the astrologer Robert Hand tells us, "Positive results in the scientific study of astrology have to be taken seriously undeniably, but negative results not so seriously" (cited in Perry 1995a, p.37). Overall, this has been the dominant response by the astrological community.

For example this tack is taken by John Anthony West in his *The Case for Astrology* (1991) where he says "Since the aim of this book is to present the positive evidence, intimate details of the bulk of the negative evidence do not really concern us" (p.234). But nearly all the evidence is negative or not commensurate with astrological claims, so West's deliberate suppression of it is irresponsible (Dean 1993). A visit to any astrology bookstore will quickly confirm that research into astrology is rarely cited and when it is, it usually only involves a distorted presentation of the Gauquelin findings (Kelly & Saklofske 1994) **Note 3** and an outdated reliance and misinterpretation of studies examining alleged lunar effects on human behaviour (see Kelly 2000, for an analysis of astrologers' misconceptions regarding lunar studies, and Kelly, Rotton & Culver 1996 for a recent review of lunar effect studies). **Note 4**

Move goalposts

Criticisms and serious long lasting anomalies can also be dealt with by hand-waving in another direction and the elevation of speculation to a futuristic higher plane. For example, a serious problem for astrology is the great divide between the Eastern Sidereal zodiac and the Western Tropical zodiac. These zodiacs currently differ by almost one sign. One may be an Aries in North America but a Pisces in India (Cornelius, Hyde & Webster 1995, p.31). Is this conflict between zodiacs a problem for astrology? Cornelius et al tell us this could occur because there are "two different orders of influence, one from the constellations and the other from the earth-sun cycle" or, alternatively, we can view "both zodiacs as two reflections of the same symbolic forms ... [that] both show in their own different ways" (p.32). The obfuscations "orders of influence" and "reflections ... showing in their own ways" are nowhere clarified, hence we are no further in our understanding after being told this than we were before. **Note 5**

Retreat into metaphor

What about people who are born at the same time and have different destinies? This has long been a standard argument against astrology. The same astrologers tell us: "The singular horoscope [can be] read as a signature for these particular twins with different groups of planets describing the two individuals ... where frequently one twin answers to the sun and the other to the moon in the same horoscope" (Cornelius et al 1995, p.131). Here the term "frequently" refers to inclining not compelling, to avoid disconfirmation. **Note 6** We are also entitled to ask how one would tell which one is sun and which one is moon, but no answer is provided. **Note 7**

If that doesn't work, Cornelius et al remind us that we can always interpret astrological symbolism in a metaphorical way, for example, "Sigmund Freud was born on a different continent but within minutes of Robert Perry (sic). Freud discovered the unconscious and Perry (sic) discovered the North Pole" (p.131, see also p.96). Hence, these time-twins were both discoverers! **Note 8** If interpretations encompassing both literal and symbolic (including metaphorical) are equally admissible with astrological claims, then we cannot fail to find a fit between the horoscope and the person. The positive side to this is never having to admit you are wrong, the negative side saying very little of import.

Invoke subtlety

A fourth popular response is to say that the phenomena astrology deals with are very subtle and elusive, and what is needed are more creative ways of investigating them. For example, even though a large, consistent body of research converges on the view that sun signs are not valid (Dean & Mather 2000), the astrologer Harvey could still say "It is absolutely correct to say that there is no evidence for signs and houses *as yet* ... (1982, p.47, italics Harvey's) and twelve years later, after acknowledging an even larger body of negative studies, tell us "I am personally still convinced that, given more sensitive and imaginative tests, confirmation of the reality of sun-sign typologies, and the signs generally, will be obtained" (1994, page v) **Note 9**.

Similarly, after finding no relationship between gender dysphoria and astrological factors, Anderson (1997) tells us "*Somewhere* the astrological signature *must exist* predicting that at some time during the native's life this devastating upheaval will take place" (p.106, italics mine). Since it is difficult to prove a negative in such cases, this position can be maintained indefinitely.

Be dogmatic

A further point is that astrologers with incompatible positions on fundamental tenets can

adopt the same dogmatic attitude in regard to their own beliefs. Such a posture in the face of negative evidence can guarantee a static system and a lack of progress. The astronomers Culver & Ianna (1988) see this posture as so pervasive among astrologers that they have characterised astrology as "The Gemini Syndrome", the confident use of glaring inconsistencies, after the two-faced nature of Gemini. If scientists had adopted similar attitudes in the face of negative studies and argument, physics would still be Aristotelian.

The posture that more sensitive tests are needed also contradicts the supposed ease with which astrological connections were first recognized. As Perry (1993) tells us of the ancients, "the partial if not complete validity of astrology was self-evident to anyone willing to attempt a serious study of the subject" (p.3). This contradiction is in need of explanation. Furthermore, appeals to the self-evident have not been very fruitful guides to truth in the history of ideas.

Blame faulty methods

Finally, one can say, that if researchers are obtaining negative results, they must be doing it wrong. They are using the wrong methodology, the wrong paradigm or both. This approach has been adopted by increasing numbers of astrologers since the 1950's, when research (and negative results) got underway. West (1991, 1996), for example, contends that scientific criticisms of astrology are irrelevant because astrology is "a system of magic" (p.223), where magic is "the attempt to master the fundamental laws of resonance that have produced the cosmos" (p.220). He is insufficiently explicit about this "system of magic" and we are left with a conjunction of unformulated statements about "the creative powers of nature", or the "laws of harmony" and appeals to "ancient wisdom". West (1991, pp.222-223) attributes the symbolic planetary manifestations on earth studied by astrologers to the interactions of poorly understood fluctuations in physical fields around the planets, with even less understood, metaphysical "rarefied realms" higher than our own. He says:

it is Heka, Magic, the Principle of Correspondences that sees to it that Divine Inspiration (Will or Intention), made manifest in the planets, transmits itself ... in subtle frequencies and amplitudes. These in turn produce fluctuations in electromagnetic or geomagnetic fields ... as yet not clearly understood or specifically identified but whose existence is acknowledged. These fluctuations are physical in a sense directly analogous to the fluctuations in the air, the sound waves, that the ear interprets as music, or the eye interprets as color. In this case, those fluctuations represent celestial harmonies, and they manifest on earth as "meaning". The study of this meaning is astrology.

West's "direct analogy" between hearing and vision and astrological meaning is deeply flawed. The dissimilarities between the two things being compared are far more significant than any similarities. We have a great deal of knowledge of sound and colour waves. For example, we know about the receptors involved, and the areas of the brain associated with these senses. On the other hand, we have little idea what the phrase "fluctuations representing celestial harmonies" means, nor can we identify methods which would allow us to reliably distinguish different fluctuations from the planets and asteroids, let alone understand how the frequencies and fluctuations would relate to hypothetical planets, nor identify what receptors are involved.

Assume truth

Further, while we have some understanding of how sound waves are related to pitch etc and are interpreted as music, we are provided with no parallel how we can reliably interpret or identify these fluctuations as descriptive of our love lives, or financial lives, let alone future possibilities, or how such "celestial harmonies" could lead to the claim that the herb Cayenne is ruled by Mars. Furthermore, while our sensory capabilities vary

among people, and our sensory abilities decline with age, there is nothing analogous with people have differing sensitivities to astrological effects, or our responsiveness to astrological influences declining with age. As Evans (1994) points out, West's

magical system is a closed system. We are invited to believe that it is true, not because it connects up with other things which experience has shown to be true, but by some inherent truth of its own which will have it that the planet Saturn symbolizes contraction whereas Jupiter symbolizes expansiveness (p.413).

While, in general, astrologers give the impression that claims about zodiacal signs, houses, planetary aspects, and so on are empirical statements (that is, claims capable of being rejected or modified by research or theory), to most astrologers such claims actually function as necessarily true claims (Kelly 1998). The truth of central astrological tenets are themselves never in doubt. **Note 10**

4. Problems with the three basic ideas of astrology

Here I examine three basic ideas of astrology, namely *as above so below*, the *interconnectedness of things*, and *only the whole chart is meaningful*. I will look at each in turn. Other ideas such as those about what the birth chart actually indicates, will be looked at later.

Idea 1: As above so below

The vague relationship *as above so below* postulated by astrologers between celestial and terrestrial phenomena is correlational not causal. As former astrologer Joanna Ashmun (1998, p.6) points out:

The basic notion of astrology is *as above, so below*. It's been elaborated to mean a lot of things, many of them goofy, but its basic meaning is that the heavenly pattern is reflected in the individual, as if the horoscope is somehow embedded in the person. It's just assumed that there is an identity between the natal pattern and the person.



The notion *as above so below* is based on a statement in the famous alchemical document *Emerald Tablet*, dating from around the 9th century. The statement supposedly expresses a macro-micro cosmic unity, the basis of astrology, but ironically it is a mistranslation of an earlier Arabic version that has nothing to do with cosmic unity. According to Merkur (1990), the authentic statement originated among alchemists and refers to distillation. The Arabic original is "That which is above is from that which is below, and that which is below is from that which is above" (p.36), meaning that the distilled vapours *above* are from the liquid being heated *below*, whereupon they condense and return to the *below* again, as in the adjacent woodcut. On this basis the supposedly transcendent core notion of astrology is actually pure physics!

Traditional astrology usually adopted the notion that the relationships between celestial and terrestrial affairs was a causal one. As Placidus said in 1657, "It is impossible for the efficient heavenly causes (as being so very far distant from things below) to influence sublunary bodies, unless by some medium or instrumental virtue ... the instrumental cause of the stars is light", and "the stars, where they do not rise, are inactive", so astrologers should "reject a secret influence as superfluous, nay, even impossible" (pp.1,3).

Most modern astrologers reject this causal approach **Note 11**. Perry (1994) tells us that the relationship between people and their birth charts is only correlational. The astronomical bodies reflect human life experiences rather like a mirror reflecting a landscape which has to be interpreted. But there is much disagreement over the kinds of celestial configurations that are relevant, and how they are to be interpreted.

Disagreement is the rule

In fact, no matter what an astrologer may claim, a search of the literature will invariably find a conflicting claim by another group of astrologers. Unlike disputes in science, it is unclear how such disputes can be resolved, even in principle. This disagreement exists even at the most fundamental level for entire populations of astrologers, for example Western astrologers disagree with Eastern astrologers on which zodiac to use and how many planets to use. While the Indian astrologers apply the real, star-related constellations in their charts, the Western zodiac is independent of the stars. Such systems are mutually incompatible, yet are seen as completely valid by their users.

Signs are shaky

Astrological signs and houses are problematic and there are no agreed upon rules for weighing their effects. For example, as the astrologer Prudence Jones (1996, p.282) says:

[The zodiac signs] rest on shaky foundations from the modern point of view. How in heaven do twelve 30 degree sectors of the ecliptic, measured from the vernal equinox but named after now-far-distant constellations, impart any qualities at all to the planets, houses, parts and nodes which we view against their backgrounds? Do they do so in fact, or is this wishful thinking? Some astrologers justify the signs (taking, usually without explanation, the sun in the signs as their exemplar) as shorthand for seasonal characteristics. But this implies that their order should be reversed in the southern hemisphere, which seldom happens. And what, in any case of horoscopes for equatorial latitudes, where seasonal change is minimal, but where, of course, astrology was invented?

Even though the Western Zodiac has lost its connection to the original sky (and cannot simply be reduced to a seasonal effect), the people born within Western zodiac are signs still said to display the personal characteristics associated with the original constellations. The sidereal signs have the same meanings as for tropical signs, eg Aries is aggressive in both systems, but the piece of sky to which this meaning is applied is not the same. So one side can believe a certain piece of the sky means *intense*, while the other side can believe the same piece of sky means *relaxed* (this is Scorpio vs Libra).

Disagreement on houses

Much the same applies to the astrological notion of houses. The meanings across systems are usually the same, but because the boundaries can vary, the meaning of any particular piece of sky can depend on the system. House systems differ with regard to number, sequence, method of division, and interpretation (Dean & Mather 1977; Martens & Trachet 1998). Further, some house systems (including popular Placidus) break down at high latitudes. At high latitudes some parts of the zodiac never rise or set, and in affected house systems any house cusps or planets that fall in such areas cannot be shown on the birth chart, so in effect they cease to exist.

Disagreement on planets

Western astrologers also differ in how many planets should be used, some use undiscovered hypothetical planets, others use asteroids (Dean & Mather 1977). The good/bad interpretation of transits co-exists with the view that transits are to be viewed as opportunities for learning and growth. This diversity in fundamentals gives us grounds to be sceptical of claims that astrologers are speaking about something they have actually apprehended. This diversity in fundamentals becomes even more problematic

when it is placed in a historical context. Astrology, in different senses, has been around for at least twenty-five hundred years. At the beginning of the new millennium astrology is in a chaotic state with an increasing plethora of conflicting claims with little agreement on how to adjudicate among them **Note 12** The claims become more varied and conflicting as some astrologers (eventually) take notice of research findings and retreat to safer pastures.

Idea 2: Interconnectedness

Along with the vague, variously interpreted notion of *as above, so below* is the ambiguous idea of *interconnectedness*. Harding says, "We are interconnected; I think this is the central message of astrology" (in Phillipson 2000, p.187), and Brady tells us "The very centre standing stone of astrology is the interconnectedness of things, so [astrology] can't say that you are totally isolated and that's it. It can't" (in Phillipson 2000, p.189).

But astrologers do not have a monopoly on interconnectedness. It is our familiarity with other notions of interconnectedness that gives initial plausibility to the more problematic astrological notion. In the 1600's, Newton hypothesized interconnectedness in his statement that every body in the universe attracts every other body. Evolutionary theory emphasizes living organisms and their environments are constituted of interconnecting webs, and that life shares the same chemical basis. Astronomy acknowledges that all matter in the universe is interconnected in the sense that all matter is made of star stuff from the Big Bang. Human beings are interconnected biologically in that they share the same DNA structure, history and the social sciences show we cannot be isolated beings because we share culture and a heritage, and increasing economic specialization ensures that we are interdependent on others.

None of the above notions imply or even support the *astrological* idea of interconnectedness, which is from a perspective that refers to symbolic connections between heavenly bodies and terrestrial events mediated through interpretation based on notions such as mythology (Mercury was the messenger of the Gods, so Mercury rules body systems that function as messengers), literally taken metaphors (the rings of Saturn represent constraint), analogies (red Mars represents blood and aggression), and idiosyncratically chosen associations ("If you want to activate Mars energy, wear red" -- Phillipson 2000, p.67).

None of the previously mentioned notions from the social or natural sciences suggest in any way that symbolic planetary configurations (which are often unconnected with actual configurations) have a strong relationship to earthy events, nor that the planetary configurations at one's birth have any lasting effect on our lives, nor that the symbolism of astrology is universal for people over time and space.

Idea 3: Only the whole chart is meaningful

Since everything is interconnected, astrological factors cannot be examined in isolation, the whole birth chart is needed. So the golden rule is that "only the whole chart should be considered, for any astrological purpose whatever" (Dwyer 1985, p.1). As Perry points out "no one part of a horoscope can be isolated ... since everything influences everything else" and "you cannot empirically observe a pure [astrological factor] isolated from other factors in the chart" (Perry 1993, p.6; Vaughan 1998). But astrologers disagree over which individual factors are important, so they disagree over what comprises the whole chart; they just agree that whatever it is, it's important to keep it in mind when doing astrology. As Van Rooij (1994) asked:

Where does the whole chart end? With ten planets, twelve signs, twelve houses, midpoints, Arabic points, nodes, aspects and whatever other astrological concepts may be used, it is simply impossible to interpret a "whole chart". When astrologers claim that they use the whole chart, they only refer to the fact that they use more factors than just one. Nevertheless, no matter how many factors they may use, they always use a restricted number of factors, and therefore only a part of the horoscope. They never use the whole chart. But then the question becomes how many factors would be considered, and which factors? ... Suppose that I consider as many as 20 factors, then undoubtedly an astrologer will come up who claims that I should use 21 factors (p.56).

The decisions of astrologers regarding what to include in their charts seems entirely arbitrary. Some astrologers use asteroids in birth charts. As Hand (1981) points out, size of an astronomical body is unrelated to astrological effectiveness, therefore "[t]he disaster is that there are thousands of asteroids and other minor bodies orbiting the sun, and using present-day astrological techniques there is no way of accounting for all of them in a chart" (p.93). Other astrologers use hypothetical planets such as Vulcan and Lilith that have not been detected by astronomers (Hand 1981, p.95). There is no evidence that astrologers using asteroids or hypothetical planets are more insightful or more successful counsellors than those using "incomplete charts", or than non-astrologically oriented psychotherapists or even lay therapists (Dean 1985; McGrew & McFall 1992).

How can different sub-sets give the same meaningful whole?

This problem is exacerbated when we remember that conflicting Western astrologies utilize different factors. And even when the same factors are used, they are often weighed differently. If different schools of astrology use different astrological factors and hence operate with different notions of the "whole chart", then any reference to the supposed commonality of the "whole chart" is less than meaningful.

Perry (1995a) stated "every planet and every sign of the zodiac is influenced by the whole in which it is embedded" (p.34). But if one astrologer's whole chart and another astrologer's whole chart involve factors that are different in type or number, the end result must (according to Perry) be open to question. It is as if we thought we were talking about the same thing, but upon investigation found that I meant Volkswagen, while you were referring to Cadillacs.

Having it both ways

Furthermore, the writings of astrologers continually (very often in the same work that condemns the use of isolated factors) violate this maxim (Kelly 1999). They constantly refer to unqualified isolated factors. So in Phillipson (2000) we read, "Saturn does correlate with failure to conceive" (p.80), "When I had Mars at an angle, I knew I was going to have a hectic day" (p.81), and Moon square Mars is associated with people who work frenetically (p.93). Astrologers continually select one isolated factor out of a large set of possible factors in a chart (often ignoring conflicting factors) to explain both on-going terrestrial events, and events that have already happened.

For example, Wolfstar (2000) explains the problems that Harrison Ford and his wife are having as due to "the troublemaker Uranus", also known as "the divorce planet", because "Over the past year, transiting Uranus has been opposite Harrison Ford's Mars ... this is the major tension leading to separation from his wife." If the Harrison Ford marriage relationship problems were not happening, Wolfstar and other astrologers would have no difficulty finding astrological factors that indicate contentment.

Now you see it, now you don't

For example, when Suzanne Lilley-Harvey (1981), a top British astrologer, compared the birth charts of Prince Charles and Lady Diana before their wedding, she found "very

fundamental rapport ... harmonious communication ... physical attraction ... general emotional and social compatibility ... strong social-cultural-spiritual bond ... excitingly attractive and romantic ... ability to work together in a very practical way." Which did not stop Campion (1993, p.154), another top British astrologer, after their separation, seeing in the same birth charts, only trauma, anger, rebellion, and disaster. The previous wonderful compatibility was nowhere to be found.

Safety in numbers

In other words, due to the enormous number of factors, a perfect correspondence can always be found between any chart, any person, and any event. Nothing could be easier than picking the symbols to fit the circumstances, or the personal beliefs and expectations of the astrologer. As an example of the latter, ten prominent astrologers were asked to provide their predictions as to who would be in the White House after the year 2000 American presidential election; examining the birth charts of Gore and Bush, each astrologer found multiple indicators for their preferred candidate. Four predicted Gore would win, four predicted Bush would win, and two avoided predicting a winner (Stariq 2000). A birth chart generally provides planetary configurations for any number of conflicting predictions or after-the-fact explanations of events, so no wonder astrologers claim to see it "working" everywhere.

Astrology works?

So when we are told by astrologers that "astrology works", we are not sure what to make of it. **Note 13** It is also important to note that the slogan "it works" put forward by astrologers masks a number of issues. First of all, astrology is not one kind of animal, but a diverse set of conflicting techniques, conflicting theories, conflicting worldviews, and conflicting claims of what astrology can and cannot do. Second, that astrologers of all (often very conflicting) persuasions will cite testimonials and stories as evidence for their very often incompatible versions of astrology suggest that non-astrological factors may play a large role in the perceived success (see Kelly 1999, p.43, footnote 6; also, Dean, Kelly & Mather 1999). Third, "it works" can have a range of different meanings from "astrology is true" to "clients are satisfied", so the statement is also ambiguous.

Note 14

5. Problems with the origin of astrological ideas

A legitimate query here concerns how astrological connections are established. For example, why do astrologers say that "The Full Moon in Taurus is a good time to attend to the thyroid gland" or "Avoid travelling when the planet ruling your ninth house is making an unfavorable aspect to another planet" (Stariq 2000), or "Women travel on their Mars lines to meet men" (Phillipson 2000, p.99), or "Neptune is associated with universal love, spirituality, dreams, and drugs" (Equinox astrology site 1999)? Most astrologers write as if astrological tenets are based on a form of "inductive empiricism", a basis where correlations between heavenly events and terrestrial events have been observed in everyday practice. Elwell (1999, p.24) says "This process of observation, refinement and confirmation, is how astrology built up over centuries."

To make it easier in examining this contention, let us initially consider a relatively straightforward astrological claim, and examine how astrologers explain it. According to traditional astrology, the planets are associated with certain character traits, for example, Uranus is associated with originality and independence. How did astrologers discover this? What is the origin of this claim? Gauquelin (1980) and Startup (1981) have described five possible origins that are taken seriously by members of the

astrological community. In what follows, I will describe each of these origins, relying heavily on the insights of Startup to examine them critically:

Origin 1: Revelation by a higher intelligence

For example by gods, angels, demons, or extraterrestrials. Thus Pat Harris (in Phillipson 2000, p.17) suggests that astrology may have originated from spiritual beings that settled on earth and predate Atlantis. Apart from begging the question about the existence of these beings in the first place, explaining mysteries in terms of other mysteries does not take us any further than we were before. "We have not explained how these aliens got their knowledge" and so it merely pushes the problem elsewhere (Startup, p.26). It is also not clear how this proposal could be independently tested.

Origin 2: Psychic means

This assumes that ESP is capable of establishing relationships far beyond the claims of researchers of the paranormal. Also:

which particular psi ability is to be invoked? Surely telepathy is no good here since, prior to the establishment of the typology, there was no one's mind to read. Clairvoyance is equally dubious since it is difficult to imagine what state of affairs could have been paranormally perceived which was not available to ordinary perception. That leaves precognition ... but this would presumably require that the ancient astrologers somehow saw the results of modern investigations which were themselves, in turn, inspired, albeit indirectly, by the "insights" of the ancients (Startup 1981, p.26).

There are other problems. What is the "it" we are detecting by paranormal means? Some "force" emanating from the celestial object? How do the items detected paranormally relate to items detected by normal perception? (For example, if we detect all sorts of paranormal "rays" around us, how can we tell that they are coming from what we visually perceive as Mars?). How do we know that there is a correlation between the normal and the paranormal item? By paranormal means? -- That's doubly question begging! By normal means? If so, then why could not we have noticed the paranormal item through normal channels?

Origin 3: Analogy with planetary appearances

Startup elaborates on this conjecture:

The idea here seems to be that the originator(s) of the planetary typology started out with the simple theory that the planets influence human personality and then to discover what these influences are, they took note of the gross appearances of the planets and interpreted these appearances analogically in terms of personality characteristics. Françoise Gauquelin gives a typical explanation of how the ancients were supposed to have thought: "the large and brilliant Jupiter suggests power, the red Mars suggests fire and war, the light blue Venus suggests tenderness, the ashy yellowish Saturn suggests remoteness and old age, etc." (pp.26-27).

Startup contends that these analogies were unlikely to have been the source of the personality characteristics associated astrologically with the planets:

Each of the planets has many characteristics visible to the naked eye, so how were the Babylonians to know which were the relevant ones? ... Venus (and other planets to some extent) varies a great deal in visible brightness and yet is not thought to be changeable in character. The sun, and also the moon, are glaringly different from the planets in appearance and yet the temperaments attributed to all these bodies are of much the same order. Jupiter is comparatively large and bright and brightness may perhaps suggest power but [to the naked eye] Venus appears even larger and brighter (Startup 1981, p.27).

Also, the portrait of the very ancients that astrologers profess to admire as scholars is unflattering:

It requires us to believe that the learned men of Babylonia proceeded in a completely unsystematic, inconsistent manner. It suggests that the planets were judged by a hotch-potch of different types of characteristic, the Moon was judged by its phases, Mars by its colour, Jupiter by its brightness or size, Saturn by its apparent speed and so on (Startup 1981, p.27).

While knowledge can evolve by a hotch-potch of experiences, for example, Chinese popular herbal medicine likely evolved by a variety of less than systematic experiences, such claims can be investigated and demonstrated by the very kinds of studies eschewed by most astrologers (Allen 2001). Further, what are the mechanisms analogous to natural selection that separate poor astrological techniques and hypotheses from better ones? As the astrologer McDonough (2000) complains:

Is there anyone ... that isn't confused and overwhelmed by the plethora of techniques in the astrologer's bag of tricks? ... Why do we have such a massive, confusing mess of factors to deal with? Because there has been no way to toss anything out.

Origin 4: Observation

As Perry (1993) says:

The stargazers of antiquity systematically recorded their observations of heavenly movements and correlated these with observable events on earth. Through ongoing inductive analysis, these early explorers gradually reached certain conclusions as to the meaning of the variables in question and passed these down to succeeding generations (p.2).

Similarly, Harding (2000, p.29) says:

I need no theory of the birth chart in order to interpret it, merely an awareness that people with Mars in X and Venus in Y tend to present in various ways. ... Ultimately, I have to explain my ideas about the world in terms of how the world is. I might have some amazing idea about the relationship of Mars and Venus, but my "proof" will lie ... only in the positions of the planets themselves and what is said and done by people who were born at certain moments.

On one popular form of this scenario, the ancients, in the process of gathering data on both celestial and terrestrial affairs, began to notice a relationship between manifestations of personality and the activity of the planets. These personality characteristics associated with certain planets were also noticed to be similar to those attributed to certain gods. On the basis of these similarities, the ancients began to match the gods' names with the planets. As Startup (1981, p.28) points out, this assumes a primitive, inductivist (theory-neutral observational) model of science.

However, observations, even low level ones, are not completely theory-neutral because what we believe influences (at least to some extent) what we see. While statements about the presence or absence of a dog under the bed involve a minimal amount of theoretical content, statements about the presence or absence of neutrinos presuppose much more theory. In the case of personality, why would one look for associations with the planets in the first place and not elsewhere? If all ancient peoples had theory neutral access to the world around them, we would expect a great deal less diversity of belief about the world.

Indeed, from this hypothesis, it would be peculiar if only the Babylonians (and nobody else) had noticed their particular personality-planetary relationships that are supposed to play such a large role in human life! Another problem is that the second fundamental claim of astrology says that astrological factors cannot be examined in isolation, because everything affects everything else. So by definition isolated planetary connections with human activity could not have been observed in the first place.

Origin 5: Theory

This says that planets were symbols of the gods and had the same terrestrial effects as their namesakes, which led to testable pairings of planets and gods. This is the contrary view to the previous one. There the observations led to theories. Here it is the other way around:

The Babylonian gods "existed" long before their names were also given to the planets. The Babylonians theorized that the planets were the gods, or symbolized the gods, and therefore had the same influence over the terrestrial affairs that the gods in their pantheon were supposed to have. Thus, to discover what influences each of the planets had, all they had to do was to find the correct pairing of god and planet ... In this account, observation was used to check the appropriateness of the god-planet pairings that were proposed and, where the initial pairings proved unsatisfactory, it may have promoted a new round of conjectures and observations (Startup 1981, pp.30-31).

As Startup stated, a serious problem here is that "each horoscopic factor gives off only a weak signal which is embedded in noise ... [so] it is not clear how such checks could have been made" (p.31). One suggested way around the problem is to appeal to what Startup calls a "societal noise filter". Perhaps there were groups of astrologers who studied, in detail, just one of the planets and "also fed back the results of their thoughts and observations to the group which discussed their ideas at length" (p.32). Over time, these restricted groups, so the argument goes, gradually filtered out the wheat from the chaff. Startup pointed out that this seems to have some initial plausibility since many early cultures may have used such a process to learn about things like antibiotic remedies before people knew why and how they worked. There is, however, a large jump between making observational connections about using molds to treat infections and pairing complex personality attributes with planets and gods.

In addition, even false theories can have a long life of their own when they serve political interests and are backed by powerful factions. Astrologers have, throughout history, used their art as a propaganda tool for various political factions. For example, the 17th century astrologer William Lilly wrote pamphlets attacking Charles 1st by selecting whatever celestial factors suited his purposes (Geneva 1995). This flexibility of interpretation of astrological symbolism, and capacity of multiple denotation has allowed astrologers to play any side in the political arena, and so guarantee patrons and the survival of astrology.

Lack of documentation

As Startup pointed out, there is not "enough documentation of the relevant facts [about how early astrologers' operated] to make speculation unnecessary" (p.33) and speculation is not an adequate explanation of anything. Startup concludes that all of these proposed explanations are ad hoc and unsatisfactory. In other words, traditional astrologers cannot plausibly account for the origins of a comparatively straightforward claim about the relationship between the planets and personality.

What numbers are we dealing with?

But astrologers claim to have uncovered far more varied and complex relationships between human affairs and the cosmos than just the association between planets and personality. There are an incredibly large, but finite, number of possible celestial patterns from which astrologers have arbitrarily excluded certain components. For example, they may have chosen to ignore the moons of Jupiter, or individual contributions from the 10^{22} stars in the part of the universe that we can see (there may be even more that are too weak to see), and so on.

This still leaves a huge variety of celestial patterns to consider in separating out astrologically effective from astrologically ineffective combinations. And by huge I do mean *huge* -- because even at the most basic level there are ten planets (for convenience, astrologers count the sun and moon as planets), each of which can appear in twelve signs and twelve houses, and make nine kinds of aspect (conjunction, semi-sextile, sextile, semi-square, square, sesqui-quadrant, trine, quincunx, opposition) to each of the other nine planets.

However, the total combinations per planet is not simply $12 \times 12 \times 9 \times 9$, nor is the total combinations per ten planets simply $10^{(12 \times 12 \times 9 \times 9)}$ or about 10^{40} . This is because any given combination of planets-in-signs immediately limits the possibilities for houses and aspects (for example, two planets in the same sign cannot occupy opposite houses or be in opposition), and because some planet-in-sign combinations must be discounted (for example, Mercury is never far from the Sun, and the outer planets move too slowly to allow every combination except over thousands of years).

Instead, the total is more like 10^{28} combinations, the exact figure depending on geographic location, house system, and the time period. This, of course, is just for the most basic astrological factors: many astrologers would use more factors, often many more, for example, axes, midpoints, retrogradation, and asteroids. Indeed, one American astrologer (without giving details of her calculation) claims that the number of combinations is 5.39×10^{68} (Doane 1956, p.1). This makes 10^{28} seem puny. But to print out even 10^{28} combinations each reduced to just one line of description would still require a stack of paper roughly as heavy as the earth.

Complexity makes observation impossible

Furthermore, our problems have only just started. Because we are forbidden to consider factors in isolation, we must now relate this huge variety of patterns directly to the large variety of patterns of human action. Obviously it cannot be done. In other words, astrological theory could not possibly be based on either observation or the testing of astrological ideas based on gods. Another complication refers to the importance of location of birth in constructing a horoscope. There is no evidence that early astrologers did or could have done the sort of studies needed to test this idea, studies that even today would be difficult. Since these claims turn out to be deeply problematic, we have good reasons to reject more complicated claims based on these same theories.

We cannot escape from this dilemma by focussing on just one or two isolated factors, because our second fundamental principle (use only the whole chart) forbids it. But even if we do break the rules and look at isolated factors, we still have problems. Suppose we find that, out of all these 10^{28} celestial combinations, people born with the sun in Aquarius aspecting Saturn in the 12th House are reserved, but those with the Sun in Aquarius aspecting Saturn in the 11th House are outgoing. In the general population, people who are reserved or outgoing are common, but those with any particular planetary configuration will be relatively rare. The mismatch in occurrence makes our finding lack any clear meaning. Even then, our problems are not over.

The same astrological factors are supposedly associated with many different things, including both positive and negative sides, which can be expressed in all sorts of differing ways. For example, together Mars and Neptune can indicate altruistic urges to perform good deeds, or, frustration and rage (Vaughan 2000b). Our interpretation of the meaning of factors in the horoscope is also qualified by other more earthly factors like the person's sex, level of maturity, age, culture and so on. Furthermore, the same

planetary configurations can mean different things depending on whether we are talking about a human being, a dog, a company, a country, or an idea. So we have complexity laid upon complexity, laid upon complexity.

The extreme implausibility (some would say impossibility) of the ancients being able to correlate such diverse, complex, amorphous, aspects of reality together into one comprehensive package should reinforce our skepticism about astrology having any kind of basis in observation, and, on the same grounds, astrological claims could not have been refined over time by any empirical procedures. **Note 15**

6. Problems with modern psychological astrology

Here I come back to the shifts from tradition associated with modern psychological astrology. In the new psychological, the central relationship between celestial patterns and human beings is not with outward, observable patterns of behaviour and tendencies but rather with the unobservable, inner life of a person, or what Perry called the "psychic structure which underlies personality" (Perry 1995b, p.123 ; see also, Perry 1988). Much of the following will be based on the writings of astrologer-psychotherapist Glenn Perry since he is one of the most prominent and representative spokespersons of the psychological astrology school.

Perry (1999, p.2) contrasts traditional event-oriented astrology and psychological astrology as follows:

A strictly predictive astrology ... implies that one's fate is more or less fixed and that one's ultimate good lies in avoiding pain and maximizing pleasure. Whereas psychological astrology assists individuals in discovering how they are creating their own fate, predictive astrology merely describes fate without relating it to the inner, psychological life of the person. From this perspective, events have no meaning beyond being "good" or "bad". To say that they are "karma" from past lives, to be suffered and endured (or perhaps avoided through the cosmically informed counsel of one's astrologer), does little to help people live more constructively in the here and now. I believe that fate can be positively altered through a process of internal healing and integration. The real meaning of events is that they constitute "feed back" that reflects back to the individual where s/he is at in terms of health and wholeness. And their real value is that they stimulate growth in precisely those areas where the individual most needs to change.

Further, it is not the job of the astrologer to tell clients what to do since planetary configurations provide:

an opportunity for learning rather than an occasion for evasive action ... [and] one of the core meanings of the opportunity it affords -- no, requires, [is] increasing one's trust in an inner source of knowing, I take that away by recommending a specific course of action. I do him a great disservice. I steal his choice, for it would be interfering in his fate to predict an outcome ... The important thing is not what is going to happen, but how he accommodates [to it] ... I believe our value as astrologers lies less in telling people what to do than in encouraging them to trust themselves and the Universe (Perry 1999, pp.2,3).

Perry (1999) further tells us astrologers should help client achieve a "greater realization of their potentials [as revealed in the birth chart]" (p.4) and thereby "best harmonize with the universe" (p.1). How do we know when the individual has achieved this? When they are in a state of "health and wholeness" (p.2).

Other ways may be better

The advice given by Perry is hardly unique to astrology. Much of the transcendental talk and advice given by psychological astrologers can be found in pastoral counselling and popular psychology (check any book store), without talk of birth charts and astrological symbolism. The crucial point is that Perry's comments about inner selves, etc. do not require stars and horoscopes. He capitalizes on astrology by using otherwise acceptable

insights provided by others. It is likely that there are more effective ways of dealing with the existential and everyday issues of clients than what astrologers can offer.

Farha (2001) points out that most astrologers do not have training in crisis management or related fields, and neither are there astrological national standards that provide a baseline of ethical practice as exists in fields like counselling, psychology, social work, or other human services. Further, the providing of constructive council for living in the here and now, and the providing of meaning, along with ways of stimulating self-examination are very arguably more effectively done by practitioners in the emerging field of philosophical counselling (see Marinoff 1999; Raabe 2001; Le Bon 2001). Given that many of the issues clients deal with are existential or spiritual:

Philosophers are typically far better trained philosophically than their counterparts. They are therefore better able to help a client when it comes to clarifying her thinking, avoiding both logical and procedural mistakes in reasoning, ethical decision making, values clarification, questions about the meaning of life, and the development of a sound and reasonable personal philosophy (Raabe 2001, p.277).

The astrological notion of potential may be more narrow than that advocated by humanistic philosophers and psychologists. While our potentials may, from these other perspectives, be limited to some extent by our genetics and cultural opportunities, the astrologer adds a further limitation, namely, the potentialities "promised" in the natal chart. The astrologer Cornelius (1998, p.10) criticises this notion as follows:

If you're born says this school of thought, with a very powerful Saturn, then you have the potential for certain experiences [opportunities] of a Saturnine nature. Remember, however, that this is a velvet glove fatalism because you're still fated to have been born with a Saturn potential! This approach hasn't really solved the problem.

Problems of the inner psyche

Let us now turn to the symbolism that in modern psychological astrology purportedly reveals the inner psyche. Perry says:

A horoscope symbolizes the complex, evolving nature of consciousness ... the depths of personality ... the dynamic relations between psychological drives. For example, Sun square Saturn symbolizes a conflict between the need for self-expression and the need for self-control (Perry 1995b, p.124).

Zodiac signs symbolize general, "fundamental human needs, or motivational drives, inherent in the human condition" (Perry 1988, p.1), whereas the house positions and planetary aspects symbolize a particular individual's "map of consciousness" or "inborn personality structure" (Perry 1988, p.2,3). **Note 16** The extreme problems of accounting for the relations between celestial factors and observable, relatively specific outcomes postulated by the traditional astrologer are further exacerbated by the psychological astrologer's additional conjectures.

How do we know these things?

How do we know such invisible psychological processes underlie the astrological symbolism? Perry tells us such cognitive processes and structures are distilled from the composite descriptions associated with traditional astrological symbolism. For example:

the need of a [zodiac] sign can be inferred from the behavior which is characteristic of that sign, eg., Leonian pride, creativity, and amiability evidence the universal human need for validation of perceived identity (Perry 1988, p.2).

It is difficult to see how it follows in the first place from the characteristic behaviours of a sign that one intrinsic motivational factor ties them all together, and even if the case could be made, a further case would need to be independently made for the particular

human drives postulated by Perry. He never clearly sets out how he arrived at these conclusions. No sets of studies of a quantitative or qualitative nature are discussed, nor is there any kind of an appeal to any careful examination of the astrologically symbolized behaviours by independent astrologers or psychologists to determine what one might infer from them.

Other problems

Furthermore, if only the whole chart will do, inferences based on parts are by definition meaningless. An additional problem is lack of agreement on the characteristics or behaviours associated with each particular sign. The sets of keywords and expressions assigned to particular planets, signs, and houses are far from consistent (Dean, Mather & Kelly 1996, p.82). While there is agreement on many characteristics associated with the signs and planets, the disagreements could contribute to quite different inferences about the underlying psychological structures symbolized.

Perry elevates psychological astrology to Biblical miracle status by further informing us that the dynamic relations between various psychological drives symbolized by the horoscope are "fluid and changing, varying in accord with situational specificity, developmental age, emotional maturity, and level of psychological integration" (1995b, p.123; 1994, p.34). Further, "unlike the boundaries of physical objects, the contents and processes of consciousness involve meanings whose boundary regions are fuzzy ... Meanings are indefinite, arbitrary, relational and culturally embedded" (Perry 1995a, p.34).

The fuzziness claimed by Perry would be one more reason why the astro-connections would be, at best, exceedingly difficult to establish, and one more reason why astrology becomes even more unfalsifiable.

How could psychological astrology work?

Despite Perry's appeals to consciousness, it is clear that no theory of consciousness based on physical processes can perform the role demanded. So Perry opts for dualism, the existence of a nonphysical, immaterial mind or soul. While psychological astrology is described as a theory of "extraordinary complexity and a model of consciousness" (Perry 1995a, p.32; 1994, p.33), questions about how this dualistic view of consciousness actually works are never addressed. Instead we are merely offered tidbits such as: consciousness is a "non-physical system" (1995a, p.32) and "a subjective experience of awareness that has no material correlates" (1995a, p.34).

Nowhere does Perry attempt to articulate the intrinsic nature of his version of the non-physical mind. While the notion of "soul" is a central part of many astrological positions, we are left with vague mental images of a non-physical, internal poltergeist that acts in equally mysterious ways, on the neurological structure and behaviour of human beings. It is far from clear how the postulation of a soul/non-physical mind can contribute toward clarifying and informing our understanding of central notions such as purposive behaviour, values, internal self-causation, meanings and creativity, over that offered by contemporary models consistent with materialism (such as those offered by Crick 1994; Flanagan 1992; Penrose 1994; Searle 1992; Dennett 1996) **Note 17.**

How does the mind come into it?

Neither does Perry offer us any inkling as to the mediating role the non-physical mind plays between cosmos and psychic structure. The most we get are vague appeals to notions such as synchronicity which substitute one mystery for another, and sidestep

issues of conflicting astrologies but fail to clarify issues of how this imprinting of the cosmos on the psyche takes place. This talk of souls and non-physical entities worsens the picture for astrology without bringing an increase in understanding. Since psychological astrology does not have a theory of its own regarding the nature of the inner psychological processes supposedly mirrored by planetary configurations, it rests mainly on those postulated by various psychodynamic theories. More specifically, Perry relates the birth chart to "conscious and unconscious processes, areas of repression and conflict, pathways of sublimation, transference dynamics, projections and the like" (Perry 1995b, p.123; See also, Perry 1988; Arroyo 1993; Greene 1996).

Based on outmoded ideas

Even if we contend that psychological astrologers have refined the crude approximations of traditional astrologers (who themselves do not offer plausible explanations for their correlations), the above case is difficult to accept. The reason is simple. Twentieth century theorizing was influenced by a great variety of areas of research, including investigations into brain function, humanistic and existential schools of psychology, neuropsychology, artificial intelligence, physicalism and functionalism in philosophy, and so on. Ancient, medieval, and renaissance theories of mind that would have been utilized by the astrologers of the past were quite different from contemporary models (See Pasnau 1997; Wright & Potter 2000).

Further, the above psychic structure is based on psychoanalytic and humanistic psychological theories that since the 1950's have come under very heavy criticism. **Note 18** Psychoanalytic processes and concepts, alluded to by many psychological astrologers, have been described as nonfalsifiable because they are consistent with any physically possible human behaviour. In addition, the coherence of the theory is questionable, along with the controversy over its therapeutic effectiveness (eg see Crews 1998; Grunbaum 1993; Spence 1994; Esterson 1993; Kerr 1993; Macmillan 1991; Webster 1995; McGinn 1999; Coiffi 1998). If the psychological structure symbolized by the planets and their interrelationships are problematic, the rest of the theory is on shaky ground. **Note 19**

What about cultural effects?

Is human nature the same the world over? Do all people share the same underlying archetypes as some psychological astrologers contend? Granted that there are physical and psychological commonalities across cultures, but are cognitive styles and thinking processes the same? Some recent research suggest that people in the Orient follow different basic thinking processes than those in the West. People in the Orient pay greater attention to context and relationships and rely more on experience-based knowledge than those in the West. In the West, people tend to detach objects from their context, and are more concerned with consistency in reasoning.

If these cultural variations exist, as some philosophers and psychologists contend (e.g Nisbett, Peng, Choi & Norenzayan 2001; Stich 2001), a problem arises how the same planetary configurations can reflect diverse reasoning patterns, psychological process, or human natures. The views of many psychological astrologers seem to assume that any divergent thinking or psychological differences among cultures can be reduced to the psycho-dynamic mechanisms popular in their circles. **Note 20**

Anything goes

Consider also the psychological astrologers' contention that inner mental dynamics can be expressed in a great variety of ways. Here they reject as simplistic the traditional

astrologer's claim that celestial patterns are typically associated with relatively specific outcomes. As an example of this complexity, the British astrologer Charles Harvey (1995) claims:

The same [planetary] combination can express itself in a whole range of ways. For example, Uranus in hard aspect with the midpoint of Sun and Moon may produce a Napoleon or a Hitler, but equally it may produce a Margaret Thatcher, a Spike Mulligan, a Martin Luther or a particular [spiritual, caring] astrologer [such] as Dr Zip Dobyns (p.52).

Similarly, Perry claims that psychological astrology does not predict specific behaviours or life outcomes but rather "predicts qualitative experiences of consciousness that can be reflected in a variety of manifestations" (Perry 1995a, p.34; 1994, p.34). He affirms that "The meanings of the parts may be stable, [but] the emergent qualities they produce when combined are not [because] real people are changing, evolving entities that are far too complex to type or tag with a few simple key words" (Perry 1993, p.7).

In other words, according to Perry and Harvey, the birth chart accurately shows our underlying subjective processes, but as to their outward manifestation, astrologers can only guess at a range of possible happenings. The inner psychic state is shown in the birth chart, but after that just about anything goes. As Perry said, "we all have the potential to behave in any way that is humanly possible, and we frequently do" (1995a, p.36).

Miracle of faith

We can see that the psychological astrologer is working with a challenging system. It involves celestial configurations that can never be examined in isolation, and whose variety when combined is immensely larger than anyone could possibly cope with. Yet these planetary configurations supposedly correlate with an invisible, largely unconscious, philosophically and scientifically controversial, psychic structure that is supposed to underly personality, and is associated with outcomes so varied and so uncertain that the astrologer can only make guesses.

This miracle of faith is further complicated by the lack of consensus on basics within the psychological astrology school itself: "there is probably no uniform psychological approach to astrology" (Perry 2000). **Note 21** Clients seeing different psychological astrologers would be provided with different considerations of potentials and likely varying descriptions of opportunities for growth and change. **Note 22** Further, the reader should not come away with the impression that psychological astrology has not gone uncriticised by other astrologers. Thoughtful critiques from within astrology of many of the problematic notions of psychological astrologers can be found in Harding (1992) and Elwell (1999).

7. Problems of astrological world views

Traditional astrology emphasizes the prediction of events, the association of relatively specific, observable outcomes with astrological factors, sometimes with the world view that planets are transmitters of physical influence. Thus the clients of the famous 17th century astrologer William Lilly expected predictions and decision making, not psychology and religion. Such a traditional orientation is not adverse to experimental investigation. A main problem of this approach, as Perry acknowledged, is that the vast majority of studies have not supported such claims (Perry 1995a).

Further, there is little prospect that plausible physical linkages will be discovered that explain astrological associations with human activity (Perry 1995a, pp.26-33; Culver & Ianna 1988; Crowe 1990; Nhgre 1998). For example, no proposed physical explanation can explain, in advance, how Sun-Jupiter contacts symbolize expansive, optimistic beliefs rather than something else, how Scorpio can symbolize secrecy rather than something else, or how the 2nd House can symbolize possessions rather than something else, or how hypothetical planets and impossible planetary configurations can be encompassed in charts.

Perry states, that even though studies relating astrological configurations with specific observable outcomes have failed, this poses no difficulty for psychological astrology since it is concerned with the "inner life" of an individual, which cannot be adequately tested by modern, materialistic, scientific methodology. Besides, he claims, astrologers already have independent experiential (clinical) evidence that astrology works **Note 23** (Perry 1995a, pp.14, 26).

What is the astrological worldview?

While astrology seems implausible from the perspective of modern physical theories, we are told that if we adopt a different set of metaphysical assumptions (for example, a more transcendental framework), astrology becomes plausible. **Note 24** This worldview, according to many astrologers, is very different from scientific worldviews. Hence, Vaughan (2000) says, "the scientific viewpoint is one way of observing the world, and astrology is another" (which does not stop her claiming scientific evidence for astrology).

Similarly, Harding (2000, p.17) tells us, without providing any specifics, that "The claim can be made that the scientific worldview is so completely different from that of the astrologer, that science simply cannot engage with the astrological model at all" (This claim simultaneously exists alongside the rush in the astrological community to associate astrology with the latest scientific theories -- see Note 18).

But what is this astrological worldview? Is it the Aristotelian worldview held by many ancient astrologers? The neo-Platonic view held by astrologers like Plotinus? Is it the worldview of Dennis Elwell's (1999) *Cosmic Loom*, where our reality groups together things like dew, ice, water, humidity and steam, all to do with H₂O, whereas astrological reality groups together things like cold, old age, bones, lead, discontent and responsibility, all to do with Saturn. (Elwell does not say how he knows his Saturn group is correct.) Such apparent diversity is woven together on the cosmic loom, hence the name.

Or is the astrological worldview associated with a hierarchy of "planes of being and existence", as portrayed by Negre (1998)? Or, following Cornelius (1994, 1998), should astrologers return to ancient Mesopotamian ideas regarding omens and spirits? Or are the psychological astrologers who content that astrology is just a projection of unconscious archetypes on the right track? Clearly there are many astrological worldviews, which point I will return to later.

Further, what do expressions like "different ways of viewing the world" and "completely different" entail? Does astrology provide an alternative account of human origins, and is it associated with its own models of the origin and workings of the universe than contemporary scientific models? Surveys of Western astrologers themselves do not indicate that they subscribe to any particular worldview. They seem no different than any other group in society (see eg Elliot 1993).

Paradigms do not help

Unfortunately, finding a worldview or paradigm that is more compatible with astrology than modern scientific ones, by itself, provides little support for the basic astrological premiss of *as above so below*, let alone *particular* systems of astrology. Finding a paradigm that is compatible with astrology achieves little since astrology still has to be tested within the paradigm. Why should astrology be taken seriously just because a new paradigm might happen to be compatible with it? As a comparison, let us consider the materialistic or naturalistic worldview, which can support a very large diversity of competing theories with greatly differing assumptions like Lamarckism and Evolution in biology, and theories like Phrenology, Behaviourism, Functionalism, Connectionism, Sociobiology, Freudian Psychoanalysis, and Piaget in psychology. Each of these approaches is encompassed within a naturalistic worldview but this does not preclude their extensive critical evaluation within that framework and, in many cases, rejection.

Vagueness adds to confusion

Perry (1991a) tells us the worldview needed to make sense of astrology must involve "a sacred realm that unites, orders, and animates the cosmos" (p.19), or what West calls "a system of magic" (1991, p.223) and Cornelius (1994, p.19) calls "some other element" (that is, other than delusion and ESP). The perspective proposed by Perry re-introduces ancient notions of teleological causation, occult powers of attraction, and most importantly, the notion that psyche and cosmos are alike, and correspond through symbolic action-at-a-distance (1995a, p.15-16), without the discussion and debate needed to evaluate these expressions.

Further, Perry explains, this will involve a return to beliefs that were common in pre-scientific cultures in which a "world soul/consciousness" was immanent in all parts of the universe. The universe, so conceived, involved a hierarchy with parts interconnected by "sympathetic resonances". Astrology played a large part in such worldviews because it gave people a symbolic language "for understanding the various meanings and correspondences of natural phenomena" (Perry 1995a, p.15; also 1993, p.2).

On Perry's transcendent perspective, the "Universe has intentions for us" and "there is an underlying intelligence that organizes the infinity of things happening in the universe". This "organizing intelligence" or "greater consciousness is always assisting us in the unfoldment of our innate capacities -- growing us, as it were, so that we can become more fully conscious of our true identities" (Perry 1999, p.1,3) **Note 25** It is not clear how Perry knows this, it seems unlikely that he has direct, unmediated access to the divine mind. Many might even agree with Perry's general notion about an "underlying intelligence" and yet deny that astrology gives us insight into its intentions for human beings (see Bourque 1997; Ankerberg & Weldon 1989). **Note 26**

Evasion adds to confusion

The notion of "our true identity" for example, is one with which many empiricists, post-modernist philosophers, and Buddhists would consider problematic. The Buddhists consider talk of an essential core of one's being illusory, while post-modernists would consider such talk of "our true identities" a modernist illusion. So an explication of astrological theories should explain these central elements. Instead, we are offered evasions such as "Astrology seems to belong to some other order of knowing things, barely conceivable in the modern world" (Cornelius, Hyde & Webster 1995, p.167). While nothing remotely resembling a fuller discussion of the nature of these forces or resonances is provided, we are still told that, whatever they are, they "make possible creation, indeed, all conscious, organic life" (West 1991, p.221).

Diversity of worldviews is problematic

We have seen how there are many astrological worldviews. But the problems caused by this diversity is more severe than we might suspect, simply because the notion of worldviews is related to philosophical traditions. Campion (1996, p.134) points out "the philosophical schools that many astrologers find so attractive, especially Platonism, Buddhism and Taoism can equally encourage scepticism and therefore hostility to astrology". For example, Wilber (1999), working from a trans-personal, spiritual perspective, strongly criticises astrology. Furthermore, Perry and others ignore or play down the great diversity found among early cultures regarding pre-scientific worldviews and the conflicting astrologies that were developed within them. The different astrologies we find around the world are intertwined with various conflicting religious systems and cosmologies.

Societies that did possess what we would recognize as a form of astrology were associated with both worldviews and astrologies that differed radically and were contradictory in many fundamentals, including, their conceptions regarding the nature of ultimate reality and the transcendent, whether the transcendent can be known or is ineffable and unknowable, the basic hierarchical structures within the postulated transcendent realities, the modes of divine activity (and whether the divine nature was personal or nonpersonal), the nature of the self, the destiny of human beings, and so on.

Furthermore, astrologies in the East have closer ties to theological systems than modern Western ones. There is also a larger concern in the East with removing negative astrological effects in ways that would not be considered possible by many Western astrologers. For example, in India, many people visit astrologers to soften the blows of horoscopic fate; "On Sundays many worshippers come to the temple to request that [the goddess] Kali remove the evil astrological influences of the two shadow planets, Rahu and Ketu" (Malville & Swaminathan 1998, p 9). Hence, general statements that astrologers believe in a "spiritual or transcendent reality" rather than subscribe to a naturalistic view of the universe, masks a myriad set of conflicting philosophies. **Note 27** To which pre-scientific or ancient astrological worldview do astrologers like Perry advocate we return ? **Note 28**

Contradictions between East and West

Likewise, the associated astrologies often differed from each other along essential dimensions. For example, the circumpolar stars, the pole star, and the quadrant divisions of the sky utilized in Chinese astrology are used differently in Western astrology. The circle of 12 animals in Chinese astrology bear little resemblance to the Western zodiac. In ancient China, Mars was related to joy and Jupiter to anger, the opposite of that found in Western astrology (Douglas 1999). The ascendant is important in Western astrology but not in Chinese astrology, and so on (Culver & Ianna 1988, p.25; Dean, Mather & Kelly 1996, pp.56-57). Within Viking mythology the Taurus constellation was interpreted as the open, biting mouth of the furious fenris wolf -- a different psychological interpretation when compared with the usually calm and slow Taurus person of modern astrology.

In India there are also a number of astrological systems which conflict both with each other and with Western approaches. [See Premanand, Bhatti & Risbud (1993) for an overview and critique of Indian astrology]. "In Western astrology the general tendency is to regard the North Node as benefic and the South Node as malefic. In Hindu astrology the general tendency is to regard both Nodes as malefic" (Dean & Mather 1977, p.259). In the Dasha-paddhati system the names of the planets are written in a sequence that is

not only arbitrary from a Western astrological perspective but is also not related to any physical characteristics of the planets or their distance from the earth. Each planet is alleged to have a certain period of influence over the destiny of people. These periods vary from 6 years to 20 years.

Each planet takes control over a person's destiny in the order specified by the system and the duration assigned to them. The sequence of the planets is the same for all people provided you are following the Vinshotiari 120 year system. On the other hand, if an astrologer uses the Ashtottari dasha system, the last four planets appear in a reversed order and together have a different duration of 108 years. During one's lifetime, the same planet cannot take charge of your destiny again, unless you live for more than 120 years (or 108 years) (see Risbud 1998 for a critique of these systems). These two systems cannot both be correct, but this seems to have had no effect on their acceptance by astrologers and clients.

Differences with the Americas

When we turn to the Americas, other fundamental differences in world view, along with astrological differences, emerge. The Aztecs were just interested in the Sun, Moon, and Venus (Botherstone 1988). In terms of hierarchical structures and allied astrology, the Mayan cosmology was quite different from the orbital-themed earth or sun-centered ideas of other cultures. For a start, Mayan astrology assigned a very central role for Venus. In addition, the position of Venus relative to the horizon was, contrary to Western astrology, more important for the Mayans than its movement. They also associated the morning and evening appearances of Venus with lunar phasing and eclipses which have no counterparts in other astrological systems.

Finally, astrology in Mayan life was closer to the astrology of India and traditional Western astrology than Perry's version in that the central focus was divination and prophecy (Aveni 1992; Danien & Sharer 1992).

What disagreement implies

There are even different colour associations with the planets among cultures. Cultures have perceived Venus as white or yellow; Saturn as white, yellow, red, brown, and black; Jupiter as white or greenish-blue; Mercury as green or blue, and the moon has been variously described as green, blue, and silver (Douglas 1999). Within Western astrology, Venus is associated with "everything beautiful, which catches the attraction of your eyes -- museums, theaters, cabarets -- and brothels" (de Wohl 1951, p.146).

The serious problems that arise due to these differing notions are precisely analogous to those issues that arise with religious diversity around the globe (see Hick 1997 for an overview of these critical questions). One cannot presume that the differing notions can be referring to the same ultimate reality (like different fingers pointing to the same moon). The different astrologies throughout the world (over both the past and present), are connected with very different ideas about fundamental reality and its complexity that cannot be side-stepped with general talk like "Astrology unites us with a living cosmos. In a conscious universe, people and planets are woven into the same seamless web of being" or "there is an immanent divine guiding intelligence" to the universe (Perry 1991, p.8; and 1999). Clearly not all the conflicting views of the divine and transcendent can be true, and neither can the different views of human nature and destiny or the conflicting astrologies associated with them. **Note 29**

Sham enquiry

It is important to keep in mind that diversity can be productive. We should not stick to one approach, but search out alternative conceptions and promote inquiry into such alternatives. However, this attitude is not prevalent in astrology. Genuine inquiry involves a desire to learn and a determination to follow the truth wherever it leads. In contrast, an examination of astrological books, internet sites, magazines and journals reveal what can be termed sham inquiry, where astrologers go through the motions of inquiry in order to demonstrate foregone conclusions (Kelly 1998; see Haack 1998 on the notion of sham inquiry).

The preoccupation of astrologers with sham enquiry rather than proper enquiry has fatal consequences, simply because they assume that astrology is inexplicable except in terms of a transcendent worldview. But such an assumption is unwarranted because astrology is readily explicable in terms of cognitive and perceptual biases, everyday artifacts of human judgement that in an astrological context look and feel like astrological "effects", which then wrongly persuade astrologers and their clients that something mysterious is happening (Dean, Kelly & Mather 1999).

Furthermore, on the basis of these artifacts alone, we can predict that modern astrology will be characterised by (1) disagreement on almost everything, (2) agreement that it works, and (3) failure to work when artifacts are prevented. Which is exactly what is observed (and by contrast is exactly what is *not* observed in the sciences). For more on these artifacts see *Artifacts in reasoning* on this website under Doing Scientific Research.

8. Problems of astrological symbolism

It was argued earlier that the correspondences claimed by astrologers were not based on observation, as a number of astrologers have claimed. Rather, the connections are established on the basis of word associations, mythological associations, a variety of cultural symbolic notions based in turn on a plethora of conflicting theological and occult beliefs, and idiosyncratic word play by individual astrologers.

Other factors are the influence of authority and tradition. Authority because an astrological master said so, and tradition because it has been done that way for hundreds or thousands of years. The end result being the chaotic state that characterizes astrology with no agreed upon methodology to separate valid notions from less valid or invalid notions. In this section we will explore these symbolic notions.

Magical correspondences

While the astronomical and mathematical bases of the cosmologies and astrologies developed by the Mesopotamian, Chinese, Mayan, and Indian cultures were sophisticated, the meaning or quality ascribed to planetary conjunctions and movements were dependent on the beliefs of the particular societies in question. This explains why many of the physical characteristics of the celestial bodies (size, distance, etc.) are considered irrelevant with regard to their effects or meaning, or even whether a planetary body actually exists (eg Vulcan) because what matters is the symbolism or mythology attached to the body's name. The influences, effects, or correlations attributed to the planetary configurations are based on "magical correspondences" relying on superficial similarities and analogies.

For example, the medieval astrologer-physician William of England, appealed to the magical doctrine of "like affects like", as have astrologers of all periods. Hence, he argued, "the sun and Mars affect red bile (because all three are hot) and the moon and Venus affect phlegm (because they are cold)" and "Should the hot and dry Mars be causing a disturbance of the blood, then when Mars moves into a house that has a disturbance of the chest, the patient will spit blood" (French 1996, p.478). **Note 30**

The astrologer Davidson (1963) tells us, "Without the sun there would be no life. It is the driving force behind the whole solar system. It represents Will Power, Vitality, Leadership, Creativity" (p.29) and "The rings of Saturn symbolize the limitations imposed by Saturnian action that operate as a harsh external discipline until we have learnt to discipline ourselves" (p.32). In mythology, Mercury is referred to as the "messenger of the gods", therefore, by simple analogy, "Mercury rules the body systems that function as messengers or conduits for communication, [such as] the central nervous system, the endocrine system, and the respiratory system" (Gailing 2000).

No systematic method

What is interesting about the latter example is that while Mercury was the messenger of the gods in mythology, talk of bodily systems as messengers is metaphorical. The above three bodily systems "communicate" in quite different ways with parts of the body, so why not also include the circulatory and lymphatic system? What governs the extent to which astrologers extend such metaphors? There is no underlying systematic method.

Whenever a newly discovered astronomical body is found, the attribution of its earthly connections is not based on the results of published investigations with extensive public discussion to establish its relationships with worldly affairs. Rather, if the name can be identified (eg by looking it up in dictionaries of mythology) and could be plausibly related to existing planetary mythology (not difficult), then the result will be long articles in astrology journals by authors surfing the mythology wave, where readers will be moved to tears or to outrage by the beauty and insight of the connections.

Examples of Pluto and Chiron

When Pluto was discovered in 1930 and Chiron in 1977 (a minor planet or moon between the orbits of Saturn and Uranus), astrologers did not publish research to establish their relationships with human and worldly affairs. Pluto is given, as one might expect from mythology, a malefic influence on human life. As Davison (1963) tells us, "The planet named after the God of Hades represents the Underworld of man's consciousness, those elements in his nature that have not been redeemed" (p.33) Could it be otherwise?

It is difficult to imagine that astrologers would ever inform us that a planet named "Pluto" would be associated with love of life and fellow human beings, sensitivity and pleasure (like Venus)! Similarly, Hand (1981) remarked "(Chiron) is believed by many to have a connection with conscious-expanding teachings and with initiation into higher consciousness" (p.94). In the case of Chiron, as with Pluto, these relationships are those we would expect astrologers to attribute to them if they were based to a large extent on mythology (Culver & Ianna 1988).

Asteroids

Similarly, as the astrologer Press (1993) says about asteroids, "the particular mythology, whether Greek, Roman, Egyptian, etc., is relevant to the expression of the asteroid in the [birth] chart " (p.178). Having determined the asteroid's mythology, the

astrologer looks at the asteroid's position (eg., by sign, by house, by aspect) in various peoples' charts to see if there is anything in the personality or case history that could match the interpretation of that position. For example, "The asteroid Icarus represents flying too close to the sun. The position (house, sign, numerical) and exact aspects of Icarus will show where a person will take risks" (p.197). Whenever possible, some astrologers will add physical symbolism to the mythological symbolism. For example:

The orbit of Icarus is between the sun and Jupiter. This containment surrounds Icarus with the irradiation of the Sun and the expansiveness of Jupiter. Icarus' orbit is in and crosses the orbits of Mercury, Venus, the Earth and Mars. Being in those orbits gives Icarus a smattering of the restlessness of Mercury, the sensuousness of Venus, the earthiness of the Earth and the self-assertiveness of Mars" (Press 1993, p.196). **Note 31**

What happens with modern names?

What happens if the new astronomical bodies are named after modern individuals? Startup (1981) says:

A popular modern astrological doctrine maintains that newly discovered planets are inevitably given appropriate names [from which the correct terrestrial relationships can be inferred], even though the names are bestowed by astronomers nowadays. This is usually taken as one more example of synchronicity (p.33).

Asteroids without classical names have a special kind of importance, again based purely on symbolic considerations. Here we enter the realm of "personal name asteroids". Press (1993, p.212) concludes (after much uncontrolled research), that if an asteroid has your name, or something close to it, then its position in your horoscope describes your relationship to yourself (whatever that means). If an asteroid has the name of another person (eg asteroid #3085 is called Donna), then its position in your horoscope (birth chart) describes your relationship to that person. This would seem to imply that your relationship to all the Donna's in the world would have much in common.

Cultural concerns

Cultural concerns lead astrologers of a particular region to attribute symbolic associations to astronomical phenomena that would be viewed entirely differently by astrologers in other parts of the world, assuming they considered such observations of relevance in the first place. For example, at some Hindu temples in India, it is believed that the sun suffers from leprosy. Sunspots may have played a role in this symbolic association (Malville & Swaminathan 1998).

Creative astrologising

Most modern astrologers view astrology as an all-encompassing, life-pervading system. For them, everything that happens on earth, including fuels and their prices, road rage, stealing bases in baseball, finding your best mate, athletic advantages at the Olympics, the political behaviour of opposing candidates, a person slipping on the ice in winter, whether or not a person gets in an automobile accident, etc. are all connected to the planets (see articles by astrologers on the astrology site, Stariq 2000). The symbolic connections described by astrologers, such as "Neptune is linked to fossil fuels", and "Uranus and Neptune brought us the internet", are based entirely on verbal associations, stretched analogies, and idiosyncratic extensions of mythological symbolism.

Further, the validity of these symbolic connections are not determined by empirical investigation, or coherence with established scientific theory, but rather by the prestige of the astrologer, the creativity of the astrologer in stretching the symbolism to encompass the interests of the readership, and the ability of the astrologer to tell a good story. Hence, different astrologers will arrive at quite different symbolic interpretations

of planetary positions and terrestrial events, and each will be convinced of the validity of their own perceived connections. If by chance the astrologer finds an empirical study that will support the claims, it is touted as "scientifically supported", but a lack of supporting empirical research will have no effect on the perceived validity of the asserted symbolic connections [see any issue of *The Mountain Astrologer*, the *Astrological Journal*, or the astrological website Stariq 2000).

9. Problems of non-falsifiability

The foregoing section on symbolism indicates how astrologers can claim that the testing of astrology is almost impossible, while simultaneously claiming that their daily experience (i.e. testing) confirms everything. Although there are specific astrological traditions, the flexibility of symbolism allows almost any outcome to be viewed as confirmatory. Consequently, a main problem with the testing of astrological claims is that there are no clear-cut results that would be considered problematic for astrological theory.

In fact, the behaviour of astrologers, indicates that there seems only one overall "theory" in astrology, namely *as above, so below*, or the claim that there are (unspecified in advance) correlations between the positions of the heavenly bodies and earthly events. Astrologers call Uranus the divorce planet (see Wolfstar 2000), but neither Uranus nor any particular conjunction or transit with Uranus need play a role in any particular divorce or even most divorces. In fact, almost any other planetary conjunction or transit could, with a little stretching, be interpreted to play a role in a divorced couples chart, making everything "explainable" in astrological terms. If we found Venus square Saturn in the majority of divorced people's charts, this would make astrological sense.

And so would Sun Square Mars, which stands for will power, aggression, etc. An expression in daily life would be lots of arguments, strife, the will of one partner to dominate over the other, and so on, hence, "No wonder these people got divorced."

Note 32

Anything goes

Consider now an astrologer who explains a sudden death of a client with a transit Uranus within one degree conjunct with the Fifth House cusp. This looks odd because the Fifth House is associated with children and fun. But the astrologer could point out, on the mundane level, the Fifth House cusp makes a square with the Eighth House cusp, which is the House of Death. A reader will not find such a "cause" in any astrological textbook. Nevertheless, quite a few astrologers could easily be persuaded that such an explanation makes sense. Indeed, such ad hoc astrological juggling takes place all the time on astrological internet sites such as Stariq. Accordingly, in research by astrologers and sympathisers, anything goes as long as some relationship between astrological symbolism and earthly events is obtained. And, of course, the likelihood of *some* relationship being uncovered is far, far higher, than that of any *pre-specified* relationship being uncovered. **Note 33**

An example of nonfalsifiability

Let us consider the study recently published by Denness (2000). This study found a tendency for car thieves and their victims to share the same sun sign in two areas in England. No specific astrological theory is tested here, only the question whether there is

a connection between one set of data (in this case, birth sign of car owners) and another set of data (birth sign of car thieves).

If the uncovered relationship was very different, for example, victims and car thieves avoided sharing the same signs, or had opposite signs, or one group had odd signs and the other even signs, or one group had male signs and the other group female signs, the study would still be described as "an argument that zodiacal signs influence career choices" (p.47). On the other hand, if the study had found no relationship of any kind between the signs of the participants, this would still not be a problem for astrologers. The negative findings would be criticised by astrologers for testing isolated factors and ignoring the qualifying effects of other factors in the horoscopes, or it would be argued that sun signs are too crude to pick up such subtle effects and planetary conjunctions and transits would have been more informative. Ironically, it could be criticised as not testing any recognized textbook claim. **Note 34**

Even specific claims are nonfalsifiable

Testing specific claims does not help either, since astrologers have a vast array of ad hoc excuses for rejecting any study that does not confirm any specific claim. Some of these are: a factor was overlooked in the chart, it was done in the wrong country, the stars incline not compel, the meaning of the factors may have changed for the people involved, and so on (see Kelly 1998). All of this supports the conclusion that astrology is not a discipline worthy of the name. Positive findings could never add up to anything coherent since there is no way of following up studies and testing refined hypotheses that could advance the field. There is no astrological theory in research except the vague *as above so below*, and there is always an ad hoc hypothesis for every negative finding.

10. Problems of magical influences

Magical or unknown influences are appealed to whenever astrology is in difficulty. Earlier in this article the problem of including all the asteroids in the birth chart/horoscope was described. Hand (1981) points out that astrologer Eleanor Bach "solved" the problem by using just the first four asteroids to be discovered. Hand (1981) justifies this arbitrary choice by informing us that:

One way of defending the use of the first four to be discovered (rather than the four largest) is to say that the effect of celestial bodies is in some way related to human consciousness of them rather than to their physical properties. As the first to be discovered they no doubt made a greater impact than the thousands later to be discovered (p.93).

We are left in the dark as to what the "some way related" and "greater impact" are intended to mean here. What about people who have never heard of the first four asteroids? (The same problem applies to the use of Uranus, Neptune, and Pluto! Up to the discovery of Uranus in the late 1700's, astrology had Saturn as the outer planet). Does this mean the asteroids cannot be used in constructing their charts, or does the awareness of academics of their existence cover for the rest of us? No doubt another set of special rules can be devised by astrologers to "solve" this problem. For example Goodman (1971) says that new asteroids work from the very first moment they are discovered by astronomers. Such speculations have the great advantage of requiring no argument and the disadvantage of saying nothing. Some of the grave difficulties of magical correspondences as explanations are described by Dean, Loptson and Kelly (1996):

First, magical correspondences are arguments from analogy, which can be expressed in the form object X has properties A and B, object Y has property A, therefore Y also has B. John Smith is tall, therefore John Brown is tall ...

The inference is vivid and quick, and therefore (as in astrology) agreeably seductive, but our chances of it being correct are not good ... No longer do midwives open the door to ease a painful labour. No longer do alchemical ideas appear in chemistry courses. In fact, magical correspondences have been so spectacularly unsuccessful that in Western education today the doctrine survives only as an example of fallacious thinking. Second, it is impossible to specify any two things, no matter how dissimilar, that do not show some kind of correspondence. A raven is like a writing desk because both begin with the "r" sound, both cast shadows, both contain quills. A speck of sand is like the Empire State Building because they have the same colour, both contain silica, and have a large number of atoms.

The point is, how can we distinguish a magical correspondence from other correspondences? The books do not tell us. Third, we have no immediate way of choosing between opposing magical correspondences. Black cats were lucky to ancient Egyptians but unlucky to medieval Europeans. The moon was male to the Babylonians but female to the Greeks. ... Is Mars unfortunate because red = blood (war), or fortunate because red = blood (life)? Who can believe any magical correspondence when it is so easily denied by another? (pp.28-29).

Other criticisms of magical thinking can be found from a philosophical viewpoint by Thagard (1980) and Vickers (1988), and from a psychological perspective by Zusne and Jones (1989).

11. Conclusion

The accounts put forward by astrologers to justify their postulated celestial relationships with outward behaviour/activities of human beings (traditional astrology), or inner structures of consciousness (modern psychological astrology), are problematic and implausible in the extreme. Astrology as presently practised by most astrologers, in its multifaceted and contradictory variations (all of which claim truths that allegedly transcend time and space) is not a reliable source of information about ourselves.

These conceptual problems do not lead astrologers to revise the conceptual basis of astrology or extend it in ways that would allow them to learn from failures, as is routine in orthodox disciplines (Mayo 1996). Rather, they are dealt with by using metaphors that lead nowhere and by applying ad hoc hypotheses that are not independently testable. Chance confirmations are readily seen as support, and routine failures are just as readily explained away by the complexities of astrology, hence the general indifference of astrologers to negative evidence (Mayo 1996, pp.280-282; Kelly 1998).

The failure of physical explanations for astrology, and a determined blind eye for the notable success of psychological explanations such as cognitive and perceptual biases (Dean, Kelly & Mather 1999), have led astrologers to adopt transcendental worldviews. But instead of providing rational arguments for these worldviews they invoke vague spiritual or occult convolutions and vague references to modern physics, the last in order to appear up-to-date and fashionable. These convolutions (eg "animating spirits", "sympathies", "pure consciousness", "resonant bonds of vibratory frequencies", "psychic anatomy") have no useful explanatory value. We are left with a disparate set of ideas taken out of context from various ancient and often incompatible worldviews without any coherent interlocking metaphysics. The difference from the coherent and well-tested explanations provided by psychology (which exactly predict the astrological situation) could hardly be more marked.

Birth chart interpretation is based on a chaotic mix of physical symbolisms, word associations, analogy, mythology, tradition, and the idiosyncratic contributions of individual astrologers. There is little agreement on what factors should be included or ignored in a chart, how they should be combined, how their importance can be determined, or how conflicting claims can be resolved. It is clear that astrology does not have the resources to deal with its anomalies, nor is it ever likely to. It has nothing to

contribute to other disciplines except fallacious arguments and sophistry. Astrology is part of our past and has undeniable historical value, but astrologers have given no plausible reason why it should have a role in our future.

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The Concepts of Modern Astrology

A Critique -- notes and references

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As already mentioned, these notes need not be referred to as they occur. Instead they can be read more conveniently, and without loss of relevance, as a whole.

Note 1. In Western culture until Newton the views of astrologers and scientists were not so very different. There was widespread belief that all phenomena in the inferior elemental world of nature were governed in some way by the motions of the superior and incorruptible celestial bodies. Not until Newton did the heretical idea arise that maybe these beliefs could be tested, which idea proved to be unstoppable.

Note 2. How successful are astrologers at making predictions? Different astrologers provide conflicting answers. Vaughan (1995) tells us that astrologers have, throughout medieval times, made many successful predictions, including predictions of death. On the other hand, Guinard (1997) says, "it remains true that for two thousand years, astrology by itself has strictly not predicted any major political or cultural event." Campion (1997) contends that there are no reliable techniques in astrology for making successful specific predictions. For example, consider predictions of death: "The prediction of death, astrologically, is a highly subjective business, and there can be no rules for predicting death, because if they applied in medieval times they would apply now -- but now we have a much longer life expectancy and the planetary cycles have not stretched.". It is also interesting to note that when successful predictions are made, there is no consensus in the astrological community regarding the predictions.

The successful predictions seem to be made by isolated astrologers with the vast majority missing the event entirely. While a number of astrologers contend that astrologers cannot predict specific events, they claim they can tell that "something" is going to happen. But astrologers did not predict world war 2, and why did the vast majority of astrologers miss "the something" of the fall of the Berlin wall and breakup of Russia in 1990? And why did so many astrologers wrongly predict catastrophe at the turn of the twentieth century with the Y2K fiasco? [See Townshend's (1999) astrological site for a large number of astrologer's predictions of Y2K disaster].

The vast majority of astrologers completely miss important events, and the vast majority are wrong when they make specific predictions of major events. Interesting

recent examples involve the predictions by astrologers of the outcome of the year 2000 USA presidential election, and the predictions of the 26 Jan 2001 earthquake in India (the worst in 50 years). As usual, only a few isolated astrologers made the correct calls. Let us view these in context. In a survey of ten prominent astrologers on the astrological site, Stariq (2000), four found multiple celestial indicators that Bush would win, four predicted Gore would win, and two hedged their bets and made no clear prediction regarding who the new president would be. These predictions follow the polls made of US voters who were equally divided.

After the election, astrologers made much that "Mercury stationed direct on the evening of November 7, 2000" (See Tarriktar 2001). If it was so obvious about Mercury, why did millions of astrologers around the world miss it? Also, does talk of stationary Mercury make astrological sense, given that Mercury retrograde is an isolated factor? Similarly, we are told (Stariq 2001) that at least two astrologers in India, out of perhaps a hundred thousand, predicted the earthquake of 26 Jan 2001 and "We can see the earthquake reflected in the transits to India's chart" (Wolfstar 2001). But again we are dealing with an isolated factor which is allegedly taboo in astrology. Furthermore, if it is so easily seen why didn't the astrological communities around the world (and especially in India) issue public warnings? And why did only a few out of the millions around the world see it coming? And what is the overall batting average (correct specific predictions versus incorrect specific predictions) of the astrologers making successful predictions? The reader is unlikely to learn from the astrological community that some Hindu astrologers predicted that an even bigger earthquake than the 26 January one would occur in India by 5 February 2001 (Yahoo, 2 Feb 2001). Happily, they were wrong that time. Given that astrologers not only possess all the same information that everybody else has, they are also supposed to have an additional source of information provided by the heavens.

One might expect astrologers to not only have far more consensus in their predictions, but also, as a group, consistently outperform everyone else. If there is so much diversity among astrologers regarding two-outcome predictions like elections, they surely cannot be trusted on more complex issues. For an interesting, historical discussion of prediction relevant to astrological prediction see Pickover (2001).

Note 3. The research of the late Michael Gauquelin and his wife Francoise have been consistently misunderstood and distorted by astrologers and those sympathetic to astrology (eg West 1991, 1996). For an account of the Gauquelin work see this website under Gauquelin.

It is of interest to note that the overall findings of Gauquelin are hardly supportive of astrology. As noted by Dean (2002), "astrologers do not claim that astrology fails to work for half the planets, for signs, for aspects, for character, or (on Gauquelin's figures) for the 99.994 percent of the population who are not eminent." Furthermore, when Gauquelin tested the ability of astrologers to predict people's character and behaviour using the whole chart, they invariably failed, which led him to conclude that horoscopes were of no useful value in understanding people (Gauquelin 1983).

Seymour (1990, 1996) has argued for the validity of a limited astrology based on the Gauquelin findings. He speculates that our neural networks respond to fluctuations in the earth's geomagnetic field which, in turn, interacts with the gravitational fields of the planets. McGillion (2002) has argued in favour of a pineal intermediary.

Unfortunately, while Seymour's and McGillion's theorizing do not contradict modern physical theories, to make a plausible case one needs more than an after-the-event fit to the Gauquelin results. Despite their appeals to the scientific status of their explanation, they fail to specify how their theories could be tested. For example they fail to address the mismatch between planetary and biological frequencies, and how an unborn child can pick up the difference between Jupiter and Saturn when the frequencies of their diurnal signals actually overlap, and how it can actually work when the causal chain from genetic heredity to personality is extremely complex and non-linear (see Turkheimer 1998). See also Dean (2000) for further criticisms.

Note 4. The quality of much astrological thinking is summarized by ex-astrologer Joanna Ashmun's descriptions of internet exchanges between astrologers:

Skepticism is not in evidence, and is in fact discouraged. ... The way astrologers treat researchers and skeptics is just the way they treat other astrologers who disagree with them -- continuing on as if they and their disagreements never existed ... The thing that I find least comfortable about astrology discussions (and not just on the internet) is their immateriality, their lack of grounding. Astrologers are less literate than average; they write badly and they read badly; there is almost no critical response; errors are ignored, corrections are not acknowledged. They answer off the top of their heads, quote from memory, claim that anything published anywhere at any time is general knowledge, and then get sidetracked into arguing about who's a liar instead of sorting out the facts of the original question. There is nothing resembling peer review, except in regard to political correctness. The fact is they don't look stuff up, not even when they disagree with you! Most astrologers would rather have an iffy quotation from Dane Rudhyar or C.G. Jung to support their opinions than some good research (Ashmun 1996, p.41-43).

Note 5. This way of dealing with conflicting ideas is quite common in the astrological world. It is often claimed that "Everything works" -- it just depends on one's point of view, line of approach, etc. Here speculation, devoid of accompanying argument, is often the rule. So in regard to conflicting house systems one can hear responses like, "Perhaps Regiomontanus works best for character and circumstances in life, whereas Placidus may give a better insight into events, and Koch works best for horse racing". But there is no agreement among astrologers on these claims nor even minimal agreement on how such speculation could be tested.

Note 6. The oft-heard claim in textbooks that "The stars incline, not compel" is contradicted by statements in any astrology book or magazine. So the British astrologer Campion (1987) tells us, "signs rule skills and talents" (p.45), "Artists are specifically linked to a strong Venus ... 5th house ... and sun in fifth house" (pp.17,47,49). No ifs or buts here.

Note 7. A variety of ad hoc rules could be used, for example, oldest = Sun, or (for opposite-sex twins) Male = Sun, or it could be whichever one on inspection fits best. At the end of the day all that matters to astrologers is having a practical strategy no matter how arbitrary.

Note 8. Actually, Freud did not discover the unconscious. There is a large pre-Freudian literature on the topic. What Freud did was use the term as a working tool that could be investigated psychologically (Fine 1973, pp.36-37). Further, the North Pole wasn't discovered at all. Everybody knew where and what it was.

Note 9. Owen (2000), writing in *The Mountain Astrologer*, praises sun-sign delineations because people can "recognize themselves" in them, which implies they are accurate, but is mystified by the public's appetite for sun-sign forecasts when they are so "consistently wrong". Unfortunately, she does not make clear the distinction between forecasts and delineations or why one and not the other could be seen as accurate.

Note 10. A more general underlying issue here is why astrologers themselves believe in astrology. As Dean, Mather and Kelly (1996) point out, the steps in belief are roughly:

1. Read astrology books, become aware of the system.
2. Learn more, calculate charts, see that they appear to work
3. Become dazzled by the history, majesty, and sheer appeal of it all.
4. Adopt the system as true, and reject attacks to avoid cognitive dissonance.

The sequence from 1 to 4 is not unreasonable. Students of astrology are not told to accept astrology without question, they are told to try things out for themselves, so at first sight, what could be fairer? The problem, of course, is that they are not made aware of all the pitfalls of personal validation (and the confirmation bias), nor are they told how to make controlled tests or to design research that actually tests astrological hypotheses and not auxiliary hypotheses. Nor are they presented with the vast body of criticism of astrological tenets, as is, for example, found in this article and references. Once they reach (4) then any internal inconsistencies and disagreements can logically be accommodated as minor hiccups due to the complexities of astrology or inevitable human fallibility (see Dean, Mather & Kelly 1996).

Note 11. Astrologers will often, in the same article or book, shift back and forth between causal and non-causal terminology. Cornelius (1998, p.10) mentions that this was noted by St Augustine almost two millennia ago:

[Augustine] observed that astrologers (when it suited them) will say "Mars caused the action of violence in that man" and, if then pressed on that point, will say "Mars is a symbol", but catch them another moment and they're back to talking as if Mars caused the thing.

Similarly the British astrologer Campion (1987) says, "Saturn causes delays, obstacles and material difficulties" (p.19) and "Uranus rules all new technology" (p.19).

Note 12. Johnsen (2000) points out that the debate between those astrologers who believed in divinatory astrology and those looking for physical explanations of astral influences was present in the second century AD. Almost two millennia later, the debate is still alive in astrological circles with about as much hope of being resolved as it was then.

Note 13. Consider as an analogy, the phrase "medicine works". This would likely be interpreted to mean that medicine as a discipline has demonstrated techniques that work. However, some medical claims about the functioning of the human body are strongly supported by evidence, some are moderately supported, and others weakly supported or dubious. Similarly, some techniques in medical practice have been shown by studies to work very well, others moderately well [but may still be used because of a lack of better alternatives, others not very well (e.g. The PSA test for prostate cancer but may still be used because of a lack of alternatives despite high false positives and false negatives)].

Further, there is awareness in the medical community that some techniques may work for different reasons than those considered by advocates (see Beyerstein 1999). Medicine is buttressed by a large consensus in the medical community (on areas such as anatomy, mechanisms of many diseases) and is associated with a successful technology (X-rays, surgery, MRI, PET scans, etc). There is no comparable consensus within

astrology about the comparative reliability of techniques or even how we might go about determining the reliability of the techniques.

Note 14. It might be argued by astrologers that many of the techniques are complementary rather than contradictory (various diseases may be cured by herbs, drugs, climate change, psychotherapy, etc.). But this depends on the astrologer and/or astrological school. Most astrologers do not seem to care about consistency in the systems they use, if only because most of them have either no idea of the technical details or of the philosophy behind them. Only a few schools in astrology (Ebertin, Hamburg, Ram, etc) know exactly what they are doing and hence reject systems that do not confirm with their ideas. As many astrologers see it, astrology is a pragmatic business. As long as it seems to work then they do not worry about (the absence of) consistency in techniques, philosophy, etc.

Note 15. West (1991) attempts to bypass the problem of how the astrological relationships could have been determined by pointing in another direction. He agrees that a complex system such as astrology could not have been built on observations but argues that this similarly holds for other bodies of ideas: "this system (astrology) ... is a whole. No amount of aimless observation, no matter how accurate or painstaking, could develop willy-nilly into such an elegant and internally consistent system. In the realm of man, nothing evolves mindlessly. No coherent body of knowledge -- such as astrology -- simply accumulates, taking form as it goes" (p.38).

However, astrology is not a coherent body of knowledge but a body of ideas, and ideas do not have to be true to be coherent (eg Tolkien's world, Star Trek, etc.). Also, the historical inconsistencies and differences among astrological systems throughout the world show that astrology is not the generic internally coherent system that West makes it out to be. Furthermore, bodies of knowledge in the social and natural sciences have theoretical conceptual structures that have become more refined over time in response to research findings which, in turn, direct and facilitate research (Whitt 1992). In contrast, astrology has shown no progress in solving its empirical and conceptual problems. Unlike many other theories, astrology doesn't have diverse evidence that converges on its central claims, has no plausible explanation for its putative correlations, there is little worldwide agreement on central tenets, and anomalies that were pointed out by critics centuries ago still remains as persistent difficulties (See Dean , Mather & Kelly 1996, pp.62-64; Dean, Ertel, Kelly, Mather & Smit 2000).

Note 16. Dane Rudhyar began the move in the United States away from traditional ideas. In their psychological orientation Rudhyar and Perry overlap, the main difference being that Rudhyar is more inclined to Eastern mysticism and religious concepts. A critical examination of Rudhyar's astrology can be found in Kelly and Krutzen (1983). A thorough consideration of the development of psychological astrology in the early twentieth century would also acknowledge the theosophist ideas injected by the British astrologer Alan Leo and the American astrologer Marc Edmund Jones (Zoller 1998).

Note 17. A useful critique of non-physical /dualist views of mind can be found in Parsons (2000).

Note 18. Astrologers are forever trying to increase the surface plausibility of astrology by associating it with the latest theories that have caught the public imagination. So Blumenthal (1994, p.19) appealed to the relevance of fuzzy logic to astrology, while Perry alluded to chaos theory (1994, p.34) and the new physics exemplified by Fritjof

Capra and David Bohm. Townley (1994) informs us that "the more advanced areas of systems mathematics [complexity theory, information theory] and neuroscience [could] be very friendly to the type of structural thinking that the best of astrology has to offer and to which astrology could make important contributions" (p.43). Jewsbury (1988) notes how Rupert Sheldrake's principle of formative causation "should remove the objection that astrology is impossible", adding in an interesting circularity that "astrology itself is a further pointer to its truth". Astrologers just assert, without providing details, that Bell's theorem, Bohm's holonomic theory of quantum mechanics, the Anthropic Principle, and purposive evolution are, both all compatible with each other, and support the principles upon which astrology is based.

A negative feature of these astrologers' writings is their penchant to be crucially vague at critical points. We are not provided with specifics of how these juxtapositions will take place. We are only given promissory notes. It is never made clear how the new physics and other modern disciplines can provide support for the supposition that specific planetary configurations can *symbolize* fundamental human needs, or motivational drives (eg. How Sun square Mars symbolizes overall strength and vigor in the personality) [See Stengler (1995, 1996) for critical comments on misinterpretations of Quantum Mechanics by advocates of New Age claims, and Guttman (2005) for what he sees as Capra's naive and misleading writings].

Further, such modern approaches in physics do not explain why the planetary positions of a moment in the past (birth) describe the supposedly continuing nature of a person in the present. And what about the "birth" of a country, a company, a resolution, a domicile, and so on, all of which astrologers confidently take as having their own natal charts? (Jones 1996).

The astrologer Cornelius (1998) has pointed out that this is an old game that astrologers have always played, namely that astrology has survived by disguising itself as part of the science and philosophy of each particular time period. The modern disguise being, according to Cornelius, depth psychology (Jungian archetype psychoanalysis) and modern physics. Apart from giving the impression that modern theories in physics hold the key to astrological explanation, many astrologers mix in modern theorizing in the social and biological sciences with their symbolic interpretations, creating a very uneasy alliance. Since the theories in the social sciences change in response to new discoveries and evidence, it is interesting how easily astrologers relate planetary conjunctions with completely different findings and theories over time.

For example, Banfield (2000) in "The Astrology of Depression" refers to findings in the psychological literature that there may be a link between "adult depression and being hypersensitive, shy, introverted, and timid when young." These childhood signatures, Banfield claims, can be identified in the natal/birth chart and may be suggestive of future depression. For example, "Astrological indicators for sensitivity and vulnerability are linked to a strong natal emphasis on the receptive planets ... emphasis on the water signs ... and water houses ... and suppression of the fire element in the chart" (Banfield 2000, p.77). On the other hand, Angelfire (1999) considers depression in terms of excessive Saturn and has no need of such theorizing.

So we find some astrologers relating planetary configurations to psychological theorizing and others ignoring such findings. This adds further chaos to the already bloated set of astrological techniques and consequent disorder in the entire field. We have also heard it all before. In the past, the same confidence was expressed by astrologers with every

prominent theory of the period. The two millennia of failures provides some good inductive grounds for believing that the confidence of present-day astrologers is as misplaced as that of their predecessors. Such represents the triumph of hope over experience.

More recently astrologer Ken McRitchie (2004) has made an attempt to provide academics with a theory to explain why astrology works. He identifies key psychological concepts such as "values", "skills", "urges", and "development", casts around for a classification scheme whose numbers are a convenient match to astrology (eg a classification of urges into ten categories that numerically match the ten planets), and proceeds from there. Along the way he makes key statements that are glaringly wrong, for example "Few [matching] tests have been conducted" (p.28) and "personality is not well understood today as a science" (p.32), and aggressively ignores the existence of hidden persuaders. Ironically he stresses that his book is "without hypotheses or testing" (p.14), so the end result boils down to speculation and passing the burden of proof. Precisely the things astrology does not need, nor the things that would satisfy academic demands for a theory.

Note 19. We are told that "astrology was never disproven by the methods of science. Rather, its invalidity was a presupposition. The issue was not one of proof, but of paradigm" (Perry 1991/2000, p.4).

However, in the history of science and ideas, theories and paradigms do not have to be disproven to be replaced or superseded. Both Popper and Kuhn (two prominent philosophers of science in the 20th century) were aware that astrology was not disproven. Popper (1959), argued that, on the contrary, astrologers go out of their way to develop immunizing strategies to make sure that no evidence will ever seriously threaten their theory. Their one-size-fits-all theories are so elastic that any disconfirming evidence can be explained away.

Kuhn (1970a,b), along related lines, contended that astrology fails because practitioners did not and do not learn from failures. They have not set up reliable procedures to determine the causes of mistakes, learn from them, and improve their theories. While astrologers have acquired multiple outs for failures they do not have agreed means of reducing these alternative explanations of failure and identifying specific astrological claims that need rejection or revision.

We might also point out that the views of astrologers in the medieval and middle ages (which are often at variance with much present day practice) have also not been disproved by present day astrologers (eg see Crane (1999) for a review of such approaches in medieval times). Rather, such views are just out of fashion in the astrological community. One interesting example is the doctrine of sect, where charts of daytime and nighttime births are read differently (Hand 1995). In this approach, the planets change their meanings in day and night charts, which would seem to mean that on average the world's astrologers must be getting it wrong half the time. Why don't they notice?

Note 20. Astrologers could get around this problem by having astrological symbolism restrict itself to the basics of human nature as claimed by bio-psychological researchers and psychometricians. This would turn astrology into a science that could be investigated by the quantitative methods used in the social and life sciences. This does not seem, however, a path most astrologers seem willing to pursue.

Note 21. A similar situation arises in counselling and psychotherapy. However, an examination of astrology books compared with clinical and counselling texts show important differences. The psychological texts, unlike texts for astrologers, present overviews of the research literature, and compare and contrast differing perspectives in terms of strengths and weaknesses (see Capuzzi & Gross 1999 for a typical example). Further, in-depth research based discussions of what is currently known about which treatments are most effective for various psychological disorders can be found in the psychological literature (eg Nathan & Gorman 1998), but similar research-based comparisons of techniques are absent in the astrological literature.

The theories in psychology also do not require the extravagant and problematic transcendental and supernatural assumptions that underlay astrology. Astrology complicates our view of the universe without providing an increase in understanding.

Note 22. Astrologers often claim, in a loose, unsystematic way, that astrology can arrive at a quicker, in-depth understanding of a person than can psychologists. So Tyl (in Phillipson 2000, p.62) says, "There are hundreds and hundreds of people who have said 'My God, it took my therapist six months (or a year) to get to that!' ". First of all, the same stories occur in psychology, when clients change to a therapist with a different orientation, so the situation is hardly unique to astrology. It often happens within astrology itself when clients consult a different astrologer.

Second, what can we infer from this? Not much without complete transcripts of the interviews. Third, such stories create other problems for astrology, since the same situation can arise when wrong birth information is used. The psychologist/astrologer Niehenke (1983) reports, "One of my clients had consulted four other astrologers before she came to me. She judged my interpretation as the most adequate of all, and showed me for comparison the work of my colleagues. I thus realized that I had made an error of 20 years on her birth date" (p. 37).

Note 23. The seductive phrase "experiential evidence" (or "clinical evidence") is problematic. Practitioners of psychological approaches Perry disavows (eg Skinnerian behaviourism, orthodox Freudian psychoanalysis) and the many competing schools of astrology in both the East and West, many of whom would contest Perry's approach, all cite testimonial evidence and case studies in support. But if we can all cite experiential evidence for our positions, it can hardly, by itself distinguish the good from the bad, the better theory from the worse. As Meehl points out:

the scholarly authors of *Malleus Maleficarum* pursued ... an enterprise detailing symptoms that diagnose witchcraft. Despite their scholarly efforts, we know today there are no persons who have made a solemn pact with Satan and thereby gained preternatural powers. If asked to support their theoretical system and the technical procedures warranted by it, [they] would doubtless have invoked the medieval equivalent of "clinical experience" (1995, p.1021).

A salutary lesson here is provided by other non-mainstream approaches such as phrenology, graphology (handwriting analysis), and palmistry which cover the same ground as psychological astrology. Phrenology was immensely popular in the nineteenth century and both phrenologists and their clients were very satisfied with phrenological readings. Graphology has been around for some centuries and is still very popular. It is instructive to compare the following endorsements of psychological astrology, phrenology, graphology, and palm reading:

(1) "[T]he client's character and life story inevitably conform to the range of potentials symbolized by the [horoscope], often in extraordinary specific ways" (Perry 1994, p.35).

(2) "The phrenologist has shown that he is able to read character like an open book, and to lay bare the hidden springs of conduct with an accuracy that the most intimate friends cannot approach" (Alfred Russel Wallace, cited in Severn 1916, p.6).

(3) "Your handwriting is all-revealing. To the trained eye it lays open your secret mind. Every whirl or line you pen exposes your true character and personality" (Marne 1988, p.2).

(4) "A study of the hand tells much about ... the physical body ... health, vitality ... the emotional nature -- love potential ... the will and individuality ... success in business ... talent ... creativity ... fame ... Self-fulfilment -- travel, life experience, spiritual development" (Wilson 1971, pp.7-8).

Astrology is only one of a very large number of contenders, past and present, which rely on magical thinking and purport to yield knowledge unattainable by materialistic science. No plausible reasons have been provided that all of these extra-science contenders are interconnected, or mutually supporting (Loftson 1996). Planets or head-bumps or palms or handwriting, at least one of them is redundant. Astrology is in the unenviable position of having to show either that it provides genuine insight into areas not covered by the social sciences and related disciplines, or to show that it can meliorate our understanding in the same domains covered by contemporary psychological and sociological theories. Astrologers have to show they can provide insight or benefits beyond those provided by non-astrological theories.

Third, many sources of bias operate in such personal experiences that can lead clinicians to claims of personal knowledge that are invalid, despite their association with high levels of conviction (Dean, Kelly, Saklofske & Furnham 1992; Dawes 1994, 2001; Grove & Meehl 1996).

Note 24. The astrologer Pottenger (1994) said "Opponents of astrology like to quote 'extraordinary claims require extraordinary proof' without giving any proof that 'as above so below' is an extraordinary claim. It is only extraordinary in some philosophies, especially materialistic frameworks which deny meaning" (p.37). As it stands, what Pottenger stated is trivially true. No matter what is postulated (barring logical impossibilities), it will always be more "plausible" within some worldview(s) than others. For example, fairy bubbles, goblins, and guardian angels are extraordinary claims in materialistic conceptions of the world (and perhaps many others as well). That they are more plausible in worldviews based on say Santa Claus or Peter Pan does not provide any reason to believe in their existence.

Similarly the claim that the universe has *meaning* and provides us with signs/portents does not imply that the signs are to be found "up there", they might only be found in entrails, the tracks and movements of nature, or only in messages from angels or similar beings, or in a number of other forms. It does not follow that an animistic/magical universe *must* have, or even might have, *meaning* reflected everywhere. We need cogent reasons to prefer the animistic universe of astrologers to other possible animistic universes, just as we need evidence for a particular astrological universe as opposed to alternatives.

There are also an incredibly large number of possible pairings between *as above, so below*. The possibilities are even larger for a system based on the symbolic meaning of signs. For example, there are probably more possible pairings of two things in, say,

Jungian symbolism than if we confine ourselves to putative causal (material) relationships; so it is even more incumbent on astrologers to provide a reason for their pairings than it would be on materialists.

Note 25. Perry (1999, p.1) informs us, without supporting argument, that "I believe the purpose of life is to progressively evolve a deeper and wider connection to this parent consciousness until we ultimately realize our at-one-ment with it." The issue of purpose in life is a very complex one with diverse answers both within and among cultures. The expression "a deeper and wider connection to this parent consciousness" is less than helpful, since it would have vastly different interpretations in Eastern and Western traditions. It would also need a great deal of explication as to how astrology can help us to realize this purpose. Many would deny Perry's claim that any transcendental purpose(s) are even knowable by human beings. Further, it is unclear whether any transcendental claims to meaning and purpose really help since we can step back from any proposed spiritual perspective and doubt its point as well (Nagel 1980).

Finally, the notion of purpose is an ambiguous one in that if there is no cosmic purpose to the universe, it does not follow that individual human beings cannot live meaningful/purposeful lives (Ames 1999; Sharpe 1999; Taylor 1999).

Note 26. The "underlying intelligence" also seems from Perry's perspective to be benevolent rather than indifferent or vindictive (since it is "always assisting us"). Presumably, this is why we should "trust the universe". This notion comes face-to-face with the argument from evil (see Weisberger 1999). Given that this "Intelligence" plays a large role in the transcendental aspect of many astrologies, one might expect an elaboration, along with some awareness of the extensive debate in the philosophical and religious literature on this topic.

Note 27. Contrast this to the debates in modern physics over the nature of reality. Physicists, unlike astrologers, are very forthcoming in the weaknesses and shortcomings of their theories and their willingness to embrace new paradigms (see economist.com 2000; Johnson 2000). Astrologers, unlike physicists, like new paradigms as long as they don't challenge basic astrological practice or fundamental beliefs.

Note 28. Astrology is viewed in different ways by astrologers. Most astrologers, if implicitly, hold a realist view, that is, that astrology conveys truths about the universe and the human situation. While such a perspective indicates a need to arbitrate conflicting astrological views, there is a general reluctance in the astrological community to do so. However, "Basinger's Rule" surely applies to astrology as it does with religion:

If we want to maximize truth and avoid error, we are under an obligation to attempt to resolve significant conflict between astrological claims. Astrologers have an obligation to identify and assess the reasons why astrologers with whom they disagree hold their positions (Basinger 2000; see also, Trigg 1998). Other astrologers are non-realists since they would contend that astrological claims do not rest on evidence, but rather express commitments to a way of life or particular values. While non-realist theologians may talk of "God" and "life after death", they would reject realist talk of an objectively real God or actual physical survival of our deaths. Similarly, non-realist astrologers like Kochunas (1999) contend that astrology is more in line with drama and poetry. It does not provide factual meanings but can still add value, interest, and meaning to our lives.

Note 29. Many astrologers seem to be simultaneously universalist and relativist. They claim that their astrology is shown to work by their own experience and holds for all people on the planet, but they also acknowledge the existence of conflicting traditions of astrology that work as well. A similar problematic situation occurs when astrologers purport to be both post-modernist and embrace astrology as a universal Grand Narrative. Astrology is, ironically, a paradigm example of the kind of universalist, all-encompassing self-described repository of received wisdom that post modernism opposes (see Sim 1998, pp.vii- ix).

Note 30. Venus was widely believed at the time to be a cold planet, whereas Mars was characterized as hot and dry. Hot, cold, wet, and dry were the four qualities underlying the four elements considered by Greek philosophers to be the basic constituents of the physical world. So they had Earth (cold and dry), Air (hot and wet), Fire (hot and dry), and Water (cold and wet). Elements with common qualities were able to change into each other, eg Water (cold, wet) could change into Earth (cold, dry) because both had the quality of coldness. Most Greek scholars, of course, considered science (as we know it today) to be an insignificant part of philosophy, which meant that their world view was based mainly on philosophical ideals rather than empirical observations. So hot and cold, etc do not necessarily correspond to what we today call hot and cold, etc.

Note 31. The diversity in symbolisms used by astrologers with apparently no rules about being consistent are noteworthy. Davison (1963) bases his astrological symbolism variously on physical attributes of the planets and on attributes of the Greek gods. The astrologer Press (1993), on the other hand, utilizes other mythologies and adds another dimension of physical characteristics to her symbolism, such as a celestial body's proximity to other celestial bodies. Which particular magical correspondences are perceived as relevant are in the eye of the beholder, and there are many different astrologer beholders.

Note 32. On the whole, astrologers will recognize some combinations easier than others. They will recognize Venus 0/90/180 to Saturn, or Venus 0/90/180 to Uranus, or Venus 0/90/180 to Neptune, or Venus 0/90/180 to Pluto as a "cause" or contributor to divorce. After all, Venus is the love planet, and the other planets mentioned are all considered disruptive "forces" when connected in negative aspect with Venus (Saturn = coldness, Uranus = unable to tie the knot, Neptune = deceit, and Pluto = oppression).

Note 33. Some astrologers view *as above, so below* in the widest sense possible to encompass any correlations (including physical correlations) between heavenly and terrestrial events. On this view, sunspot effects on radio transmissions on earth, gravitational or electromagnetic effects (however variable) on animals and plants, or daily cycles in animal metabolism are subsumed under the astrology label even though astrologers did not postulate the nature or form of the obtained relations, or contribute to research uncovering such relationships. Somehow such research is supposed to confirm the notion that the rest of astrology is supported. A difficulty with this vague position is making clear how one goes from such physical correlations to astrological symbolic claims like the herb garlic is ruled by Mars, or the area of the sky called the Seventh House is associated with marriage, or how a snapshot of the sky captured at a particular moment (expressed in an astrological chart) should have an enduring strong relationship with almost all aspects of a person's life (see also Kelly & Dean 2000 for a critical examination of this position).

Note 34. Astrologer Valerie Vaughan (2000) criticises studies conducted by skeptics that failed to uncover significant results with "which astrological theory is he referring to?"

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Horary astrology A brief critique

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For details visit <http://www.astrovdm.com/>

Abstract -- Horary astrology seems ideal for testing because it produces concrete yes/no answers. But its rules are often ambiguous and subject to disagreement even though they are said to be based on years of experience. So why the disagreement? Its concrete answers should have produced agreement, not disagreement. Evidently something is wrong with the way astrologers draw conclusions from experience (a process explored in the articles on faulty reasoning under Tests & Snags). Four references.

In the so-called *horary astrology* one studies the planet positions at the moment when a certain question was posed. Quite different rules are applied here, compared to those from personal, natal astrology. The person that asks the question is represented by the ascendant, and the question is represented by the cusp of the house related to the subject. of the question. The answer is then determined by looking at aspects between the ascendant ruler and the house ruler.

But when one looks closely, this branch of astrology is obviously wrestling with enormous logical problems.

A question like "Will my wife come back?" is still relatively easy. If the ascendant is in Leo at the moment of the question, one looks at aspects between the Sun (ruler of the ascendant) and Uranus (ruler of the 7th house of partnerships). If there is a "good" aspect between them, the answer is "yes", otherwise it is "no".

When can an aspect be called "good"? Of course that's a point of discussion. What is the orb to be used? Isn't it weird that an aspect with a deviation of 8:01 degrees from exactness suddenly doesn't count anymore and makes the answer turn into "no", while we would have a full "yes!" with a deviation of 7:59 degrees? Do only applying aspects count? Can aspects be blocked by an interfering third planet? [McCann 1997a]

It gets even more complicated with questions like: "Will my friend's daughter move?". No problem, one takes the fourth house (home) of the fifth (daughter) of the third (friend) as being the house of the question. Now the catch question: what if this daughter of my friend also happens to be the wife (house 7) of my boss (house 10)? Or, posing the question "Will John bring my book tomorrow?", does it matter if John is my friend or not? Whether it is a study book or a novel?

What if the ruler of the ascendant is the same as the ruler associated with the question? As when the latter is the Moon and the ascendant is Cancer. In that case take the degree of the ascendant!

This starts to look like some technical game with very low credibility. Some astrologers will claim that these are just borderline cases, but it is exactly in borderline cases that one can optimally discern the strength or weakness of a theory.

Further, everything will make or break depending on the choice of house system to be used. One can also opt for the classical sign rulers or one of the modern variants. We already saw above the vital importance of houses and rulers, to which the strings are so firmly attached.

One also needs a place to cast a horary chart for. And of course there is no unanimity in this matter either. Do we take the location of the one asking the question, or that of the astrologer? The horary astrologer Maurice McCann is very clear about this. He says:

"Always use the latitude and longitude of the person asking the question since the question was born in their mind at their location and not at that of the astrologer's. It is their question and only they fully understand it." [McCann 1997b]

However other astrologers have the same rock-solid conviction of the exact opposite, such as Alpee Lavoie [Lavoie 1995, p.12], and Erik van Slooten who says:

"I am strongly convinced that the place of residence of the astrologer is the one that counts. Especially as I receive a lot of questions by telephone from abroad and have been able to collect excellent confirming experiences" [van Slooten 1994, p.21].

Surprising, isn't it? Again, should one use the time when the question occurred (e.g. in the middle of the night), or the time when it was received by the astrologer (e.g. the next morning or even later)? Opinions from horary astrologers with years of experience are just as divided on this question as well.

You see, there comes no end to the problems, and if you ask me, it's much easier to toss a coin if you really want a "cosmic" answer!

Ironically, horary astrology is actually more suitable for testing than psychological astrology, since it produces neat and concrete "yes or no" answers. Now the above opinions are based on "years and years of experience", according to their authors. So how come they don't reach the same conclusions? Apparently something is wrong with the way most astrologers draw conclusions from experiences.

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Moment Supreme

Why astrologers keep believing in astrology

Rudolf Smit

Translated and updated from the original Dutch article in *Skepter*, March 1993.

Abstract -- For ten years the author was a professional astrologer and teacher of astrology. In his experience astrologers are generally nice, caring people. They become interested in astrology, and stick to it despite the overwhelming empirical evidence against astrological claims, because horoscopes seem to correctly describe a person's character and circumstances. This discovery is an unforgettable Moment Supreme, ever returning with each new horoscope, which makes astrologers go on believing in astrology. So they see no need for scientific research. But astrologers also make astrology nonfalsifiable, so the Moment Supreme is an illusion. When the author pointed this out, he was immediately seen as an enemy of astrology. Nevertheless a small but increasing number of astrologers accept that the horoscope is just a tool, not a source of information. Clients are helped less by the astrologer being a

good astrologer and more by the astrologer being a good person. Nevertheless Mayer (1984) found that, despite his best efforts to use the horoscope only as a tool, "some clients continue to use it in a deterministic manner". He concluded that horoscopes should not be used for clients who believe in cosmic correspondences. As an experiment, the author tried reading horoscopes where their owners were told the reading was merely an exercise in looking at astrological symbolism. Amazingly, there was still a Moment Supreme, and they went away quite happy. Most likely this was because the interaction was helpful and rewarding, if only because both author and client focussed on any meaningful statements and ignored the rest, just as would occur when talking to a neighbour or priest. To skeptics this kind of "astrology" might be more acceptable than believing in untrue cosmic correspondences, but it might not invoke as strong a following. More research is needed. Five references.

For ten years I was a professional astrologer and teacher of astrology. During that time I met many interesting people. For example I once met a novice astrologer who, in deadly earnest, asserted that "if you have seven planets in the 7th house, you will marry seven times". When I pointed to the horoscope of movie star Elizabeth Taylor, who already had her fifth or sixth husband but whose 7th house did not contain a single planet, he wasn't impressed. "The exception proves the rule", he said. I too wasn't impressed. It seemed that the novice astrologer didn't want to know that this was a rule known only by its exceptions.

Believe me, the life's path of an astrologer is not strewn with roses. He (more often a she) seldom earns a good living with astrology, and is somewhat of a social outcast, being tolerated rather than respected by a society that is expected to be tolerant. But certainly for skeptics this tolerance is often accompanied by a gnashing of teeth, for they tend to see astrologers as weird people who do weird things.

Arguments

But are astrologers truly that weird? I don't think so. In my experience they are generally nice, caring people. But because of their dubious position, i.e. being tolerated rather than respected, they tend to go off the rails in their defense of astrology. For example Kelly et al (1989) looked into the arguments used by astrologers to underpin their belief in astrology. Those arguments, followed by Kelly et al's comments in parentheses, are briefly as follows:

1. Astrology has great antiquity and durability (so has murder).
2. Astrology is found in many cultures (so is belief in a flat earth).
3. Many great scholars have believed in it (many others have not).
4. Astrology is based on observation (its complexity defies observation).
5. Extraterrestrial influences exist (none are relevant to astrology).
6. Astrology has been proved by research (not true).
7. Non-astrologers are not qualified to judge (so who judges murder?).
8. Astrology is not science but art/philosophy (not a reason for belief).
9. Astrology works (the evidence suggests otherwise).

Astrologers know most of these arguments only from hearsay and have not thoroughly thought them through. But the most important argument is the last: Astrology works! Because it is here where personal experience comes in, which for the average astrologer is a thousand times more persuasive than the results of scientific studies into astrology.

Philosophy

Furthermore, this list of nine does not answer the question of what made astrologers interested in astrology and why they insist on sticking to it. An answer to this question is especially relevant for those skeptics who seem incapable of understanding why astrologers cling to astrology when empirical studies seem to show that astrologers cannot corroborate their claims. The skeptics argue that facts are facts, and that astrologers are crazy to keep on ignoring them.

It is not that simple. Astrology for astrologers can hardly be compared to a business in, say, making clothing buttons where you could stop overnight. For them, as it was for me, astrology is an ideology, a philosophy of life. And believe me, to relinquish astrology is about the same as losing one's purpose in life. So when the facts forced me to do a U-turn, I was overwhelmed by a mental crisis that took a long time to overcome. But at least I can discuss this matter with some justification.

Moment Supreme

In my experience nobody becomes an astrologer just like that, as if by an effort of will. Instead it just happens, in the sense that you will simply encounter it one fine day. For example most astrologers tell how they started by meeting quite by chance someone who was already doing astrology. At the time none of those not-yet astrologers was immediately prepared to attach some value to it, but of course they were curious. So there came the unavoidable request: please, cast my horoscope! The (amateur) astrologer was very willing to comply with their request. And lo and behold, to their unspeakable astonishment, their horoscope analysis seemed to correctly describe not only their inner being but also the circumstances in their life. Now, that is an unforgettable moment. And it is that Moment Supreme, ever returning with each new horoscope, which makes astrologers go on believing in astrology.

So strong is the experience that, sooner or later, astrologers let go of any critical sense. For them astrology has become an inexhaustible source of knowledge and of great personal support. Just like devout Catholics who derive their security of existence from their religious beliefs, so do astrologers derive their security of existence from astrology. They feel how their lives and those of others are governed by the planets in their personal horoscopes, wherein simply everything is written -- their character, relationships, destiny, everything.

Stopwatch

Furthermore, if the astrologer is incapable of extracting certain information from a horoscope, this is held to be the fault not of astrology but of the astrologer. He has not progressed far enough in his skills. Or maybe the birth data is not precise enough for the purpose. Or maybe the manifestation of the horoscope is not typical. And so on.

Since astrology is said to govern everything, the horoscope does not limit itself to people. As long as one knows a precise time and the place where it happens, then one can cast a horoscope of any thing, animal, or event. For example the birth of your dog, your cat, the signing of the deeds of your house, the setting up of a shop, or the inauguration of a president of the United States. As for the last, thousands of astrologers will duly use a stopwatch to exactly time the moment of "so help me God" on which they will then base the horoscope of the government period of this new president.

But the horoscope does more. For many astrologers, in particular for the more esoterically inclined, astrology is the embodiment of the principle that "all is one and one is all". Such astrologers feel part of a greater whole, the *all*. Believe me, it is a wonderful feeling. For skeptics it may be easy to dismiss this all-ness, this feeling, but then they most likely have not had that feeling. And they most likely forget that even great and critical minds have fallen for astrology, albeit after some hesitation and after, for those times, critical scrutiny.

Psychology of the astrologer

In the 1970s Geoffrey Dean and Arthur Mather, compilers of the now classic *Recent*

Advances in Natal Astrology, were convinced that astrology was a worthwhile area for empirical investigation. But in the course of time, during more than twenty years of careful work, it became increasingly clear to them that astrology did not usefully live up to its factual claims. Indeed, after a number of euphoric years, I too was beginning to feel that there was something truly amiss with astrology. It happened too often that doctrine and practice were not concurring. Many astrologers had already discovered this but had found (spurious) solutions to the problems, each new solution being even more ingenious than before. As a result the number of techniques had increased, but so had the number of contradictions.

It was in those times -- when I happened to be president of the Dutch Society of Practising Astrologers -- that I was confronted with the psychology of the astrologer. In my naivety I believed that my fellow astrologers would wholeheartedly endorse critical research into astrology. After all, how else could the quality of astrology be improved? But their endorsement didn't happen.

Instead I encountered indifference and passive, later even active, resistance to my proposal. It was asserted loud and clear that astrology and science are a bad match. It was also asserted that astrology does not need to be proven scientifically because it proves itself over and over again on a daily basis. So why all my fuss about critical research?

Inconsistencies

My fellow astrologers admitted they had encountered inconsistencies now and then. But it was not a problem, because you would simply choose a different technique, of which there is a rich arsenal. Or you rectify the chart's birth time. After all, plenty of rectifying techniques are available, even though they often strongly disagree with one another and are sometimes hours different from the officially recorded birth time.

When I pointed out that these strategies did nothing to resolve the original inconsistencies, my fellow astrologers usually viewed me with glassy eyes -- and that was that. Except they were beginning to consider me an unruly guy. They cherished their own ideas and were quite happy with them; what they found confusing were the facts I confronted them with. So they preferred to stick their heads in the sand. There was cognitive dissonance between their belief that astrology is perfect and its evident inconsistencies, but this dissonance was ignored or explained away. Of course this is not a condition occurring only amongst astrologers, but they do seem to be especially prone to it. A telling example is given by David Hamblin (1982), an astrologer who later became chairman of the UK Astrological Association:

If I find a very meek and unaggressive person with five planets in Aries, this does not cause me to doubt that Aries means aggression. I may be able to point to his Pisces Ascendant, or to his Sun conjunct Saturn, or to his ruler in the twelfth house; and, if none of these alibis are available, I can simply say that he has not yet fulfilled his Aries potential. Or I can argue (as I have heard argued) that, if a person has an excess of planets in a particular sign, he will tend to suppress the characteristics of that sign because he is scared that, if he reveals them, he will carry them to excess. But if on the next day I meet a very aggressive person who also has five planets in Aries, I will change my tune: I will say that he *had* to be like that because of his planets in Aries.

Hamblin complains that this makes astrology nonfalsifiable. It gives astrologers an inexhaustible reserve of easy explanations for even the most difficult of inconsistencies. And this is indeed how things go. Astrologers are masters at making persons fit their horoscopes. Because astrology cannot be untrue, it has to be true, hence they make it true. Just like Procrustes, the mythological innkeeper who made sure his guests would exactly fit their beds by either stretching them or chopping off their legs. Since astrology

has to be true at all times, astrologers find it necessary to ignore unwelcome facts, even if those are produced by their own kind.

Home computers

By the end of the 1970s the first home computers had come on the market. I was quick to purchase a Commodore PET for which the first astrological software in the Netherlands had become available thanks to the great efforts of my fellow countryman Wim van Dam. Thus it became possible to investigate and test a great number of horoscopes. I focused on astrological prediction techniques and discovered, much to my chagrin, that most of the claims in astrological textbooks had virtually no substance whatsoever. I remember a sample of 72 people who had died in traffic accidents, which I tested using four different predictive techniques. With one fairly unknown technique the results were highly significant statistically (later I was to suspect that this was caused by biased data sampling); the rest gave only chance results.

Now, let me call this Technique A; the other three I call B, C and D. When I announced my results before a large group of astrologers in the Australian city of Melbourne, which thus shattered their three beloved predictive techniques, their reaction was perplexing to say the least. The advocates of method B immediately claimed that they always hit the mark but not with methods C and D. But the advocates of method C claimed they always hit the mark, but not with methods B and D! When I pointed out to them that maybe now and then they had indeed hit the mark, but like most people they tended to remember only the hits and forget the misses, I apparently kicked a sore leg. So among my fellow-astrologers I was soon considered a dissident.

Kill the messenger

I even received a more or less official reprimand when I told those same astrologers about my small research project into the character and lives of twins. Most twins will be born shortly after one another and will thus have virtually identical horoscopes. According to astrological theory they should therefore have virtually identical characters and circumstances in life. But I discovered that this is not the case. For fraternal twins their characters and circumstances could differ enormously despite their very similar horoscopes. Of course, those Melbourne astrologers were not very happy with the facts I was telling them. From that moment onwards, whenever I asked a critical question, one of the older committee members always tried to muzzle me with "so, you don't believe in astrology, eh?!"

It did not end there. Amazingly, soon after this article was published in 1993 in the Dutch skeptic journal *Skepter*, it was translated into English by astrologers and circulated as evidence of how I was now an implacable enemy of astrology! Which is a good example of how intolerant astrologers can be towards the slightest hint of unwelcome news or even (as in my case) simple reporting. For them absolutely no rocking of the boat is permitted even if it means killing the messenger.

Tool for helping

All these incidents have convinced me that astrology is a belief system. Astrologers have found in astrology a substitute for a religion. It gives them security and meaning in their lives. So it is understandable that they do not want this snatched away from them. However, it is remarkable that, despite an enormous diversity of techniques and insights (which in established religions can lead to mutual denunciation), astrologers tend to unite behind a consensus model of "astrology is alive and well and all systems work".

This unity in diversity makes it possible for astrologers to reject or ignore criticism, simply because it is the only way for them to survive.

Of course, we all tend to react against evidence that threatens our world view. So it would be easy to think that any attempt to make astrologers relinquish their astrology will be in vain. Nevertheless a small but increasing number of astrologers have accepted that astrology is not a source of factual knowledge. Instead they hold that astrology is a remarkable inspirational source for helping their fellow human beings. That is, they hold that the horoscope is a wonderful tool for promoting therapy by conversation. It helps people find what today can be very elusive -- a caring person to talk to.

Celestial inkblot

In this modified astrology, what matters is the astrologer not the astrology. Clients are assisted less by the astrologer being a good astrologer and more by the astrologer being a good person. The horoscope indications are no longer important because the horoscope is now just a tool to help therapy by conversation. It is like a celestial inkblot, not a source of information.

As far as I know, one of the first people to formally explore this approach was the US psychotherapist Dr Michael Mayer (1984), whose work won the AA prize in 1979 for the most valuable contribution to astrology that year; his work was later summarised in *Correlation* when I was its editor. But despite using the horoscope only as a tool, Mayer found that "some clients continue to use it in a deterministic manner", so he felt it should not be used for clients who believe in cosmic correspondences.

More research is needed

Quite possibly such clients are reinforced to have such beliefs because of the insistence on accurate birth data. Hence to receive therapy by conversation, and their Moment Supreme, they still have to believe in something that is untrue. (Jacques Halbronn's article *Astrologer meets client: Tricks of the trade* on this website shows how astrologers can take advantage of this.) As an experiment, I recently tried reading horoscopes where I warned their owners in advance that there was no factual truth in astrology. I warned them that the reading would be an exercise in looking at astrological symbolism, that's all. The result might seem insightful but in reality would be only make-believe.

All of them agreed to this in advance. Amazingly, there was still a Moment Supreme, and they went away quite happy! This might have been because my reading was free of charge. Or because they kept a secret belief in cosmic correspondences. Or because, even when told the scientific facts, they did not care. Or simply because the interaction with a caring person was helpful and rewarding, if only because both of us focussed on the meaningful statements and ignored the rest,

To me the last reason seems the most plausible. It seems no different from the way any reasonable person might act in a similar exchange with a neighbour or priest. In this sense astrology hardly enters the picture -- what matters is the counsellor. So astrology itself effectively disappears, being reduced (as Weidner 2002 puts it) to "a useful kind of fiction, which may be used by individuals as a tool to organise their life." Similar views are presented by Halbronn in his *Astrologer meets client*. To skeptics, belief in useful fictions might be more acceptable than belief in untrue cosmic correspondences, but it might not invoke as strong a following. More research is needed!

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Murder

Astrologers rated these killers as good guys

An article from the now defunct Kansas City Committee for Skeptical Inquiry. The article was originally titled "Astrology on Death Row!" and was reprinted in the *Indian Skeptic* 1989, Vol 1 (11). The results of three similar studies have been added in Appendix 1, and the results of orthodox studies in Appendix 2.

Abstract -- In the late 1980s a skeptic in Kansas City went to five professional astrologers giving as his own the birth data and computer-calculated birth chart of John Gacy, one of the worst convicted serial killers in American history. They described him as having a "well rounded personality", that he could "offer a good role model" and that he would "be excellent for working around young people" (which is precisely the group that Gacy specialised in murdering). Students who had been told the readings were of their own chart rated them as accurate. Appendix 1 presents similar results using the birth data of mass murderers Edward Kemper III and Marcel Petiot. Obviously perceived accuracy means little. Appendix 2 reviews orthodox predictors of psychopathy and murder that are well-established and make sense. Nobody with the relevant information could possibly agree with the astrologers' statements. Until astrology can improve, which given the results to date seems unlikely, this is an area from which astrology should be firmly excluded.

How accurate is astrology? To find out, a member of the Kansas City Committee for Skeptical Inquiry (KCCSI) went to five astrologers posing as a man interested in working with young people. He gave each astrologers the birth date, birth time and place of John Gacy instead of his own, plus a computerized natal chart from a company internationally recognized for accuracy (Neil F. Michelsen), and asked them for their advice. The astrologers unanimously encouraged him to pursue youth work and none could see any problem with this.

(John Gacy was born in Chicago on 17 March 1942 at 00:49 CST, or 05:49 GMT, CST being the time required by Illinois for birth registration even though War Time was then in effect. Some hospitals did not follow this rule, so the actual birth time might have been an hour later at 06:49 GMT. Both times give a Sagittarius ascendant.)

At the time, the real John Gacy was being held on death row at Menard Correctional Center in Chicago. He received 12 death sentences and 21 life terms for the brutal torture and murder of 33 young men and boys. He was executed by lethal injection on 10 May 1994.

Gacy was selected for the test because his chart should portray a clear picture of a sadistic sexually motivated killer. If astrologers are able to spot personality traits and destinies in any chart, then this is one they should have no trouble with.

The way in which Gacy murdered his victims was particularly repulsive. They were usually teenage boys whom he lured into his home and overpowered. He had a pair of trick hand cuffs, which he would demonstrate that he could slip out of. After immobilizing them by persuading them to put on the hand cuffs, he repeatedly raped and tortured them. Finally, after they begged for their own deaths, he would strangle them, often by shoving their own underwear down their throats. Each astrologer was asked to examine the computerized chart for as long as they wanted before giving their reading.

Advice given by the astrologers

John Sandbach, a nationally known astrologer who has authored six books, advised him not to "become weighed down with regrets about how you could have done more in some past situation." He described a "plasticity or lack of aggression" in the chart and encouraged him to work with young people because he could "bring out their best qualities."

Local astrological talent, Randy Goodman, was reported by the Kansas City Star (April 10, 1985) to have investigated "mysterious flying hotdogs" at the Radisson Hotel Muehlebach. He told our substitute Gacy that he was "really born to serve people." He stated that "In the past you have used your energies very well, so therefore in this life you have a lot to contribute, and ... your life will be very, very positive."

Another local astrological celebrity, Norma Knight, was also given an opportunity to analyze the chart. She described him as "a very, very sensitive person." When asked whether a youth ministry would provide suitable employment, she replied "I think that you can be very good with kids and that it might be a good medium for you to learn to be more trusting in the giving and receiving."

Beverly Farrel lays claim to being an "internationally recognized author, lecturer and teacher of religion, metaphysics, astrology and psychic awareness" with "30 years experience in the field of (the) paranormal." She also encouraged the man behind the chart to go into youth work, because "when you're working with young people you're not gonna have a lot of heavy-duty problems."

The results seemed to indicate that astrologers cannot read a persons character from the positions of the planets at the moment of birth, nor can they see into anyone's past or future, nor do they seem to possess any insights other than the ability to impress their clientele.

How well did the readings fit anyone?

KCCSI next passed out envelopes to students in several local college philosophy classes. The students were instructed to write their names, birthdates, birth times and places on the outside of the envelopes and return them. KCCSI put in each envelope an excerpt from the Gacy readings and handed them back to the students telling them that a professional astrologer had made up a personality description specifically for them. They were asked to grade how well each description fitted them.

When the results were tabulated it was discovered that those students who believed in astrology showed a significant tendency to grade the readings as more accurate than did those students who did not believe. This supports the premise that the popularity of astrology is due to the predisposition of the believers to exaggerate its accuracy and thus make it appear to work. Also this would explain the persistence of many people to assert that astrology really works despite evidence to the contrary.

What the astrologers said about mass murderer Gacy

"I think that you can be very good with kids and that might be a good medium for you to learn to be more trusting in the giving and receiving."

"... just your presence would be of a beneficial nature to other people, a real calming kind of effect ... In the past you have used your energies well: so therefore, in this life you have a lot to contribute and you will have some problems but basically your life will be very, very positive."

"... a fairly well-rounded personality ... you can offer a good role model ... when you're working with young people you're not gonna have a lot of heavy-duty problems."

"Helpful, understanding of the needs of others. At times a sucker for anyone who needs help ... Kind, gentle, considerate of others' needs."

"At your best, you are very impressionable and radiate the unconditional love of a happy infant ... You have an instinctive awareness and your uninhibited response to life can refresh and gladden whomever you encounter."

Appendix 1. Three similar tests using mass murderers

The first is from Gary F Posner, *Skeptically Speaking* March 1993, with further information from a videotape of the Stossel TV show mentioned by him. The second and third are from Michel Gauquelin.

Joyce Jillson, whose column is carried by the *Tampa Tribune* and who is Hollywood astrologer to the stars, unwittingly allowed ABC-TV reporter John Stossel an opportunity to demonstrate for his millions of *Good Morning America* viewers in November 1988 just how well astrology works in spite of it appearing not to be real.

Jillson (who normally charges \$200 per chart) first prepared a detailed reading for a person unknown to her, whose birth information (which is all she requested) was supplied to her by Stossel. Stossel then distributed a copy of the completed horoscope to each of 20 students in an adult education class. Each student had given Stossel their own birth information one week earlier.

The students, thinking they were each reading their own personalized horoscopes, marveled at how Jillson knew things about them that no one else could possibly know. Typical responses were "very accurate", "I am amazed", "hits points that nobody knows." Stossel asked one student "is it you?" (yes) "but is it different from other people?" (yes it is). But the students, male or female, were reading the same horoscope, that of someone described by Jillson as "enormously bright ... [with] sexual charisma ... great charm ... a sense of moral propriety ... [who] may know celebrities ..." Jillson's reading, supposedly unique, was clearly a one-size-fits-all unisex reading.

Stossel felt that Jillson may have incorrectly assumed the birth information to have been his own. In fact it was that of mass murderer Edward Kemper III, who in addition to many other "charming" deeds had cut off his mother's head and used it as a dartboard. Ironically one statement fitted the authentic subject quite aptly, namely "takes life seriously." Concluded Stossel, confronting Jillson on camera with the facts, "I just think this shows it's a hustle, and you make money by writing general things that everybody believes is about them."

All this had no noticeable effect on Jillson's popularity. In 2003 she suffered what the *Skeptical Inquirer* Nov/Dec 2003 page 9 called "the ultimate embarrassment for an astrologer." In her syndicated column of 12 September 2003, Jillson had given a glowing horoscope of TV star John Ritter "having a Virgo sun sign helps keep his career ticking", even though he had died the day before.

A more elaborate test was carried out in the 1960s by Michel Gauquelin. In his book *Astrology and Science* (Mayflower 1972), which is an English translation of his book *l'Astrologie devant la science* (Planete 1966), he describes this test as follows:

"But do astrologers know enough at least to distinguish between the horoscopes of people whose lives are completely opposed -- between, for instance, a criminal who dies on the scaffold and someone who spends his whole life quietly? Let us give an astrologer twenty dates of birth without the names, in which ten murderers are mixed up with ten dull lives, and ask him to separate one group from the other. Of course, he will not be expected to identify *all* the death-house names but at least to detect a number sufficient to make one reasonably believe that his choice has not been made at random.

"We have asked many astrologers to give us this demonstration of their knowledge, but only a few have agreed. Some claimed that did not have the time, and others that this would teach them nothing; or else they proclaimed more ingeniously that inside every honest man there hides a killer and therefore their science could not hope to distinguish between real criminals and would-be criminals. But then what if anything can they find out from a birth chart, if everyone is potentially anything, by definition? [In fact the ingenious proclaiming is simply wrong, see Appendix 2.]

"However, there were some astrologers brave enough to participate in the experiment. The results were conclusive: they chose law-abiding people as murderers in a manner which was quite indiscriminate and entirely in accordance with chance. Those prophets of the stars who were acting in good faith were completely taken by surprise, and there was even one astrologer who drew the inevitable conclusion that astrology is incapable of making a distinction, even when the final effect of a man's life is presented, between the birth chart of a criminal who will end up on the scaffold, and that of a decent honorable family man." (pp.137-138)

Later, much the same thing happened when Michel Gauquelin sent 500 people a 10-page computer interpretation of supposedly their own birth chart but which was actually that of the notorious mass murderer Marcel Petiot. He asked for comments. Of the first 150 replies, 90% found the accuracy to be confirmed by their family and friends, and 94% found it to accurately describe their character, their personal problems, and the cycle of events in their life. It produced responses like "the work done by this machine is marvellous", and "on the whole, everyone who knows me found it accurate, especially my wife" (from *Aquarian Agent* May 1970).

In his 1972 book, Gauquelin concluded "Confronted with science, modern and traditional astrology are seen to be imaginary doctrines. To predict the future by consulting the stars is to delude the world, or at least to delude oneself." (p.138)

In other words, perceived accuracy means little. Studies like these have shown again and again that people find astrology's insights just as convincing when, unknown to them, the wrong birth data are used. So where does that leave astrology? (For a worked example using Petiot's chart see *Effect sizes* under Doing Scientific Research.)

Appendix 2. Orthodox correlates of murder

We can start by looking at psychopaths, which is the official name for the worst antisocial criminals. Studies have found that about one fifteenth of the criminals in prison have committed two-thirds of all the crimes and are diagnosed psychopaths. Or as the Bible says in another context, many are called but few are chosen.

What makes the psychopath dangerous? There is wide agreement that the psychopath (who is almost always male) is notably without love and guilt. What makes them dangerous is that many appear quite normal. Their capacity to hurt and destroy can be hidden under a veneer of charm and honesty. They stand on what criminologists call the *mad/bad line* -- they know what they are doing and care nothing for those they hurt.

Two examples are the serial killers John Gacy and Theodore Bundy. As already noted, Gacy was a well-respected volunteer in community affairs, yet he tortured and murdered at least 33 young men and boys before burying them in his basement. His veneer of respectability kept the police off his back despite complaints from victims who had escaped. Not once did Gacy express remorse or guilt for his crimes.

Ted Bundy had a similar mask of respectability. He was a cleancut law student, and put his charm and smile to good use at a crisis hotline center. He confessed to raping and murdering 28 girls and women and may have murdered a hundred more. He showed no remorse or pity until his last few days, doubtless a last-ditch attempt to delay his execution. He was a psychopath to the end.

The traits that define psychopathy (impulsiveness, violence, lack of guilt, and so on) are on a continuum. At one end are the Gacys and Bundys whose psychopathy is total and violently destructive. At the other end are those whose similar but nondestructive traits manifest as arrogance, nonconformity, and often creative genius, such as the composer Richard Wagner (called a monster by one of his biographers).

For our purpose the important thing is that psychopathy exhibits various physiological correlates, so if we know the correlates we can predict the psychopathy. For example psychopathy is linked to abnormally low levels of activity in the autonomic nervous system (normal or high levels make a person conditionable and mindful of criticism or punishment, low levels have the opposite effect), so a highly stressful situation has no effect on the psychopath. Other links include different sex hormonal levels, which increase the probability of violence, and low verbal IQ, which leads to poor impulse control -- criminal psychopaths with low verbal IQs are invariably violent and dangerous.

Another important predictor of psychopathy is severe love deprivation in childhood. Thus among juvenile delinquents the greater the deprivation the more the psychopathy and

violence. Serial killers have nearly always been beaten or abused as children, and to have family members addicted to drugs or alcohol -- all clear indicators of love deprivation. For example Hitler's father in drunken rages often beat him and his mother, and at 15 he himself beat his mother. John Gacy had an alcoholic father who physically abused his wife and verbally assaulted his children. Ted Bundy was born of an unwed mother who married when he was four. He never bonded with his step-father and felt abandoned and rejected. The rapist and serial killer Carl Panzram, perhaps America's most violent prison inmate, was deserted by his father and beaten by his mother. The multiple killer Jack Abbott had an abusive alcoholic father and a prostitute mother who divorced when he was four, leaving him to abusive foster homes. Albert DeSalvo the Boston Strangler was brutally tortured by his alcoholic father. Charles Manson was illegitimate, his 15-year-old mother was sent to prison shortly after, and he was sent to a succession of foster homes. In each case the effects of love deprivation later exploded into terrible violence.

In short, there are predictors of psychopathy and murder that are well-established and make sense. Nobody with the relevant information could possibly conclude that Gacy had a "lack of aggression", was "born to serve people", was "very, very sensitive", and was well-suited to youth work, yet the astrologers did exactly that. Clearly, until astrology can improve, which given the results to date seems unlikely, this is an area from which astrology should be firmly excluded.

Most of the above information on serial killers, psychopathy and its correlates is from Dr Anthony Walsh's *The Science of Love: Understanding love and its effects on mind and body*, Prometheus Books, Amherst NY 1991, pages 140-152.

Optimum place for astrology
A tool not a source of knowledge

Arthur Mather

Abstract -- Science = observation and testing, astrology = anything goes, with no overlap. The continuing popularity of astrology suggests that it must provide a worthwhile service to clients. But hundreds of empirical studies have found nothing that is commensurate with its claims. Nor have astrologers made any attempt at self-criticism or the attainment of consistency. So astrology is not entitled to be seen as a source of knowledge, only as a tool for helping introspection and therapy by conversation. Reverting to a declared art form, ie to a non-scientific activity, may be the only valid way ahead for astrology, where the birth chart is accepted simply as a tool for channeling wisdom from astrologer to client.

Introduction

In a 1995 article in *Correlation* 14(1), 56-59, Nick Campion suggests that arguments between astrologers and scientists are based more on cultural ideals than on evidence. I think the case is overstated because scientific criticism of astrology is always based on evidence, not on cultural considerations.

Nevertheless Campion holds that the situation depends on how astrology and science are defined, and I agree. In what follows I look at the difference between science and astrology to see if this can identify an optimum place in the world for astrology. I start with science.

Science

Campion considers three ways of defining science, namely in terms of (1) its results, (2) its tools, and (3) what scientists do. But these three ways are equally applicable to say gardening or car repairs or even astrology, which thus becomes defined as its results, its tools, or what astrologers do. None of them taps the essential nature of science and its underlying aim, which is obtaining knowledge by systematic testing.

This knowledge is not any old knowledge but a sweeping system of interlinked knowledge that is consistent from one end to the other. For example it would be unacceptable if our knowledge of how atoms behave in chemistry was inconsistent with how they behave in physics.

As more and more knowledge is incorporated into the system, doubtful inconsistencies may be rightly ignored because science is too soundly based to justify chasing anything entirely speculative. But if the inconsistencies are themselves soundly based, as they were for the perihelion advance of Mercury, then in due course science shifts to accommodate them, in this case from Newton to Einstein.

Limitations of Science

Astrologers often point to what they see as the limitations of science that stop it detecting astrological effects. They claim that science is impersonal or unspiritual or insensitive to deeper truths. Or they claim that astrology involves subtle factors not yet known to science. But science requires only that events be observable in some way. And if astrologers can observe the claimed effects, so can scientists.

So the limitations are straightforward -- if no possible observation could rule out a particular claim, the claim is untestable and science is irrelevant. As is the claim in the first place -- if nothing can show it is wrong, then by the same token nothing can show it is right.

Science of course is subject to greed, jealousy and politics like any other human activity. But the over-riding insistence that issues be decided by careful testing means that

scientific knowledge is ultimately self-correcting. It may take years or decades, but ultimately errors in science do not survive. How does astrology compare?

Astrology

Campion considers four ways of defining astrology, namely as (1) a science that seeks empirical answers to questions, (2) a neo science that seeks empirical validation of its ideas, (3) a pseudo science that does false science, and (4) a humanity that interprets data. Note how these four are not the same as the previous three (astrology = its results, its tools, or what astrologers do).

Campion himself prefers (4). And its merits are obvious -- by confining itself to *interpretation*, astrology is elevated above any criticism based on grubby empiricism. (I come back to this point later). But rather than trying to define science and astrology in absolute terms, it seems better to consider what distinguishes one from the other.

Two possibilities

One possibility is consistency -- science demands it but astrology does not. Thus science would not tolerate tropical and sidereal zodiacs having the same meaning, but astrology sidesteps the issue by assuming each operates at a different level. This sort of thing happens all the time. Astrology (but not science) proceeds via assumptions. So anything goes. In fact in their 1979 critique of astrology, the astronomers Culver and Ianna were so struck by the typical astrologer's confident use of glaring inconsistencies that they labelled astrology the "Gemini Syndrome" after Gemini's supposed propensity for being two-faced.

Another possibility is level -- science is material stuff, astrology is soul stuff. This means that souls are a necessary component of astrology, and that astrology is essentially a religion. Such ideas would certainly distinguish astrology from science, but many (if not most) astrologers including Campion would disagree that astrology is essentially a religion. Areas of dispute can hardly form the basis for reliable distinction.

Main distinction

In fact the main distinction between science and astrology is their attitude towards the testing of claims. Science tests but astrology essentially does not, and scientific tests are typically deemed inadequate or the results are ignored. Science (but not astrology) insists that knowledge be based on observation. In astrology (but not in science) anything goes, generally with tradition as the default option if difficulties arise (as below). No astrologer ever prejudiced an idea by insisting on proper tests. The comment made in 1950 by ace researcher Donald Bradley still applies: "all improvements are welcome so long as the complacent surface of tradition is not disturbed."

Note that this difference is strictly one of *attitude towards testing*. So we cannot say that astrology is scientific because it uses a science-based ephemeris, any more than a book is scientific because it uses a science-based printing technology. Nor can we say that astrology is a science because both use symbols, albeit in different ways, namely qualitatively (JU = expansiveness) vs quantitatively (r = correlation coefficient). What we can say is that astrology's attitude towards testing means it has no resources by which error could be detected.

So science = testing and observation, astrology = anything goes, and there is no real overlap. For convenience let me now define art as any directed *activity* not a science, for example the *activity* of drawing and painting. (Do not confuse this with other definitions

of art such as art = art objects eg paintings, or art = the expression of feeling, or art = a special skill eg the art of conversation; nor with craft, the skilled making of objects eg jewellery; the whole point of my choosing this definition is that it excludes science.) We can now say that astrology is entirely an art as defined above, and entirely not a science. Which is consistent with Campion's preferred definition of astrology as a humanity (an art that humanises).

Implications of an art form

If astrology is entirely an art as defined above, and entirely not a science, then the scientific approach must by definition be rejected. Of course many astrologers already do this. But they do not observe the consequences, which means *not* making testable statements and *not* making claims like "Jupiter indicates expansiveness."

Note the problem: Without a sound scientific basis, which astrology is now by definition incapable of having, nobody can legitimately claim that Jupiter indicates anything. All that could be said is something like "the ancient Greeks thought that Jupiter indicates expansiveness, but nobody knows if this is actually true." Anything else would turn astrology into a pseudoscience -- an art form falsely posing as a science, as when the testing of testable claims is rejected or ignored.

Straddling the divide

Could astrology straddle the divide by being both science and art form? Perhaps, but only if astrologers embraced testing and consistency, which on their past performance seems unlikely to happen. And even if they did, the consistent failure to date of empirical tests by scientists versed in astrology allows little hope that empirical support will suddenly be found, or at least support reasonably commensurate with the claims (which is what matters). So reverting to a declared art form, to a declared non-scientific activity, may be the only valid way ahead for astrology, at least if it is to place itself beyond scientific criticism. In which case how might astro-art forms be developed?

Developing astro-art forms

Astrology could develop like any other art form -- by people having ideas and working on them. Conflict between different ideas would disappear because it would be seen as part of the choice available to consumers, just as there is no conflict between different ideas in painting or writing. These advantages would of course not apply if astro-artists made testable claims such as "Jupiter indicates expansiveness" -- at least if applied to the person rather than the soul.

As in any other art form, the challenge is to evaluate different ideas for their appeal to clients. This is an interesting challenge because objective tests are of little use in a situation where subjective feelings are the sole arbiter. Good astro-art is what clients like, period. But the challenge is not new. Astrologers have long been used to evaluating ideas in such terms, usually expressed indirectly such as compliance with tradition (recall that Bradley quote). But there is now more to it than meets the eye, as explained next.

Survival of astro-art

In astro-art the effective agent is the wisdom of the astrologer, not the astrology or even the birth chart, a point tellingly shown by the acceptance of readings that were later found to be based on the wrong birth chart. So the birth chart is simply a tool, a focus, an ice breaker, for channelling wisdom from astrologer to client. Tea leaves or

inspiring pictures or even dreams could conceivably serve just as well, although they would lack the depth of astrological symbolism.

Arguably even better (and this is the point) might be tools scientifically designed to help introspection and therapy by conversation. Such tools already exist and can be anything from a list of topics to elaborate pictures, all of them carefully tested for effectiveness. This might be preferred to astrological symbolism by a future generation better acquainted with astrology's lack of empirical support. In other words astro-art might in due course have the same fate as phreno-art. Let me explain.

Might astro-art have the same fate as phreno-art?

In the 1980s a move was made to re-instate phrenology as an art form. Contrary to the claims of phrenology, which in the 19th century was even more popular than astrology is today, phreno-artists reject any link between head shape and character. Instead they hold that by thinking about ourselves in terms of supposed phreno-faculties (such as Benevolence, Cautiousness, Ideality, Order, Veneration), and by assessing our excesses or deficits, we can achieve a physical, mental and spiritual whole (see H&P Cooper, *Heads, or the Art of Phrenology*, London Phrenology Company 1983, page 101).

The merit of phreno-art lies in its "fascinating potential for aiding self-realisation ... its antiquity, discipline and deliberate idealism towards self-perfection" (p.104). Indeed, phreno-artists hold that it is useful in almost every situation. Thus it can give "direction to self-awareness and meaning to life. ... It can help to evaluate such problems as bringing up children, choosing a career, a partner in life, assessing incompatibility and confusion, but above all it is for the self" (p.100). It could be astrologers describing astrology.

The move to phreno-art was paved with good intentions. But a plethora of more scientific approaches to self-awareness (see any bookshop) killed it. Phrenology's once overwhelming charm was suddenly not enough. The move lost out to ideas that had greater appeal and effectiveness. Might the same happen to astrology? Clearly it is unlikely to happen overnight, any more than it happened to phrenology overnight. But as the decades pass, as people become aware of empirical findings that were unavailable to their parents, it could happen. However, if astrology encompasses ancient wisdom about the human condition that science does not, then who knows?

Theories of astrology

A comprehensive survey

An updated and abridged version of a discourse by Dean, Loftson, Kelly and seven others in *Correlation* 1996, 15(1), 17-52 with 84 references. Part 4 (theories to explain astrology's perceived value) is new.

Abstract -- Astrologers and researchers need a good testable theory to explain how astrology is perceived to work, to avoid conceptual problems, and to guide their inquiries. None of the existing spiritual, physical, informational, psychic, and magical theories are useful, being either untestable or incompatible with existing knowledge. The same defects apply to the theories of Jung, Elwell, Hand, Guinard, and Scofield. In contrast a new non-astrological theory of astrology is useful and has survived repeated testing. Explains the role of theories and how to assess their usefulness. Along the way many of astrology's internal problems are uncovered and discussed. Theories to explain astrology's perceived value reduce to astrology having the right priorities. It can give the feeling of understanding our place within the whole. Memes (any information that is copied from person to person) are a powerful new way to explain astrology's longevity and perceived value. 46 references.

Part 1. Why bother with theories?

The word *theory* has two different meanings. In everyday use it means an unsupported idea as in "it's only a theory." But in science it means the exact opposite, namely a well-supported idea as in the theory of relativity. Both kinds of theory are explanations for how things work, and we bother with them for two very good reasons. First, explanations are better than uncertainty, even untrue explanations as when misfortune was explained by witches. Second, knowing how things work is better than ignorance. It helped us walk on the Moon.

If we want to improve astrology, we first need to know how it works. So we need an explanation to guide our explorations. If we think it works by physics, we explore physical variables like gravity. If by chemistry, we explore chemical variables like hormones. If by spirit forces, we explore seances. And so on. Without some kind of explanation we have no idea where to start.

But astrologers have never had a clear idea how astrology works or why birth charts should match their owners. To them astrology has always been an extraordinary phenomenon beyond ordinary explanation, and over the centuries they have put forward various speculations to fill the gap. But the gap may be an illusion. Astrology may have

an ordinary explanation after all, so their speculations may be premature. In what follows we briefly survey the theories / explanations (ancient and modern) of astrology starting with a closer look at why they are important. To avoid confusion we will use *explanation* instead of *theory* to mean an explanation (tested or untested) of how things work.

Why explanations are important

We may not realise it, but making and testing explanations is part of everyday living. We do it all the time. Repairing a faulty car requires an explanation of how cars work. Curing an illness requires an explanation of how people get sick. Interpreting a birth chart requires an explanation of how astrology works. As shown next, we need only be more rigorous in our use of explanations and we end up doing science.

In science we recognise that our senses often fail us. Things are often not what they seem. So we need reliable well-tested explanations. The sequence tends to be observations, explanation, tests -- and if the explanation fails, we change it for something better. Thus oxygen was better than phlogiston at explaining combustion.

The advantages of a well-tested explanation are enormous. We no longer need to record the fall of every apple, and we become more and more free of paralysing uncertainty. It helps us to ask the right questions (why do leaves fall slower than apples?) and to be suspicious of answers that have not been properly tested.

But we cannot derive an explanation of X, or even know anything about X, unless (1) X exhibits some order, and (2) the order can be discovered by observation. Astrologers claim that astrology meets both requirements, so there is no reason why an explanation of astrology cannot be derived. But what should an explanation explain?

What should an explanation of astrology explain?

As astrologer Robert Hand (1988:119,123) puts it, astrologers "must evolve a theoretical framework ... [which] must be based on a coherent metaphysical position and must allow the derivation of astrological principles. Right now we are stuck with the 'anything goes' approach to astrology." Or as Dobyns and Roof (1973:4) put it, astrology is "almost as confused as the earthly chaos it is supposed to clarify."

Accordingly, an explanation of astrology should explain how planets etc can correspond to people, thus allowing the derivation of astrological principles. It should provide clues to issues such as: How does astrology work? How can it predict events and answer questions? Why time of birth and not conception? How can signs be relevant if not due to stars? Why ecliptic positions and not actual positions? What techniques are best? What things are not shown in charts? Must the astrologer be a good person? How essential for good results is belief in astrology? Why has research failed to find effects commensurate with astrological claims?

What makes an explanation useful?

The above issues keep an explanation on track but are not enough to make it useful. To be useful an explanation of astrology has to (1) explain the observations, (2) lead to testable outcomes else we can never know if it is right or wrong, (3) improve on existing explanations else why bother, and (4) not contravene known restraints such as the second law of thermodynamics or Newton's first law of gravity.

An explanation that is testable will usually pass the other criteria as well. So we can usefully make testability our first focus. To see how it works, consider Tomaschek's (1962) suggestion that astrology might be explained by direct causation, by triggering, by the correspondence between simultaneous events, or by the unity of everything. We can see that none of these "explanations" can in fact be tested, at least not as they stand. All reduce to a circular argument -- the unity of everything explains the unity of everything. More detail is required before we can proceed further. As shown next, the same applies to nearly every explanation that has been put forward to explain astrology.

Part 2. Speculative explanations of astrology

In what follows we exclude explanations characterised by vagueness such as that of Shallis (1981), which is based on unspecified Principles whose nature is not described, and explanations that view astrology purely as a language without regard to content, which leaves nothing for an explanation to explain.

Spiritual explanations of astrology

In general, spiritual explanations view astrology as soul stuff, dealing with things other than the material. In effect such explanations put astrology into the purely spiritual domain, which is unproblematic provided no claims are made for astrology other than spiritual ones. But no astrology conference or book stays within purely spiritual beliefs. Furthermore the application of astrology in cases where there is no living body (eg ships, companies, countries, questions) might seem to deny that astrology could be fundamentally soul stuff, unless of course we assume that everything (even atoms and ideas) has a soul, in which case we also need to put forward a way of testing this assumption.

Spiritual explanations include those of Alice Bailey (1951, based on seven rays), Charles Carter (1968, based on the zodiac as the pathway of the soul), Alan Leo (1913, based on karma and reincarnation), Dane Rudhyar (1969, based on actualisation of potentialities), and Robert Schmidt (1990, based on the Greek principles of the One and the Many). Clearly spiritual explanations can differ just like other explanations, but being spiritual they are by definition untestable. We can of course test the supposed physical implications of a spiritual explanation but this does not solve the problem, in the same way that presents under the Christmas tree do not allow us to choose between Santa Claus and an Act of God. So such explanations are not useful, which is not to say they cannot be a comfort in times of spiritual adversity.

Physical explanations of astrology

Physical explanations reduce astrology to physics. For example Ptolemy notes how the sun is linked to seasonal and daily variations in humans, animals, plants, and the weather, and how other heavenly bodies "aid it or oppose it in particular details." So in principle, if celestial positions are known, the weather can be predicted, as can "the general quality of [human] temperament from the ambient [ie heavens] at the time of birth", and "occasional events" (*Tetrabiblos* 1.2 Robbins translation).

In 1657 Placidus argued that "It is impossible for the efficient heavenly causes (as being so very far distant from things below) to influence sublunary bodies, unless by some medium or instrumental virtue." He concluded that "the instrumental cause of the stars is light", so that "the stars, where they do not rise, are inactive." Consequently "we

reject a secret influence as superfluous, nay, even impossible" (*Primum Mobile*, 1.1 and 1.4, Cooper translation).

Today there are two approaches to physical explanations of astrology. One is to stay with an extended conventional science, as in the explanations of McGillion (1980,2002) based on the pineal gland, Cotterell (1988) based on interstellar radiation, and Seymour (1990,1997,2004) based on resonance between planetary tides and the magnetosphere.

The other approach is to move beyond conventional science. Recent examples (albeit applied to astrology by astrologers and not by their originators) are physicist David Bohm's idea of implicate order, neuropsychologist Karl Pribram's idea of holographic order, and plant physiologist Rupert Sheldrake's idea of morphic resonance.

Two earlier explanations that were once popular among certain astrologers are those of Charles Muses (1919-2000), a mathematician and philosopher, and Arthur Young (1905-1995), founder of the Institute for the Study of Consciousness. Muses's explanation is described in his 1985 book *Destiny and Control in Human Systems*. It is based on what he saw as the structure of time, in which lines, circles and helixes in time express the relationship between macrocosm and microcosm. Young's explanation is described in his 1975 book *The Geometry of Meaning*. It begins with the twelve measures needed to describe a body's motion, force and power, which can be matched to signs. Thus acceleration = Aries, mass control = Taurus, and so on through moment of inertia = Pisces. This of course was before sign effects had been disconfirmed. More details of each explanation can be found in Mishlove (1993).

Ironically all physical explanations involve two problems. First, precise details are missing about how things like "Moon opposition Saturn indicates problems with your mother" are explained. The links with say seasonal effects may be clearer, but this no more explains astrology than does getting up with the sun or having barbecues on moonlit nights. So they boil down to leaps of faith. Second, in principle all physical explanations must fail because there is often nothing for physical forces to act on. As when the subject is a company or a country or a question, or when actual planetary positions no longer exist as in progressed charts and returns.

Until such problems have been overcome, physical explanations remain circular -- astrology is explained by the kind of thing that, if it worked, would explain astrology. One possible but little-explored solution is to move the focus from physical forces to information content, where people respond to coded cosmic signals.

Information theories of astrology

The basic idea in information theory is that information can be treated much like a physical quantity such as energy. But unlike energy, which is the stuff of causation, information is weightless and energyless and therefore does not imply causation. Since astrologers routinely refer to astrology as "non-causal", information theory seems at first sight to be a promising explanation of how astrology might work.

The issues to be addressed are: how much information is in the heavens as shown in the birth chart, and how quickly can that information be transmitted from the heavens. Because the heavens are always on the move, the information to be transmitted is more like a frame of movie film than a fax. Speed is crucial. For our present purpose the means of transmission (physical or nonphysical, causal or noncausal) is not a concern.

The information content of a message or picture or birth chart can be measured by the number of yes/no instructions or bits (0s and 1s) needed to construct it. If we have N equally-probable symbols, the number of bits required to select any one of them is $\log_2(N)$. Thus to select a sun sign would take $\log_2(12) = 3.5$ bits. For more than this the calculation gets complicated. Planet and house positions to the nearest degree would require about 1500 bits, whereas to select a chart meaning from a pre-existing set of all possible meanings (total about 10^{186}) would require about 620 bits, a notable saving over 1500.

To receive this information there has to be some kind of carrier wave, for example without sound waves you could not hear what your astrology teacher is telling you. A wave whose frequency range is B cycles per second (this is called the bandwidth) can carry something like $6B$ bits per second. For example in human speech the transmission rate is about 10 bits per second.

The highest frequencies available in the heavens are planetary diurnal frequencies of around one cycle per day or 0.00001 cycles per second. So the transmission rate cannot exceed 0.00006 bits per second. To transmit 620 bits would take $620/0.00006$ seconds or around 120 days, far too long to match the traditional moment of birth. Even selecting one sun sign out of 12 would take $3.5/0.00006$ seconds or around 16 hours.

To put it another way, if the birth moment is taken to last for one second, to receive 620 bits during that second would require a minimum carrier frequency of 620 cycles per second, or slightly above octave C. The heavens would be singing a baritone song. Since no such frequency seems to be available, information theories of astrology seem as unpromising as physical explanations.

Psychic explanations of astrology

Many astrologers attribute a successful chart reading to what they call intuition or psychic ability, where the birth chart acts like a crystal ball. They see astrology less as a set of rules and more as something akin to divination, where "its reliability depends on the quality of the astrologers' intuition" (Phillipson 2000:167). In other words astrology works not because of astrology but because of the psychic ability of the astrologer. There are two problems here.

First, like everyone else, astrologers certainly have intuition, the unconscious processing of previous experience that pops answers into our minds, so we know without knowing how (and also without knowing we could very well be wrong). But what matters here is not intuition but psychic ability, which unlike intuition has no scientific explanation. Careful tests have shown that astrologers do not have useful psychic abilities (Dean & Kelly 2002), nor for that matter do leading psychics (Boerenkamp 1988, details are given under References).

Second, such explanations put astrology firmly in the field of psi and therefore expose it to the same problems. Problems such as the absence of criteria for deciding whether psi is present or absent (Alcock 1981,2003), the severe incompatibility of psi with the findings of neuroscience (Beyerstein 1987, Kirkland 2000), and its negative definition (psi is what remains after all known normal explanations have been eliminated, so where does that leave normal explanations not yet known?). In effect they replace one mystery by another and are therefore not useful.

An alternative psychic model has been proposed by Guinard (1993-2003), where our psyches resonate with the planets and pops the results into our minds as unspecific symbols and archetypes, so no special psychic ability is needed. But Guinard insists that his model is untestable (what matters is that astrology is meaningful), which is not useful.

Magical explanations of astrology

The most popular explanation of astrology is based on magical correspondences or argument by analogy, the assumption that things similar in some respects are also similar in other respects. Thus Mars the red planet indicates blood, anger and war, and then by extension anything vaguely red, hot or aggressive.

Ancient Hermetic writings contain eloquent examples of magical correspondences: "The macrocosm has animals, terrestrial and aquatic; in the same way, man has fleas, lice, and tapeworms. The macrocosm has rivers, springs, and seas; man has intestines. The macrocosm contains breaths [winds] springing from its bosom; man has flatulence. The macrocosm has Sun and Moon; man has two eyes, the right related to the Sun, the left to the Moon. ... The macrocosm has the twelve signs of the Zodiac; man contains them too, from his head, namely from the Ram, to his feet, which correspond to the Fish" (from MacNiece 1964:126).

There are three problems here. First, we have no immediate way of choosing between opposing magical correspondences. Black cats were lucky to ancient Egyptians but unlucky to medieval Europeans. The Moon was male to the Babylonians but female to the Greeks. The same piece of sky means one thing in the West and another in the East. Indeed the astrologer Dale Huckleby (2003) argues that symbolism is too flexible to be useful. It allows an easy accounting of virtually any outcome at any time using any chart, so the match between chart and outcome is nonfalsifiable.

Second, it is impossible to specify any two things that do not show some kind of correspondence. Lewis Carroll's raven and writing desk are alike because both begin with an "r" sound and both cast shadows. What should surprise us is not a correspondence but the lack of it. According to Huckleby (2003) the solution is a return to observation, to look for patterns, to see what repeats over the years as the transits repeat. He asserts (wrongly) that science cannot explain astrology, and speculates that astrology is no more than an evolved sensitivity to planetary cycles (precisely what signals are being detected is not stated).

Third, our chances of being correct are not good. No longer do we believe, as Aristotle did, that death can occur only at low tide. No longer do midwives open the door to ease a painful labour. No longer do alchemical ideas appear in chemistry courses. In fact magical correspondences have been so spectacularly worthless that in Western education today they survive only as an example of fallacious reasoning.

In short, no explanation based on magical correspondences has much hope of attaining the usefulness we need here. Even if a specific claimed correspondence ("Dragon's Tail on the Descendant indicates a dwarf") could be tested, which is never easy because in astrology everything depends on everything else, the outcome (success or failure) would tell us little about magical explanations in general.

Three examples of explanations based on magical correspondences

(1) Hand's (1987) explanation of astrology assumes that, at any given moment,

everything is connected by a symbolism that is inherent in nature. His explanation is thus "a restatement of the old doctrine of correspondences that underlies all the so-called occult arts" (p.36).

(2) Elwell's (1987) cosmic loom theory of astrology proposes two realities, one seen by us and the other seen by astrology. *Our reality* groups together things like dew, ice, water, humidity and steam, all to do with H₂O. *Astrological reality* groups together things like cold, old age, bones, lead, discontent and responsibility, all magical correspondences to do with Saturn. Such apparent diversity is woven together on the cosmic loom, hence the name.

(3) Scofield (1993) proposes a testable model where the planets represent the various stages of human development. For example the personal planets Moon, Mars, Mercury, Venus represent ages 1-2, 3-4, 5-12, and 13-19. However, his model explains nothing -- it merely re-arranges symbols.

The above explanations reduce to "astrological effects are explained by astrological effects", which is not useful.

Clock and time quality explanations of astrology

As Hand (1988) puts it, "The universe is essentially a clock in which all components serve to tell what time it is. As above so below, because it is essentially one thing. ... In various forms this is the most prevalent theory at present."

The role of clocks and timing emerged first in the ideas of Carl Jung (1931:154), who suggested that "time, far from being an abstraction, is a concrete continuum which contains qualities or basic conditions ... In other words, whatever is born or done in this moment of time has the quality of this moment of time." The last may be the most popular quotation in all of astrology. Jung later replaced time quality with the idea of synchronicity, see next section.

Jung stressed that time quality "does not establish anything except the tautology: the flux of things and events is the cause of the flux of things, etc." (1976:176). It also implies that the quality of a given moment is the same everywhere, thus allowing the *so below* to be inferred from the *as above*. But as argued by Roberts (1990:98), it is absurd to believe that the quality of time throughout billions of star systems, some possibly with planets sustaining life, is synchronous with what our solar system is doing. So the quality of time has to be localised, on which point neither Jung nor astrologers offer guidance. If the quality on earth is highly localised then the relevance of the outer planets (perhaps all the planets) could be denied.

Furthermore, if each moment of time really does impress a quality upon whatever is born or *done* in that moment, then everyone should tend to laugh or cry in unison. When it rains here it rains there. Throw a large number of dice at the identical moment and all should show six. Similarly the silicon crystals grown today should differ from those grown yesterday. But such things are not observed. Time quality as conceived by Jung does not seem to exist.

Jung's synchronicity as an explanation of astrology

Jung (1960:849) defines synchronicity as "a coincidence in time of two or more causally unrelated events which have the same or a similar meaning" (1960:849), as when you

happen to think of friends just before they telephone you, adding that synchronicity "explains nothing, it simply formulates the occurrence of meaningful coincidences" (1960:995).

Nevertheless, synchronicity differs from ordinary coincidence in being deeply meaningful, acausal (one event cannot conceivably cause the other), highly improbable, and intensely emotional. It cannot be evoked on demand (1976:541) and occurs only in archetypal situations, which tend to be crises ("death, sickness, accident, and so on" 1976:537) that are so overwhelming that victims "find themselves compelled by fear to utter a fervent prayer: the archetype ... is constellated by their submission and may eventually intervene." As might be expected, synchronicity "is a relatively rare phenomenon" (1960:938n).

Jung presents no calculations to support his views about coincidences. In fact the number of events to which we are exposed is so huge that the probability of experiencing a dramatic coincidence is quite high. So there seems to be no reason why meaningful coincidences should involve synchronicity.

And how coincident is coincident? Jung starts by saying the outer event is simultaneous with the "momentary subjective state" (1960:850). Later he changes his mind, saying that the inner state coincides with a "(more or less simultaneous) external event", or even a "future event that is distant in time" (1960:984). So simultaneity is not essential. Koestler (1974:95) comments "One wonders why Jung created these unnecessary complications by coining a term which implies simultaneity, and then explaining that it does not mean what it means."

Note the problems for astrology: (1) Simultaneity is not essential. (2) Synchronicity is facilitated if the chart reader is in the grip of intense crisis-type emotions, but even then it may not appear. (3) Synchronicity arises from the reader, not the chart. In other words synchronicity as defined by Jung is not relevant to astrology. If it was, every hit would require the reader to experience intense archetypal fear, anger, joy, sorrow, love, hatred, etc, in rapid succession. No reader or client could stand it.

What we need is testability

None of the previous explanations seem useful. None of them suggest what a birth chart should contain and how it should be interpreted. All they suggest is "astrology works because it works." Indeed, nobody given only these explanations could end up as an astrologer. What we need are testable explanations. Two examples follow.

Addey's theory of harmonics

Addey's (1976) theory of harmonics is aimed at the unification of techniques, so it is not quite the type of theory we are looking for. But it is based on extensive empirical observations and therefore on testability, which justifies its mention here. Addey's theory says that astrology is basically waves and harmonics of waves. For example when planetary diurnal positions are plotted for large samples of people, they show ups and downs that seem related to the kind of people.

Later, using a computer, it became possible to apply Addey's methods to artificial populations to see if his methods recovered what was known to be there (Dean 1997). Unfortunately they did not. Addey's findings were most likely an artifact of small sample sizes, incorrect expectancies, and improper procedures, which leaves his theory with no secure basis.

Reversed explanations: As below, so above

Instead of trying to explain *as above so below*, or why heavenly affairs are reflected on earth, we could focus on trying to explain *as below so above*, or why earthly affairs are reflected in the heavens. This approach seems promising because testing requires neither birth data nor particular assumed correspondences. For example we might predict that the adjustment of marriage dates or of journey destinations should be accompanied by measurable changes in the heavens, but the actual nature of the changes need not be specified in advance. However, by the same token, a failure to detect measurable changes might merely mean we were looking in the wrong place, or at the wrong things, or with insufficient magnification. Testable, perhaps, but still not useful.

Part 3. An ordinary explanation of astrology

As we have seen, there are many speculative explanations of astrology. By contrast, there is only one ordinary explanation. It explains astrology by the failure of astrologers to control non-astrological factors, which are then mistaken for genuine astrological effects.

Non-astrological factors include perceptual and inferential biases (we draw wrong conclusions from what we see), sampling errors (sampling variance is wrongly interpreted as variance due to astrology), and capitalisation on chance (if the number of possible chart variables exceeds the number of subjects, as it must do for any astrologer who has less than a few million clients, then a perfect match between chart and client is guaranteed even if all data are random numbers). Non-astrological factors have been explored in thousands of studies and dozens of books but they are consistently ignored by astrologers. None of the factors are mysterious and none of them require astrology to be true. For further discussion see *Artifacts in reasoning* on this website under Doing Scientific Research.

This ordinary explanation immediately lays to rest many puzzles. It explains why neither astrologers nor clients seem able, under blind conditions, to tell wrong charts from right charts, and why tens of thousands of Western astrologers can disagree with hundreds of thousands of Eastern astrologers over what the same 12 pieces of sky mean.

It also leads immediately to testable predictions such as: There will be mutually incompatible techniques that are nevertheless seen as valid by their users. Subjects will be generally unable to distinguish authentic readings from controls. Judgements by astrologers using authentic charts will be no better than those using control charts. The more biases and artifacts a technique contains the more effective it will seem. No predictive technique including horary will consistently perform better than chance.

In short, such an explanation meets all our requirements. It explains the observations, improves on existing explanations, suggests new areas for testing, and does not contravene existing knowledge. No other explanation comes close. It has also been put to the test, see next.

Attempts at disconfirmation

Testing this ordinary explanation of astrology was essentially the challenge of the \$US5000 superprize competition, which was announced in 1983 with twelve sponsors including the Astrological Association. "The superprize will be awarded for convincing

evidence that the accuracy of chart interpretations cannot be explained by non-astrological factors. For the present purpose, 'convincing evidence' is that which is convincing to the judges" (Dean & Mather 1983-1987).

To make the situation quite clear: "The non-astrological factors which could apply are surprisingly numerous and in principle are sufficient to explain how astrology seems to work. Examples are universal validity, gullibility, belief, and statistical artifacts. There are many others. The aim of each entrant will be to demonstrate that non-astrological factors are in fact not sufficient, and that the only genuine explanation of how astrology works is the reality of astrological effects" (1983:209).

Details were published in astrological journals in eight countries and probably reached 250,000 readers in the USA and over 5000 elsewhere. More than 60 intentions to enter were received from a total of 14 countries and were pleasingly diverse: roughly one third involved personality, one third involved events, and one third involved other areas such as discrimination, synastry and horary. Subsequently 34 actual entries from 7 countries were received, of which 16 did not address the required topic and 3 had produced only negative results. Of the remaining 15 entries only one was successful, but this was a fake entered to test the allegation by Dennis Elwell that the prize was unwinnable because appropriate tests could not be designed and the panel of eight judges was not impartial.

Disconfirmation could of course be achieved by any study in which non-astrological factors are controlled. There are now well over 100 such studies (including over 50 Vernon Clark studies) involving thousands of charts and hundreds of astrologers, but none have produced a convincing disconfirmation. Appeals to the Gauquelin findings hardly count when there is no Gauquelin effect for half the planets, or for signs, or for aspects, or for the 99.996% of the population who are not eminent, and there is likely contamination from social artifacts anyway, see *The Gauquelin work 2. Artifacts vs puzzles* on this website under Gauquelin.

In other words the ordinary explanation of astrology has resisted repeated attempts at disconfirmation and can thus claim to be the first successful explanation of astrology. Of course it may or may not survive future attempts at disconfirmation, but until then it seems premature to consider other explanations.

Part 4. Explanations of astrology's value

So far the aim has been to explain how astrology works. We now move from explanations of (perceived) truth to explanations of (perceived) value. Previously the issues included things like how does astrology work and what techniques are best. Now the issues include things like: Why has astrology been popular for so long despite its internal disagreements? What is its perceived value? What matters most -- the client, the problem, the technique, or the astrologer? Must the astrologer be a good person? How essential is belief in astrology? How can the value of (a demonstrably untrue) astrology be improved?

For clues we can consider sun sign astrology. Although every controlled test has shown it to be untrue (people with sun sign X are no more X-ish than other sun signs), it is the most popular kind of astrology in the Western world. Its easy commercialisation explains

supply but not demand. If we can explain why sun signs are so popular despite being untrue, it might help in explaining the popularity of astrology proper.

Explanations for the popularity of sun signs

Whatever we may think of sun signs, they provide millions of people with a rich source of cues for constructing their identities -- personality, lifestyle, romance, occupation, everything. In the old days our cues to finding a personal identity were taken from stable family and social settings. Today this stability is greatly reduced, and traditional cues may well be less important than those provided by TV, celebrities, and the occult. This applies even if the cues are false, simply because belief in their truth will make them true in their consequences just as a sound bank can collapse if people believe it is unsound. The efficacy of false cues has long been apparent for sun signs, where the observed effect size for sun sign self-attribution is typically 0.09, equivalent to 54.5% hits when 50% is expected by chance. When false cues are prevented the effect disappears, leaving nothing for sun signs to explain.

To put this another way, sun signs have *personal utility* (they address our favourite subjects, namely us and our relationships, in a positive and nonjudgemental way), *social utility* (they help us talk about ourselves, creating closeness, and nobody is left out), *simplicity* (they require only a birth date and are easy to learn), *perceived validity* (they are perceived to be mostly true) and *availability* (only the weather forecast is more pervasive).

All of the above reasons are plausible, and although their relative contributions have yet to be established, an explanation would most likely embrace all of them. Such an explanation can be simply stated -- sun signs are popular because they are simple, cheap, fill a need, and seem to work. No other system comes close. How well does this apply to astrology proper?

Explanations for the value of astrology

It is arguable whether astrology proper is simple. But it is relatively cheap, fills a need, and seems to work. Thus astrological ideas have undeniable beauty and appeal, they can feed the inner person in much the same way that music, poetry and art do, they meet our need to conform and yet feel unique, they provide reassuring structure in a chaotic world, the birth chart is nonjudgemental, the interpretation is non-falsifiable, astrologers tend to be nice people, and in a dehumanised society astrology provides ego support at a very low price. Where else can you get this sort of thing these days?

In short, this explanation says that astrology has value because it seems to have its priorities right. It can give the feeling of understanding our place within the whole. The same applies to religion and pop psychology in all their forms, even though they often disagree and cannot all be right. Note how this explanation does not require astrology to be true, and how our explanations of value have nothing to do with the explanations of truth surveyed in Part 2.

Explanations of longevity

But this sidesteps an interesting question -- if astrology is actually untrue, why has it lasted for more than 2000 years? What is the secret of its longevity? Can we really believe that "filling a need and seeming to work" was enough to carry astrology during its falls from grace? After all, beliefs such as phrenology that filled a need, seemed to work, and were even more popular than astrology, are nevertheless now defunct. It is here that meme theory may be relevant.

Memes and memeplexes

Memes are any kind of information (ideas, skills, stories) that is copied from person to person. Like genes, memes are replicators, and both compete selfishly to be copied whenever they can. It is this focus on replication that gives meme theory its explanatory power. Meme theory is still new and controversial but it successfully explains many human attributes that are otherwise difficult to explain such as our capacity for language (Blackmore 1999, 2002).

A memeplex is a group of memes that are passed on together. Memeplexes form whenever a meme can replicate better as part of a group than it can on its own. As before, its only aim is to replicate. The most successful memeplexes are those that supply untestable explanations for human predicaments (why are we here?), and include reinforcing tricks such as coercion (wrongdoers are punished), reduction of fear (believers will be saved), altruism (good people believe), and dogma (this explanation is The Truth). There is clearly a good match here with any religion, and with astrology and divination.

Memes in astrology

Blackmore (1999:182-184) points out that clients pick up lots of memes during a chart reading. For example the reader has special powers that the client does not have; the system holds ancient mysteries that cannot be tapped by unbelievers; it reveals the connections between you and the universe and unfolds your destiny; it reveals the real you and puts you in touch with your higher nature. Blackmore (who in her early days had a reputation of being an excellent Tarot reader) comments:

"These memes are successful because they seem to explain the client's experience and include all the right tricks. The fear they prey on is the fear of uncertainty and of making the wrong decisions in a horribly complex world. People typically go to psychics when they are their lowest ebb and want guidance. This means they are all the more likely to fall for claims of higher powers or of special insight. The "illusion of control" also works in favour of these memes. Stress is reduced when control over a situation is increased -- and if real control is not possible, an illusion of control will do. Many experiments have shown the power of this illusion." (1999:183-184)

In many cases we could of course argue that some memes spread because people are gullible. But nobody designed astrology to suit gullible people. Instead, countless astrology memes competed out there in the marketplace, and the most successful ones (the ones with the best tricks, namely a Barnum reading plus a pseudo explanation based on astrology plus a suggestion to read your horoscope every day, hanging together as a sun sign memeplex) kept getting copied and ended up as the most prevalent astrology we have today.

Memes and longevity

Recall that the focus here is not astrology, or people, but replication. Replication is everything. We do not have to like or agree with the memeplex, all that matters is that we talk about it and thus pass it on. From the memeplex's point of view, any publicity is good publicity, so believers and debunkers are equally welcome. It is here that we can see a memetic explanation for astrology's longevity.

Imagine two memes. The first is a *statement* "Leos are generous." The second is a *belief* "I believe Leos are generous." The question is, which meme will fare better in the competition to get into as many brains, books, and television programmes as possible?

Answer: the second will. A *statement* will be passed on only if it is relevant, which may occur only rarely. But people (especially if influential like parents or church leaders) will press their *beliefs* on others regardless of relevance. In this way some memplexes, true or false, important or trivial, will survive better than others.

We can now see why astrology has lasted so long, and has perceived value, despite disconfirmation of its claims. It survives because people talk about it. It survives falls from grace because so much publicity is already out there. It survives and is believed for the same reasons that a religion survives and is believed -- by rewarding belief and punishing disbelief. Compatible memes are accepted, incompatible memes are rejected. Validity (as opposed to perceived validity) and the explanations of truth covered in Part 2 have nothing to do with it.

But astrology and divination memplexes do more than survive. "They exert phenomenal power in modern society and are responsible for the movements of vast amounts of money. They shape the way we think about ourselves and, perhaps more importantly, they cause many people to believe things that are demonstrably false. Anything that can do all this deserves to be understood" (Blackmore 1999:184).

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Using astrology as a counselling tool

Strategies that work

Much of what follows is updated from G Dean, Does astrology need to be true? *Skeptical Inquirer* 11(2), 166-184, Winter 1986-87. And from G Dean, IW Kelly, & A Mather, Astrology and Human Judgement, *Correlation* 1998, 17(2), 24-71, especially pages 62-65, and from material prepared for that paper but omitted from the published version to conserve space. Both sources incorporated the comments of many others as indicated in their respective acknowledgements. This update received help from counselling

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Abstract -- This article is a long one and covers much ground. The astrology being considered is the serious astrology of journals and consulting rooms, not the nonsense of sun sign columns. The case against astrology as documented by articles on this website is that it has no intrinsic validity. Yet other articles on this website argue that astrology can be a useful aid to counselling. The present article explores in detail this apparent contradiction. It looks at relevant findings in psychology and sociology on what makes good therapists and clients (eg they should like each other), it brings together the known ways of being a better astro-counsellor without requiring astrology to be true (eg be warm and understanding), and it explores the implications for research. The results will be useful to astrologers and clients alike. It starts with the welcome trend away from *chart reading* (astrologer talks, client listens) towards *chart exploration* (client does most of the talking), a trend that is sabotaged by the continuing but invalid belief among astrologers that astrology (when it works) is actually true. By continuing to hold this invalid belief, astrologers generate hostility from critics, obscure the genuine role that astrology can play in counselling, and obscure the factors that can maximise success. All psychotherapies fall into two broad groups, *person-centred therapy* or therapy by conversation, and *symptom-centred therapy* or therapy by action. Astrology as an aid to psychotherapy or counselling (the terms are used interchangeably) is person-centred. The basic techniques of counselling (listen, encourage feelings, reinforce good suggestions, discourage bad ones, avoid giving advice) are entirely compatible with astrology. But astrology itself is not counselling, nor is it without liabilities such as astrologers playing God or charging high fees, and clients expecting fortune telling. Nevertheless it is easy to see why the birth chart is a good aid to counselling: It provides a great check list, is hugely flexible, need not be true, is non-threatening, and helps clients accept their bad points by putting them on the table. Examples are given of how it works via hidden persuaders such as cold reading and the Barnum effect. Other therapeutic uses of astrology include experiential astrology, where for example clients role-play a planet or (in groups) different planets, eg walking in the street like Jupiter. Given that astrology adds nothing to the psychotherapy beyond non-astrological effects, there is a clear case for future research to focus on enhancing those effects, eg by attending to known correlates such as warmth, understanding, and wisdom. Some clues are given by the US psychotherapist Michael Mayer who uses an astrology called astro-poetics to emphasise that no claims of validity are made. Five appendices cover literature trends, humanistic astrology, placebo effects, The Samaritans, and pernicious therapies. 115 references.

The case against astrology as documented by articles on this website is that it has no intrinsic validity, it has failed hundreds of tests, and astrologers do not usefully agree on what a given birth chart indicates. Yet other articles on this website argue that astrology can be a useful aid to counselling. For example astrology *provides personal support* (Case for and against astrology), *allows therapy by conversation* (Astrologer meets client), *is a tool, a focus, an ice breaker* (Optimum place for astrology), *involves images ... used to help the client* (Basic statements about astrology), and *it hardly matters whether it involves truth* (Projection).

But how can an astrology without validity be useful in counselling? The following article explores in detail this apparent contradiction. It looks at relevant findings in psychology

and sociology, it brings together the known ways of being a better astro-counsellor without requiring astrology to be true, and it explores the implications for research. The results will be useful to astrologers and clients alike. The astrology being considered here is of course the serious astrology of journals and consulting rooms, not the nonsense of sun sign columns. There is a lot of ground to cover, divided into seven parts:

1. Background. *Perspective, history, astrology need not be true.*
2. About counselling. *What makes good therapists, clients, techniques.*
3. Using astrology. *Views, being a better astrologer, training, dangers.*
4. Examples. *Chart exploration, non-astrological factors, experiential.*
5. Implications for research. *Putting clients first.*
6. Appendices. *Humanistic, placebos, Samaritans, pernicious therapies.*
7. References. *More than 110, some annotated.*

Part 1. Background

Perspective, history, astrology need not be true.

Putting astrology and counselling into perspective

Astrological counselling may loom large on this and other websites, but in the grand scheme of things it tends to pale into insignificance. Consider the following:

In the 1980s it was estimated that about 70 million Americans (about 30% of the population) would be suffering from one or more psychological problems during their lifetimes (Regier et al 1988). Sufferers tended to avoid psychotherapists and were more likely to consult their doctor or minister (Cowen 1982) or buy some of the 2000 new self-help titles then being published annually (Doheny 1988). About 15 million sufferers were attending a total of about 750,000 self-help and mutual-help groups (APA 1989). Sufferers had 280,000 licensed counsellors to choose from, and even more unlicensed ones -- 130,000 in mental hospitals and clinics, 300,000 clergy, and 10,000 instructors in TM alone (Zilbergeld 1983).

Today there are more than 400 types of psychotherapy (Erwin 1994:263) and over 1200 studies of psychotherapy outcomes, which have found that only "certain types of psychotherapy are effective (and even for these, only for certain types of problems and clients)" (p.274). One result is that professional counselling (at least in the USA) is "overpromoted, overused, and overvalued, [but] can be beneficial when used prudently" (Zilbergeld 1983:271). Of which more later.

In such a perspective astrological counselling emerges as a minor player. In the 1990s in the USA, for every astrologer with paying clients there were about 70 licensed counsellors of all kinds including psychiatrists, an equal number of lay counsellors such as clergy, about 100 doctors or lawyers, 200 prison inmates, 300 nurses, 700 teachers, and 3000 college students (Numbers 2002). Astrologers in the UK were similarly overshadowed, albeit not as severely. Today in the USA roughly one million people a year consult astrologers, which seems like a lot. But even this number is only about 2% of the millions of Americans who at any one time are seeking answers to their psychological problems. In other words, if you should see the detail that follows as inflating astrology above its station, you could be right. But we have included it here simply because it has hitherto not been conveniently available all in one place.

Where counselling enters the astrology picture

Personal work with astrology can be broadly divided into three types. Each type blends into the next so the classification is basically one of emphasis: (1) *Chart reading*. Astrologer talks, client listens. Usually one session. (2) *Chart exploration*. Astrologer and client explore chart together. Often several sessions. (3) *Chart therapy*. Psychotherapist uses astrology on the side as an adjunct to orthodox techniques. Client has serious problems and usually requires ongoing sessions. Not a job for astrologers.

Astrologer Roy Alexander (1983:83) suggests as a rule of thumb that *reading* becomes *exploration* when the client does more than half the talking. But it will depend on the client. With inhibited clients the astrologer may have to do most of the talking just to draw them out. ---

Chart reading is traditional and is what most people expect when they visit an astrologer. *Chart exploration* goes beyond tradition and is where counselling enters the picture. *Chart therapy* is rare. Only a tiny proportion of licensed psychotherapists use astrology on the side.

The move towards astro-counselling 1960-1990

Chart exploration had its beginnings in the person-centred astrology promoted by Dane Rudhyar (1895-1985), a protege of occultist Alice Bailey (1880-1949), in reaction to the failure of ordinary astrology in the USA to satisfy spiritual needs. In the 1960s, when many astrologers were busy with predicting events or proposing new techniques, Rudhyar was almost alone in being concerned about astrology's effect on clients. For example in his booklet *An attempt at formulating minimal requirements for the practice of astrology*, Rudhyar (1973) says:

"what is required is NOT whether a particular type of system, or an interpretation of the basic data provided by astrology, is valid in itself ... but whether the [astrologer has] a clear sense of his responsibility to the client whose mind and feelings may be deeply affected by what is told him. ... The human quality of the relationship brought about by the astrologer's personality and his feeling-responses is often what is most important" (pp.20,22).

On the other hand, Rudhyar tended to overemphasise the materialism of conventional astrology, and many astrologers outside the USA would have denied that their astrology was other than person-centred. For example Margaret Hone's *Applied Astrology* (1953), an early British and widely-used collection of case studies, gave much guidance that was person-centred such as "think of your client before yourself" (p.13), then "having established confidence ... get him [the client] to state his problem in the most clear manner possible. This will be his first step towards resolving it. ... Listen quietly, giving him the opportunity for what Jung calls 'a clearing of a cramp in the unconscious'" (p.14).

The 1960s was also the time when pop psychology and self-help books were becoming fashionable. A decade later, new astrology authors like Liz Greene were writing books that focussed on psychological astrology, which was attractive to people interested in astrology but who were put off by its popular fortune-telling image. It also inspired researchers to look again at astrology. For example American astrologer Michael Meyer (1974) noted that the new approach "is presently attracting the attention and interest of many young and progressive people"; it also required a new style of chart reading because "One-time one-hour astrological sessions are obviously inadequate; the astrologer ... must understand the person as a whole" (p.40).

In the 1970s British astrologer David Hamblin (1975) noted that existing astrology courses in the UK gave no guidance on building a good client relationship. But things

were changing. By the 1980s Christina Rose (1982:15), a British astrologer and qualified counsellor, was able to report "immense changes" in the practice of astrology away from chart *reading* to chart *exploration*. Working astrologers in the UK had begun to see chart reading as defined above to be unhelpful because the client is too dependent on the all-knowing astrologer (but of course if clients are merely curious about astrology then a chart reading may be all they want). And in 1988 the UK Faculty of Astrological Studies began two-year post-diploma counselling courses to blend astrology and counselling.

Beyond codes of ethics

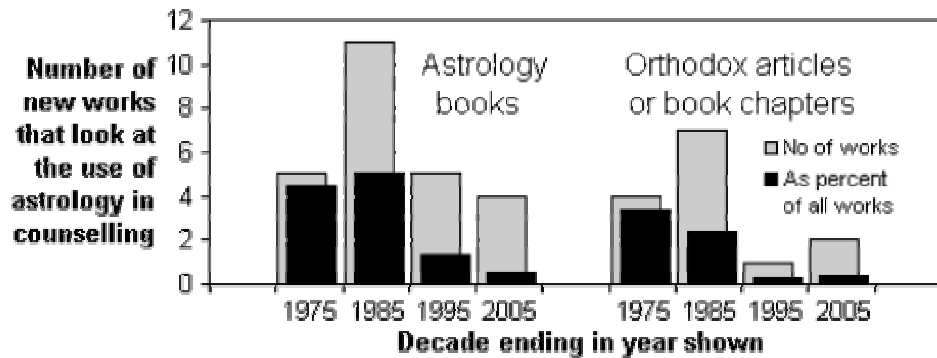
Today all established schools of astrology hold examinations, award diplomas, and have codes of ethics. The codes vary in detail between schools but all require that no astrological opinion be given unless based on the whole chart cast for the exact date, time and place of birth; that opinions not based on astrology be identified; and that client confidences be observed. Wilful violation of the code leads to withdrawal of the diploma. But particular codes of ethics are not the same as effective regulation generally. Anyone who wants to practise medicine or psychology or plumbing, or to build or sell houses, must be qualified and licensed to protect the public against malpractice. But anyone can become an astrologer just by saying so.

In the 1980s working astrologers in the UK saw the need for a professional body to maintain standards, and in 1990 the Association of Professional Astrologers International was formed to provide protection against astrological malpractice. Safeguards in its code of ethics included the mandatory referral of potential clients "whose needs are beyond the competence of an individual astrologer", and a ban on "offering any medical, legal or financial advice to a client on astrological grounds unless the appropriate [orthodox] skills or qualifications have been obtained" (APAI 2006). Membership was limited to astrologers with a diploma from an approved body such as the Faculty of Astrological Studies. In due course similar bodies were formed in other countries such as the Australian Association of Professional Astrologers in 2000, which is "committed to the development and maintenance of best practice in the astrology field through the promotion of strong education standards, professional competency, ethical understanding and integrity", and the American Organization for Professional Astrology in 2001, which is dedicated to maintaining "professional standards for the responsible use of astrology".

The countermove away from counselling 1990-

Ironically the move towards legitimisation in the 1990s was accompanied by a countermove against psychological astrology by fundamentalists wanting a return to the old-style astrology of eg 3rd century Ptolemy, 13th century Guido Bonatti, and 17th century William Lilly. There was also increasing interest in mundane astrology (world events), financial astrology (money markets), horary astrology (answering questions), and Vedic astrology (Indian). The result was an increasing split between psychological astrology and the rest, and decreasing interest in the former. At the same time there was no great move back to the monologue style of chart reading. Even the new fundamentalists tended to discuss charts with clients rather than just say what it indicated.

Where does that leave counselling? Publication is a good measure of interest because it reflects the demand that book sellers, publishers and authors rely on to stay in business. Judged by the number of astrology books that are devoted partly or wholly to counselling, the immense changes that were apparent to Christina Rose in the 1980s have now disappeared, see figure below.



Left: Rise and fall of astrology books with a chapter or more devoted to counselling. The titles on which the percentage is based do not include sunsign titles. Note that books with counselling in their title such as Doris Chase Doane's two-volume 1983 *Vocational Selection and Counseling* may have nothing on counselling in the sense meant here, whereas books without counselling in their title, such as Tracy Mark's 1986 *Art of Chart Interpretation*, may have a chapter or two. **Right:** The number of articles or book chapters in orthodox publications that look at the use of astrology in counselling show a rise and fall similar to that on the left ($r=0.89$). Appendix 1 lists all the publications plotted above.

The above figure shows how the number of new astrology books with some focus on counselling, measured either as titles or as a percentage of all new astrology titles, peaked in the 1970s and 1980s and has since fallen away to around 1 in 200 of all new astrology titles. Right, much the same pattern is shown by orthodox publications that address the use of astrology in counselling. Similarly, of the 1500+ articles published in *The Mountain Astrologer* since 1991, the proportion that have some focus on counselling is also around 1 in 200. The pattern seems clear -- general interest in astrological counselling has declined since its peak in the 1970s and 1980s, reflecting not only the 1990s re-emergence of non-psychological astrology but also perhaps a general trend towards concerns other than helping others.

Number of counselling astrologers

Much the same decline of interest is reflected in the membership of professional associations. For example after 15 years the APAI (with presumably the whole world to draw upon) has only 110 members, mostly in the UK. In addition to an astrological diploma, about one-third of members have a formal degree, typically a BA or MA, and about one-fifth have a formal qualification in counselling or have completed the two-year Faculty course (APAI 2006). Similar proportions apply to the 40 members of the Australian APA.

Ironically, despite the concern by some astrologers to be seen as responsible and self-policing, these attempts to educate the public about astrological qualifications have met with only limited success, especially in the USA. It is the general experience of astrologers that clients tend to be as uncritical and not bothered by credentials as they were in the 1970s. So the above concerns about professionalism have had little effect on client behaviour.

What about astrologers as a whole? In the 1990s the number of full-time professional astrologers was about 250 in the UK and 5000 in the USA, or ten times this if part-timers are included, see Various (1990s). The proportion of full-timers with some formal counselling qualification is unknown but might be around 5% in the UK and rather less in the USA (the Faculty had to discontinue its counselling course due to poor demand). If we include part-timers and hobbyists, but still excluding astrologers at fairgrounds,

shopping malls, psychic fairs, or on phonelines, the proportion with some formal counselling qualification is likely to be very much smaller. For comparison the number of licensed counsellors in the USA today is about half a million. The UK does not yet have a licensing system for counsellors; the nearest is the UK Council for Psychotherapy, which sets training standards and ethical requirements; it represents 80 UK psychotherapy organisations with a register of over 6,000 approved psychotherapists.

But the old (invalid) beliefs still prevail

Rose (1982:136) stresses that the focus of a chart exploration is the client, not the chart. Indeed, "very often the chart can become superfluous and it becomes a matter of talking with the client without that piece of paper constantly being referred to. ... if the chart is avidly scrutinised at every word he utters, every move he makes, it can make him abandon the work with the astrologer altogether".

Nevertheless putting the client first is still accompanied by a belief in astrology as a source of information -- information that has to be true otherwise it is not information, in the same way that news about an elephant under your bed is not information unless it is actually there. Astrologers tend to raise smokescreens at this point by appealing to *correspondences or significations or as above so below*, that is, to any kind of *acausal explanation* that might disguise their need for astrology to be true. Former American astrologer Charles Strohmmer (1998:21) notes that:

"If an acausal explanation for astrology sounds hard to swallow, it is, [simply because] we live in a universe, a world, of causes and effects. This means we can't keep causes and effects out of anything, including our theorizing. Thus it is not possible for astrologers, or anyone else, to hold causality at bay *even in their theorizing*. ... However unintentional it may be, astrologers cannot write without recourse to the language of causes and effects" (his emphasis).

Thus astrologers habitually refer to planetary *energies*, planetary *actions*, planetary *influences*, to planets *governing*, planets *ruling*, to variations in planetary *strength*, to Saturn *restricting*, to Uranus *liberating*, to planets *triggering*, *trapping*, *clashing*, *conflicting*, *supporting*, to the chart being a symbolic representation of *energy patterns*, to no factor in a chart being completely *powerless*, and to *inclining* not compelling. This is the language of information, of the need to be true, and it extends into the heart of the consulting room. For example listen to these typical claims of astrologers who are also counsellors:

"astrology ... identifies the strengths and weaknesses we have" (Donna Cunningham 1978:10), "astrology in the counseling arts enables the counselor to help the person to align himself with the truth of his nature and being" (Stephen Arroyo 1979:56), "we recognize the truth in the relationship between planet and event" (Stephanie Jean Ellis 1982:42), "the astrological chart is far and away the most effective, comprehensive and reliable source of information about the client" (Roy Alexander 1983:xii), "The planets themselves show the way the psyche is broken down into its constituent parts" (Gregory Szanto 1987:104), "attitudes toward work, authority, and money do not readily show up in traditional vocational tests, yet they are clear in the horoscope" (Donna Cunningham 1994:141), all of which imply that astrology provides the truth. As does the psychiatrist Bernard Rosenblum (1983:1) who says the chart gives "an excellent psychological overview". Similarly the astrologer and counselor Maritha Pottenger (1982:207) gives an actual counselling session in which she tells the client things like "your Mercury in Aries quickens the thinking" and "With Capricorn rising, you needed to work"; Donna Cunningham (1994:159) says of one client "People with Neptune near the Ascendant keenly feel the needs of everyone they meet", and of another "With Sun, Mars, and Mercury in Aquarius, he had to put the [recommended] books down as simplistic, of course" (p.159); and even Christina Rose (1982) devotes much of her book to chart factors as if their meanings were actually true.

Similarly all astrological teaching bodies including those approved by the APAI run courses and set exams that take the truth of astrology for granted. Consider this typical exam question: "You have to share your house with an overseas student. Describe the kind of student you would favour, and give the astrological significators you would look for." Unless there is some pretext of truth in astrology, such exams become

meaningless. Of the APAI members who give details of their practice via the APAI website, all claim in effect that the birth chart is a source of information. For them astrology needs to be true.

At which point some astrologers raise a further smokescreen by insisting that astrology is only a language, the language of myths and metaphors, a source of meaning with no claim to being a source of truth. The idea seems reasonable, so why is it a smokescreen? See next.

Astrology as the language of myths

Myths are not about truth. Myths are about the human struggle to deal with the great events of life. They attempt to explain in stories how people, nature, and the universe behave. They reduce uncertainty about the unknown. In short, myths meet a need in the psychological or spiritual nature of people that has nothing to do with truth, or facts, or science, so it is futile to try interpreting one in terms of another.

The ancient founders of astrology, especially the Greeks, projected their myths on to the heavens. Anyone who knows their Greek mythology can find in the heavens something to match and illuminate every nuance of human existence. It is there because it was put there in the first place. Consequently, as pointed out by the astrologer Michael Baigent (1994:79), "The tales of heaven are, in reality, tales of Earth. Mythology forever connects these two realms and, of course, astrology's basic premise rests upon this connection. ... Indeed, the art of astrology itself can be seen as a means of working with mythology in a practical way".

Well, not quite. It is one thing to recognise our personal situation in the smorgasbord of Greek mythology, and quite another to be told by our birth chart that we must select certain myths in a certain way if they are to mean anything. It is like buying the Encyclopedia Britannica and being told for no good reason that we must look only at the pictures.

If today the Greek myths seem overly fanciful, the result of armchair enquiry rather than empirical scrutiny, we are forgetting that the Greeks were faced with so great a variety of ideas that they had for starters to rule out ideas that were contradictory or failed to cover everyday situations. That much made good sense. And of course it was well suited to armchair enquiry (Toulmin & Goodfield 1961:64). On the other hand, when we consider all myths, not just Greek ones, we find an overwhelming diversity of contradictions that only rarely reveal a unifying link such as a related symbolism (Verdet 1992:19).

Nevertheless the mirroring of human conditions in the sky is why many astrologers see astrology as a *language* second to none for describing these conditions, as if this was enough to elevate astrology above criticism. But it is not enough. Language can only transmit information, not generate it. Language also allows people to lie, mislead, deceive, distort, conceal, confuse, mystify, and obscure. Furthermore, what makes a language useful is that we agree on what the words mean, which astrologers often fail to do. For example no meaningful conversation is possible when the same piece of sky can simultaneously mean intense to Western tropical speakers who call it Scorpio, and relaxed to Eastern sidereal speakers who call it Libra.

At the end of the day, clients don't pay good money for myths or flowery language. Their motivation may be to learn more about themselves, or to resolve personal problems, but

(like astrologers themselves) they still regard the chart as a source of information, otherwise why bother with it? Astrology in the consulting room still needs to be true. And that is precisely the problem. See next.

But astrology does not need to be true

Astrologers and their teaching bodies generally accept that astrology may not always work, but when it does, it tells the truth. But research has found that when astrology works it is due to non-astrological factors such as cognitive biases (hidden persuaders), not to astrology itself. When these non-astrological factors are controlled, astrology ceases to tell the truth, a point that is detailed elsewhere on this website under Doing Scientific Research. In other words, contrary to the claims (direct or indirect) that astrology is true, astrology does not *need* to be true.

That said, nobody should underestimate just how powerful the illusion of truth is. It is why thousands of educated people have a serious interest in astrology. It is why we ourselves, thirty years ago, began to research the literature and testing of astrology. It is why you can read newspaper reports such as the following:

Kathy Hacker (1978), an investigative journalist, found that a growing number of Philadelphia psychiatrists were referring their clients to astrologer Debbi Kempton Smith. It began when psychiatrist Dr Clancy McKenzie was impressed enough by her reading of his chart to send her some of his patients. There was a good match between "what she found and what I knew to be true about them. She was able to describe their sexual preferences, their dietary patterns, the small details about their lives that couldn't be guessed at." Smith says "With astrology, I can see where their hangups are, their fears, their weirdness, their kinky bits. I can take a sweet, pretty single girl who can't find a fellow and tell her she'll have two lovely guys to choose from ... Or I can tell a woman when her boyfriend will be horny during the next year."

A similar experience was reported by psychiatrist Dr Bernard Rosenblum (1983:3-4). At age 41 he visited an astrologer and was told about his conflicts, talents, intellectual style, emotions, parental images, and much more. "It was all pointedly meaningful to me -- and surprisingly specific. The usual criticism of astrology, that it produces a variety of generalisations that can refer to almost anyone, was suddenly, in my mind, relevant only to newspaper and magazine types of astrology and no longer to the experience of going to a competent astrologer." But people said the same about phrenology, once more popular than astrology is today but now known to be completely invalid, just as they say the same about cold reading, and for the same reason -- hidden persuaders. Being a psychiatrist does not necessarily make you aware of hidden persuaders. For example, on receiving a reading of his sun sign, psychiatrist Edward Askren (1980:12) was astonished by its accuracy. But this was as it should be, "for I now know that our Sun signs indicate the nature of our personal growth and development." But psychologists are aware of hidden persuaders and are less impressed. For example psychologist Graham Tyson (1982), whose PhD thesis was devoted to the social psychology of belief in astrology, points out that hidden persuaders "make it highly probable that anyone who consults an astrologer is likely to perceive the horoscope as accurate and thus come to believe in astrology. Consequently it is obvious that personal experience, which is frequently cited as the basis for belief in astrology, does not in any way provide a validation of astrology."

Now for the key point: When astrologers ignore what is really happening, as they invariably do, they generate an otherwise avoidable hostility from critics, they obscure the genuine role that astrology can play in counselling, and they obscure the factors that can maximise success. Rudhyar's person-centred astrology is a classic example of this, see Appendix 2. Similarly astrological Codes of Ethics lay down the requirements for proper behaviour but say nothing about proper attention to the picture established by research. They pay lip service to high standards while simultaneously turning a blind eye to the findings on which those standards depend. In effect they are concerned with skating elegantly and not with thin ice. The same is true of approaches that see astrology itself as therapy rather than merely a tool.

Astrology as therapy vs astrology as a tool

Gregory Szanto (1987), a former barrister who became a full-time astrologer and tutor with the Faculty of Astrological Studies, holds that when astrologers use the chart as a tool (the view promoted by the present article) rather than as a therapy, "the real potential of astrology as a means of experiencing the individual's true self is not fulfilled" (p.14). The reason, he says, is simple: the aim of psychotherapy is to enable the client "to get in touch with his real self" (p.12), and his real self is shown only by astrology:

"First, because its symbolic language is far richer than any that can be found in the various schools of therapy. And second, because it is the only symbol that exists of each individual human psyche that is born into the world. The Horoscope is thus unique as a means of perceiving the reality under the surface and it is important that astrologers, while learning the techniques of psychotherapy, use the Horoscope itself as a direct means of access to the individual it represents" (p.44).

In other words to use astrology as therapy requires using the chart as a true model of the person, that is, it requires that astrology be true. Szanto was of course writing in the days before the failure of this requirement became widely known. Today no approach can be ethical if it requires astrology to be true.

But back to counselling. In books on astrological counselling the need for astrology to be true nearly always gets in the way of learning what is necessary for any counselling to work. The result is like filling a book on car repairs with guidance from angels. Ironically, rejecting the idea that astrology is true leads to a remarkable clarification of the ways in which astrology can help counselling. This point is examined in detail below. Readers bored by detail can skip to "How to be a better astrologer" in Part 3.

Part 2. About counselling

What makes good therapists, clients, techniques?

Psychotherapy vs counselling: is there a difference?

In general the words *psychotherapist*, *therapist*, *counsellor* and *mental health provider* describe people who help by talking and listening and who avoid making judgements about you. Is there a difference between them? Some practitioners say Yes -- counselling enables, facilitates, and typically takes a few weeks, whereas psychotherapy intervenes, treats, and can take months or years. In their view psychotherapy ("treating mental illness by psychology") is more serious than counselling ("helping a person cope with a problem"). Others say No -- the overlap is too great and any distinction is purely academic (Clarkson 1994). Cynics see both as "the purchase of friendship". Clients themselves tend to prefer *counselling* to anything beginning with *psycho*, which conjures up images of madness and lunatic asylums (Llewellyn 1994). In this article the terms are used interchangeably.

What kind of problems are dealt with?

Mental problems can be broadly divided into organic problems such as psychoses that require medical treatment, and emotional problems such as neuroses that require psychological treatment. Psychiatry deals with the former, psychotherapy with the latter. Problems can be classified in a huge number of ways (eg anxiety, mood, psychotic, delusional, substance-related, eating, personality) but the broad division still applies. Many people with emotional problems consult friends, priests or doctors as their first choice. But the official emotional healer is the psychotherapist or counsellor, who:

"offers the client the experience of an intense concentration by another human being on concerns of importance to him. He and he alone is the focus of interest and attention ... For most people this is an extremely rare, and therefore

precious, opportunity. The need to be listened to with unswerving attention [and] the formulation of new choices, is something most of us crave at times of tension and difficulty in our lives. It is precisely to this that the psychotherapist commits herself" (Lister-Ford & Pokorny 1994:136).

The above description also applies to those astrologers who are dedicated to helping others. But calling something a psychotherapy does not automatically make it good for you. Although psychotherapy is generally helpful, there is much evidence that certain kinds can be harmful, that they are "the well-intentioned path to harm" (Wright & Cummings 2005). The need to do something is not a license to do anything. The worst dangers come from pseudoscientific and unscientific psychotherapies (Lilienfeld et al 2005), which of course will include astrology if we see it as a source of information rather than an aid to counselling.

Features shared by all psychotherapies

All psychotherapies, orthodox and non-orthodox, share the following features (Frank & Frank 1991:40-51):

- A confiding relationship with a helping person.
- A healing setting such as an office, hospital or clinic.
- Plausible explanations for the suffering and for relieving it.
- A procedure for providing relief that both believe in.

The procedures for providing relief break down into two broad groups depending on the level of intervention, which echoes the distinction some practitioners make between counselling and psychotherapy:

- *Non-directive or person-centred* therapy aimed at a general problem such as internal conflicts or emotional blocks. The therapist follows their particular model but does not intervene and leaves the actual change up to the client. In effect it is therapy by conversation. Its targets are to make people feel better and function better.

- *Directive or symptom-centred* therapy aimed at a specific problem such as bed-wetting or fear of spiders. The therapist follows a definite structure, intervenes more or less scientifically, and remains firmly in charge. In effect it is therapy by action. Its targets are limited but it can succeed where therapy by conversation fails.

Some examples of the above approaches (orthodox / non-orthodox) are:

Non-Directive -- psychoanalysis / astrology, palmistry, tarot, psychics.

Directive -- behavioural therapy / shamanic healing, religious conversion.

The above classification of astrology as non-directive applies only to modern Western psychological astrology. For example in the 17th century a successful astrologer might have a thousand clients a year, spending perhaps fifteen or twenty minutes on each; he routinely dealt with every kind of problem from likely business success to recovering stolen property, but most commonly he advised on personal problems that required a decision (Hare 1977). In India today astrologers routinely give instructions, predictions and remedies for every human problem and concern including marriage and career choices (Pugh 1983). No modern Western counselling astrologer would go this far.

Interestingly, despite decades of research and a huge literature, no orthodox non-directive approach has been found to be more effective in general than any other, which indicates that they all work for the same reasons -- reasons that can therefore be applied to astrology, see next section.

Similarly no non-orthodox approach has been found to be more effective in general than any other. For example Steiner (1945), a medical and psychiatric social worker, made a remarkable survey of US astrologers, palmists, numerologists, tarot readers, and similar consultants. The survey took 12 years during which she posed as a consultant to find out what people's troubles were, and visited consultants (including 40 astrologers) posing as a client to find out what their advice was like. She concluded that: (1) There is no agony like emotional turmoil. People will seek relief anywhere, usually quite uncritically. (2) In general consultants were utterly untrained for professional practice. Many were unscrupulous and dishonest. (3) No technique was better or worse than the others. Yet all consultants claimed success for their particular system.

Frank & Frank (1991:65-73) point out that the client's experience of therapy will not be captured by scientific methods such as rating scales, so they suggest another way of looking at it. They suggest that therapy can be usefully compared with noble rhetoric, the use of persuasive arguments to reorganise beliefs, and with hermeneutics, the finding of meaning by artful interpretation. Thus both therapists and noble rhetoricians seek rapport with their targets; both offer the hope of better things by argument, vivid metaphors, and emotional appeal; and both rely on interpretation to make it meaningful. To be effective the interpretation must catch the attention and be meaningful, as when evangelists offer eternal salvation to their congregations. And of course when astrologers interpret a birth chart.

What makes psychotherapy work?

Thanks to much research (see later), the ingredients necessary for any person-centred psychotherapy to work, and which therefore help astrology to work, are known to be as follows:

- Client and therapist should like each other.
- Client and therapist should share the same values.
- Therapist should be warm, understanding, and optimistic of success.
- Surroundings should be comfortable and appropriate.

Or as Clarkson (1994:30) puts it, "success in psychotherapy can best be predicted by the properties of the psychotherapist, the client, and their particular relationship". In other words the actual psychotherapy is less important than warmth, understanding, and being told you will feel better, all of which are characteristic of placebo effects. A placebo is anything not directly related to the treatment but which is nevertheless effective. No understanding is needed, just the belief that it will work, which for astrology has to be good news. For more on placebo effects and placebo effect sizes see Appendix 3.

In psychotherapy many techniques have appeared since the 1970s that involve the placebo effect in disguise, such as imagery, relaxation and self-hypnosis, all of which give the person faith that they can improve their condition by themselves (Plotkin 1985:251). Furthermore, if appropriately packaged for particular cultures and age groups, these techniques "can provide a legitimization for the manifest exercise of these [self-healing] skills, which in many contemporary contexts may otherwise appear silly, futile, or pretentious." (Plotkin 1985:252). This would certainly include astrology.

Interestingly, there is little evidence that some people are more prone to placebo effects than others. That is, the placebo effect is not related to individual variables such as gender, age, intelligence, and personality, except possibly anxiety, probably because the effect depends on too many variables to have a simple relationship with any one. Nevertheless faith plays a crucial role -- the more the faith in the therapy (any therapy) the better the chance it will work (Fish 1973). A good way to maintain faith in astrology is of course to ignore contrary evidence, as when astrologers unknowingly use wrong charts and find them to work as well as right charts. Many other variables, not fully

explored, such as cost and perceived efficiency, may play a role in helping a therapy work. But a known crucial variable is the therapist.

What makes a good psychotherapist?

One might think that psychotherapists would be good performers for a number of reasons, so that (in technical terms) counselling performance would be multi-dimensional. In fact measures of performance consistently reduce to a single dimension, namely good therapist vs bad therapist, showing that psychotherapists who score high on one dimension tend to score high on all dimensions (Scott et al 1986). One might also think that training and experience are important. In fact the research evidence suggests that untrained inexperienced nontherapists who are warm and sympathetic generally perform as well as (or even better than) trained experienced therapists with years of study, and that both are better than nothing, at least for nonpathological problems (Christensen & Jacobson 1994).

The power of empathy is rather dramatically revealed by the experiences that led to the setting up of The Samaritans, see Appendix 4.

Good psychotherapists tend to be empathetic, trustworthy, and warm (Strupp 1989). The chances of success are increased if the therapist shows interest, warmth, and sympathy for the client, is a good listener, is enthusiastic about the system, and expects a positive outcome, all of which determine liking by clients much more than competence does. For example Miller et al (1980) found that empathy accounted for 67% of the variability in therapists' success with problem drinkers whereas experience accounted for only 1%. (*Sympathy* is having similar feelings. *Empathy* is understanding another's feelings. You cannot sympathise unless you actually have similar feelings, but you can empathise regardless.)

Indeed, Shapiro (1971) concludes that the single most important factor may be simply whether the therapist and client like each other. When liking was mutual, four times as many clients reported an improvement than when the client did not like the therapist. (But as noted by Sutherland 1992:187, this can also mean that clients like the therapist because they are improving; however, this would emerge only slowly whereas rapid liking is more relevant here.) Similarly Sloane et al (1975:225) found that "Successful patients rated the personal interaction with the therapist as the single most important part of their treatment". This is good news for astrology, because finding a likable therapist is greatly hindered by the bureaucracy of institutionalised therapies, and is greatly helped by the informality of most astrologers.

Similarly, success is unlikely if the therapist does not like you. Also, the more interest a therapist shows in the system the more effective the results (this works even for shamans who are knowingly using deception, see Frank and Frank 1991:95), probably because clients think the interest is directed at them. On the other hand, judging by the ever growing demand for self-help books, many persons seem not to need a live therapist at all. When previous approaches have failed, such books can inspire hope and can be especially useful whenever, for whatever reason, a physically-present therapist might be intimidating.

Self-help books

In a survey of self-help therapy in the USA, Rosen et al (2003) note that self-help books have always been popular. But it was not until the 1970s that psychologists became seriously involved. Today there are several thousand titles in English in print, which with

tapes and CDs have resulted in a self-help industry in the USA worth several billion dollars a year. (For comparison there are about one thousand astrology titles in English in print.) Some self-help books, especially if based on sound scientific principles, can help as much as psychotherapy does (Gould & Clum 1993). Others still need a therapist (Marrs 1995), for example 100% of users were unsuccessful with particular self-help treatments of panic disorder, snake phobia, and sexual dysfunction (Rosen et al 2003:416). The vast majority of self-help books have not been independently assessed. Rosen et al stress that "Psychologists who write self-help materials based on methods they find effective in office settings have no assurance that the public can successfully apply these procedures on their own" (p.410). They give a checklist of 14 questions based on "who benefits under what conditions?" to help authors address key issues *before* (their emphasis) publishing their books; the questions boil down to "does it work better than a placebo?".

What makes a good client?

A good client (ie one for whom success is most likely) is one who shares the therapist's values and beliefs. It is as simple as that. More specifically the client "should be able to easily absorb dogmas and ideas of the most abstract, even outlandish dimension. He should be philosophically adaptable and able to ape the therapist's value system and biases. The more he agrees with the therapist, the better his chances of being helped. This conditioning process is at the core of all faith healing, magic and religion" (Gross 1978:48).

According to Curtis (1985) the clients to avoid are young (<20) or old (>50); with low intelligence, poor insight, poor motivation, or fragile egos; and with pathological, severe, or long-established problems. If astrologers take care to avoid such clients, and to accept only clients who share their values and beliefs, their own beliefs cannot fail to be reinforced, including the (wrong) belief that astrology is a source of information. But once the client and astrologer have found each other, what should happen next?

Basic techniques of counselling

It happens to all of us. Friends, workmates, people you meet along the way, suddenly pour out their troubles. They need someone to talk to, and as a caring person you want to help, even if the problems seem to have no solution. It is here that a few simple counselling techniques can make all the difference. There are of course many methods of counselling ranging from confession to encounter groups, none of them automatically the best, so each counsellor uses whatever method feels right for them. But underlying all methods are the following basic techniques (from Layman 1974):

(1) Listen, even when the problem and answer are known. (2) Help the client ventilate their feelings. Negative feelings always emerge first and are always followed in due course by positive feelings. (3) When the positive feelings arrive, reinforce them. Reinforce all good suggestions and discourage bad ones. (4) Suggest alternatives, discuss consequences, but avoid giving advice. Clients have to take charge of their own lives. (5) Never moralise, never be judgemental. A client's affairs are none of your business.

Or from Stewart & Cash (1975:184-203):

(1) Let the client state his problem when he is ready. Do not rush it. Do not argue with the client. (2) Suggest a range of possible solutions. Give information, not advice. You reflect and stimulate the client's ideas. You do not dictate. (3) Do not expect to cover

everything. Leave room for another meeting. (4) These hints help you deal with normal people with normal problems. They do not prepare you for severe problems.

All this will fail if you misinterpret what your client says. So how to stay on track? As a general rule avoid evaluation (you shouldn't do X), interpretation (it happened because of X), and probing (why did you do X?). Sympathy can help (it's awful to get X), but best of all is paraphrasing (you are unhappy with X?). You repeat what your client says, but in fewer words with a clearer focus, asking for confirmation. You focus on your client's experience not on the problem. For example "You feel worried because it makes you angry?" or "You found you cannot afford it?". Your client's reactions will show if you are paraphrasing well or badly. It's not paraphrasing if you guess something your client has not stated. "Did this make you unhappy?" is not paraphrasing.

Don't despair if the client does all the talking. Varah (1965:13) cites an occasion where his client did not stop for well over an hour, then left after thanking him for "the best advice she had ever had", although all he had done was listen attentively and slip in an occasional "Mmmmm".

Clearly there is no conflict between the above skills and astrology. Nevertheless astrology is not counselling. People with problems need to learn coping skills, but this will not happen unless the astrologer is informed about coping skills and is able to help people work their own way through problems. In such areas appeals to planetary gods (other than to illustrate the client's position) are not likely to be helpful, especially if they seduce the astrologer into playing God, the all-knowing channel for cosmic wisdom. Nor do astrologers who promote invalid beliefs get off the hook for having kind hearts and generous intentions -- the wrong thing done for the right reasons is still the wrong thing.

Part 3. Using astrology in counselling

Views, being a better astrologer, training, dangers.

How astrology can help counselling

Astrology and the main orthodox psychotherapies, plus their underlying principles, can be summarised as follows:

- Astrology (let planetary gods reveal new viewpoints).
- Behaviour (unlearn your problems).
- Body-Mind (massage your cares away).
- Cognitive (change perceived meanings).
- Gestalt (discover inhibitions and become whole again).
- Humanistic-Existential (relive the past and achieve release).
- Psychodynamic (beware the unconscious mind).
- Transactional (are you parent, adult, child, or all three?).

Note that almost endless variations are possible and lead to endless blurring. For example it is not clear whether personal construct theory (interpret your experiences in a new way) and neuro-linguistic programming (reframe the situation) are distinctive therapies or just another form of cognitive therapy. In the 1980s there were between 250 and 400 different schools of orthodox psychotherapy (Karasu 1986). Twenty years later the number had risen to about 500 (Singer & Nievod 2003:189), all of which claim to work. Ultimately they all boil down to helping people manage their problems, so one way out of the confusion is to forget about schools and instead focus on the methods and skills of problem management, and of course to keep abreast of research results. Acclaimed examples of this approach are Egan (1994) and Feltham & Dryden (2006).

The above listing shows that orthodox psychotherapies are based on a recognised mechanism (learning, perceiving, reliving, discovering inhibitions and unconscious processes). In contrast, astrology is based on "the distinctive attributes ... of each god in the closed circle of astrological polytheism" (Strohmer 1998:35),, that is, on a mechanism that involves our seeing faces in clouds of gods. Because the ancient founders of astrology chose gods that mirrored human conditions, astrologers such as Ralph Metzner (1970) can claim that astrology is "probably better adapted to the complex variety of human natures than existing [orthodox] systems". The faces we see are our own.

Astrology guarantees a match with this celestial identikit in three ways. First, by allocating human attributes at wonderfully abstract levels, which for Sun through Pluto are *inner self, emotions, intellect, affections, drive, abundance, discipline, change, intangibles, intensity*. For houses 1 through 12 they are *disposition, possessions, communication, security, pleasures, service, friends, hidden things, travel, career, social ideals, sorrows*. And for signs Aries through Pisces they are *assertive, possessive, versatile, sensitive, creative, critical, harmonious, secretive, adventurous, prudent, detached, impressionable*.

For comparison, orthodox check lists are far less universal (indeed, that is the whole point). Thus for the much-used Adjective Check List (300 adjectives from *absent-minded* to *zany*) the subject ticks those that apply. For the California Q-set (100 descriptive statements) the subject sorts them into piles from most-apply to least-apply.

Second, by allowing a wonderful flexibility in bringing these abstract ideas down to earth. For example hard aspects are bad because their obstacles lead to failure, and good because their challenges lead to success (Carter 1972:12). Venus square Saturn can be *shy and isolated in love relationships* or alternatively can *overcompensate ... by excessive sexual openness* (Rosenblum 1983:39). Five planets in Aries is compatible with both *aggression* and *suppression of aggression* (Hamblin 1982). Rex Bills (1971) gives about 300 meanings for Aries, 350 for Gemini, 1000 for Venus, 1500 for Saturn, and so on. Michael Munkasey (1987) collected all the astrological keywords he could find and after six years of work he had 2000 pages of keywords. So in astrology there is always something that will fit any client.

Third, if an awkward indication cannot be overturned by another factor, standard practice allows it to be explained away as untypical, or as an unfulfilled potential, or as repressed, or as an error in the birth time, or as an outcome of the practitioner's fallibility. Or it can simply be ignored. Furthermore, as already mentioned, standard practice rests on non-astrological factors such as hidden persuaders that make astrology seem to work even when it doesn't.

In other words it is *always* possible to plausibly fit *any* chart to *any* person, which of course is astrology's strength as a focus for therapy by conversation, and its weakness as a source of information. Two examples of this from top astrologer Noel Tyl are given later.

Another benefit is more subtle. Rosenblum (1983:10) notes that "clients cannot overcome difficult traits unless they fully accept the fact that they have them", yet they are generally unwilling to do so just because the psychotherapist (or doctor or psychiatrist or priest) says they have them. But when the celestial identikit confronts them with "accurate generalities" that seem enshrined in their birth chart, they come to the party, especially as there is no implied physical, mental or moral weakness as with a doctor, psychiatrist or priest. The process is non-threatening. "Many who wouldn't

ordinarily dream of going for therapy find it less threatening to go for a chart reading. Saying that you're 'just curious' about your future is less humbling than saying that you need help" (Cunningham 1994:88). In other words clients can understand themselves better by talking to astrologers than to psychotherapists.

Or as one person replied to Steiner (1945:210) when asked why she goes to an astrologer with her troubles instead of to a psychologist: "An astrologer doesn't pry into all your secrets."

The same process is described by Mivtzari (2002) as involving a "numinous third party", and by Noel Tyl (1975:35) as "objectification", whereby the chart puts the client's identity "on the desk top, becoming remarkably free from personal censorship, defense mechanisms, value judgement." The same of course is also true of graphology, palmistry, phrenology, and physiognomy. People unwilling to accept sympathy and reassurance directly may do so if the process is suitably "objectified" even if cloaked in the mystery of an ancient system and its arcane symbols.

The above points seem like a persuasive argument in favour of astrology being a useful tool for helping therapy by conversation. But how do orthodox psychotherapists and counsellors feel about it? See next.

Orthodox views of using astrology in counselling

Most (but not all) orthodox views of using astrology in counselling are positive. Here are some examples:

Sechrest and Bryan (1968), two psychologists, consulted 18 US astrologers who advertised mail-order marital advice. They found that the advice bore no discernible relationship to astrological principles but was always realistic, and was usually direct, clear, vigorous, personal and friendly. They concluded that the advice was not likely to be damaging and, because it was friendly and cheap, was even a great bargain.

Skafté (1969), a psychologist and counsellor, tested the effect of introducing popular astrology (and palmistry and numerology) into personal and vocational counselling, for example by saying "a person born under your sign is supposed to enjoy travel -- does this sound like you?" The words were chosen to avoid implying validity and to promote dialogue. She found that: (1) This provides a focal point for discussion that often stimulates clients to talk openly about themselves. (2) Mutual interest in an unconventional activity quickly creates closeness and rapport that would otherwise take many sessions to establish. (3) The focus on individual qualities (as opposed to say impersonal questionnaires) meets the client's need to feel special.

Laster (1975), an educational psychologist and astrologer, makes the pragmatic point that the many people who believe in astrology can be reached on common grounds of faith by counselors familiar with astrology, just as Jews can be better reached by Jewish counselors than by non-Jewish ones. But as in the previous paragraph, if astrologers tend to attract only clients already into astrology, this might be a case of the blind leading the blind.

Wedow (1976), a sociologist, made tape recordings of counselling sessions with eight astrologers to find out what happens when they make a wrong statement about the client. She found that they gave one or more of the following explanations: Client does not know himself, astrologer is not infallible, another chart factor is responsible, manifestation is not typical. Wedow notes that such explanations make the whole

process non-falsifiable, and that the participants seem to be unaware of this non-falsifiability. Hence once the session has begun, the end result can hardly fail to maintain astrology's credibility, and thus support whatever positive or negative effect it might be having.

Askren (1980), a psychiatrist who was once skeptical of astrology but later came to use it in his practice, describes the benefits of using astrology as follows: "[Astrology provides] me with a different view of personality -- one that seems to be more congruent with the world... By giving me a new set [of analogies] with which to perceive, it helps me to see things I would not see otherwise. My patients have responded -- some negatively, some positively, some gradually positively."

Perinbanayagam (1981), a psychiatrist in Sri Lanka, found that belief in astrology and karma allowed various forms of misfortune to be understood and handled. Case studies showed how astrology and the doctrine of karma enabled a person of that culture to create a number of structures that have a therapeutic effect.

Lester (1982), a professor of psychology, visited an astrologer, talked to clients of astrologers, and surveyed astrological writings. He concluded that: (1) Astrologers play a role similar to that of psycho-therapists. (2) People consult astrologers for the same reason that they consult psychotherapists, but without the stigma the latter may entail. (3) Clients get empathy, advice, compliments (which increase self-esteem), and positive comments about possible future traumas, all of which amounts to supportive psychotherapy.

Valentine (1994), in an anthology of innovative methods in psychotherapy, notes that the practitioner can use the birth chart as a means of reflecting and exploring the client's experience. It helps to bridge the gap between therapist and client and thus improves the psychotherapy.

Noble (2001), a therapist for women, noted that tapping into unseen, energetic and magical realms (as in oracles, astrology, shamanism and collective ritual) can be the source of deep healing and illumination in the therapeutic process. Using nonrational knowledge techniques takes the pressure off the individual therapist to figure everything out and relieves the client of helplessness and despair.

Mivtzari (2002), as part of his PhD thesis, interviewed in depth four licensed psychotherapists who used astrology in their practice. All four were passionate about astrology but apprehensive of criticism. They saw the chart as altering the therapeutic procedure by introducing a numinous third party into the relationship. They felt the chart was not just a tool but had a much deeper meaning because it brought a whole worldview and spiritual beliefs into the therapeutic process. They felt the worldview enhanced their skills and deepened the clinical work they did with their clients.

Not all professionals come away from astrology with such glowing opinions. Dr Anthony Stevens, a psychiatrist who assessed chart readings as part of Derek Parker's (1970) investigation of astrology, concluded that astrology is a delusional system comparable to organised religion and is used to impose order on private chaos. Unlike psychiatrists, who free clients from their paranoia that events are beyond their control, astrologers reinforce it by dragging their clients into a *shared* paranoia,

"a *folie a deux*, in which both astrologer and client subscribe to the same delusional system. ... Astrology, in my view, is not so much anti-therapeutic as a-therapeutic, producing a psychologically sterile liaison between client and astrologer which stultifies creativity instead of making it possible: not *know thyself* but *know thy stars*. At this crucial point, the similarity between astrology and psycho-analysis ends: if my own fate should bring me to the crossroads, I know to which discipline I should turn for help." (pp.218-219).

Note how the problem raised by Stevens is due to using astrology as a source of information, which was the way it was generally used in those days. (That the same is now known to be true of psychoanalysis does not negate the argument, although it does weaken the case for outlawing astrology if psychoanalysis is allowed to go free.) Once we abandon that idea and move away from chart *reading* to chart *exploration*, the problem disappears. So how can we apply what we have learnt to being a better astrologer?

How to be a better astrologer

By now it should be easy to see what really matters. As follows:

(1) Be warm, understanding, and (of course) wise. If you lack wisdom then hold off until it has accumulated. (2) Accept only clients who share your approach to astrology, and send the rest to someone more compatible. The more the mutual liking the better the results. Refuse clients with problems beyond your expertise. (3) Make your office businesslike with books and certificates on display, but also welcoming with flowers and a comfortable chair. Ensure privacy. Refuse phone calls. (4) Forget what other astrologers say about your chart technique, and vice versa. Research indicates that, in factual terms, all astrological techniques are equally invalid. So use whatever technique you like, simple or complex, logical or crazy, it makes no difference. The only thing that matters is that you and your clients should like it.

In other words what matters is the astrologer not the astrology. All of the above points are vividly explored by Jacques Halbronn in his pithy *Astrologer meets client* on this website under Applied Astrology. "Your client needs to feel special. Once his confidence has been obtained by your general attitude, astrology can gradually grow blurred, leaving you to focus on the feedback. Soon you and your client will be closely joined in a dialogue, and astrology can mostly be ignored except as a convenient means of changing the subject." Or as Richard Asher puts it: "If you can believe fervently in your treatment, even though controlled studies show that it is quite useless, then your results are much better, your patients are much better, and your income is much better too" (Richard Asher 1972, quoted in French 2001:35).

What about training in counselling?

The astro-counselling session can be seen as an interplay between the client identifying problems (a process helped by objectification in the chart) and the therapist identifying potential solutions (a process helped by the particular psychotherapy). In other words the chart helps set the stage for a psychotherapeutic encounter.

Rose (1982) notes that the process usually requires several sessions, and that at least some basic counselling training is "necessary for the astrologer, for a qualification in astrology itself does not automatically imply counselling ability" (p.138). If the astrologer does not have this training, they need to recognise when it is needed and refer the client accordingly. Astrology does not exempt the astrologer from being responsible. In any case the rule is: Discussion, yes, advice or direction, no.

Rosenblum (1983:89-119) identifies four common client problems that require proper training, namely: stuck in a negative relationship, excessive dependency on astrologer, depression, and serious psychopathology. The last is most commonly revealed by past history or by disturbed eye contact such as rigid, fixed; or staring; or darting, unsteady; or dead, unfeeling; or frightened, childlike. The untrained astrologer should refer these cases to a qualified therapist.

Rose (1982:152) stresses that not all astrologers "are suited to counselling ... Others are eminently suited to it. ... Each counsellor is the foundation upon which all of the information or skills ultimately rest; therefore any training begins, and continues, inside the person herself". You can read about counselling skills in books and in this article but if it isn't instinctive it doesn't work. Good counselling comes from the heart, and clients notice if it doesn't. What matters is being a good person rather than a good astrologer.

In the next two sections we look at reasons against using astrology in counselling.

Money, money, money

Astrology is no longer the low-cost alternative that it was in the 1970s. Today in the UK one hour with an astrologer costs £50-100 typically £70 including chart and tape, or twice this for a written report. Follow-ups or a single horary question are typically £30. In the USA one hour with an astrologer costs \$100-200, typically \$150. In Australia the going hourly rate in 2006 for a clinical psychologist was \$180, but some astrologers charge even more.

Of course even these rates may still be half the cost of an hour with an astrologer via a psychic phoneline, but is it ethical to charge for time spent studying what is effectively nonsense? To be fair this problem is not unique to astrology and exists throughout psychotherapy generally, see Appendix 4. For disturbing insights into astrology by phone see the first (long) note in *Sun sign columns: Response to an armchair invitation* on this website under Sun Signs.

Is astrology harmful?

As part of an MA thesis on the validity, appeal and potential harm of astrology, Angela Bourque (1997) searched the books *Astrology Science or Superstition* by psychologists Eysenck & Nias 1982, *Astrology True or False? A Scientific Evaluation* by astronomers Culver and Ianna 1988, and *Astrology Do the Heavens Rule our Destiny?* by bible scholars Ankerberg & Weldon 1989, for views on whether astrology could be harmful. Eysenck and Nias felt that any neurotic addiction (eg to sun sign columns) would be mostly harmless and unlikely to occur on a large scale. But Culver and Ianna felt that "such massive rejection of rationality" is a sign of the deterioration of our culture and its imminent downfall. Ankerberg and Weldon devoted an entire chapter to astrology's dangers, and concluded it is harmful because it is false, it has demonic origins, it denies responsibility for human error, it can justify selfish behaviour and promiscuity, it promotes fear and helplessness, it can lead to the wrong choice of marital decisions, it leads people away from God, and in the wrong hands it can be dangerous as when astrologers play God or put their own needs first or encourage dependence (which of course are problems shared by all psychotherapies).

In an article "Top scientists must fight astrology or all of us will face the consequences", philosopher Robert Crease (1989) points out that the dangers of astrological thinking should not be underestimated:

Consider the book *Sexual Assaults: Pre-Identifying Those Vulnerable* (Davis Research Reports, 1978). "The horoscope," this book claims, "is the only tool presently known which can be used to separate those who may be vulnerable to a sexual assault from those who would not." Evidently, astrologers are prepared to counsel rape victims that, on the most profound level, they had it coming. Or consider the advice that I heard Larry Berg, a prominent astrologer from Omaha, Nebraska, give at an American Federation of Astrologers (AFA) convention last July. Don't worry about the depletion of the ozone layer or the "wrong and alarmist" reports of global warming, Berg said. "The dominant celestial patterns are intact. I see no changes and no need to do anything."

Others have documented how occult practices themselves can be harmful. For example in 1995 a survey of 509 British schoolchildren aged 14-15 found that most saw astrology as harmless fun. But more than one-third actually believed their stars. And a minority had been led to other occult practices that ended in trauma, so for them astrology was not harmless fun (Boyd 1996).

Indeed, scattered across astrology books are many cases of adult clients being near-traumatised by unwise readings. For example Rudhyar (1979) says "I have received many letters from people telling me how fearful or psychologically confused they had become after consulting even a well-known astrologer and being given biased character analyses and/or predictions of illness, catastrophe, or even death." The astrologer and book reviewer Lore Wallace (1978) describes going at age 17 to a famous astrologer, whose prediction of things like a difficult birth and the death of a child "have damaged me probably for the rest of my life" (her comments imply that the predicted events did not occur).

Of course people can suffer just as much from parents, teachers, clergy, and lawyers, so it might be unfair to single out astrologers, especially as they are much easier to avoid. Indeed, people can suffer even more from psychotherapists whose disdain for empirical research has long been infecting psychotherapy and is now widespread and pernicious. They have torn up families, sent innocents to prison, cost people their jobs, and promoted great harm. See Appendix 4 on pernicious psychotherapies. Such disdain for research makes people vulnerable to whatever hysterical therapy comes along next, and is of course typical of astrologers who wear it like a badge of office.

Rosenblum (1983:120-128) identifies characteristics that make bad astrologers, namely: superiority, need to be right, hunger for power, bland positivism, failure to recognise own hangups, and intruding own philosophy. Suspect these if you find yourself becoming impatient with clients, or having arguments, or avoiding certain topics, or yielding to frequent demands for extra time. Cunningham (1978:193-196), in a chapter entitled *Games astrologers play*, suggests that clients "be suspicious of astrologers who advertise -- the best ones operate solely on the recommendations of their satisfied clients", and that they be wary of the guru, the power-hungry, the astro-junkie, the totally negative, the totally positive, the prurient peeping tom, and the spotlight seeker.

The above negative qualities fit a recognised disorder called the *narcissistic personality disorder*, characterised by grandiose ideas, self-importance, exploitiveness, fantasies of power, excessive need for admiration, lack of empathy, and patronizing arrogance (*Oxford Dictionary of Psychology* 2001:476). In the astrological community it is not hard to find individuals fitting this description, but they remain the exception, perhaps 5% of all astrologers. Most astrologers are nice people with a genuine concern for others.

Bourque concludes her survey with this suggestion: If you feel that irrationality can be a good thing, that demonic forces are imaginary, and that occultism is always positive, then astrology might be OK. Otherwise the worst worries are that (1) astrology encourages *do what you want* rather than *do what will help others*, and (2) occult

practices may be harmful. "There certainly are current trends that could be seen as greater threats to our society than the increasing popularity of astrology. ... [Nevertheless] its appeal and potential negative effects are real and should not be ignored by any of us".

Of course many of the above worries arise from the use of astrology as a source of information, and will no longer apply when astrology is used as a counselling tool. Which introduces the key issue facing such use.

The key issue facing astrology as a counselling tool

If astrological claims do not need to be true, they presumably need to be *believed* to be true. Thus even the most irrational consumer might resist using a tool of this complexity unless some underlying truth is assumed, in the same way that we would resist using English if it required us to speak in riddles. After all, there are plenty of other self-help systems to choose from. So the key issue is a simple one: How to encourage belief in astrology if genuine cosmic correspondences are disclaimed and on which a placebo effect would presumably depend.

The problem is less one for clients than it is for astrologers. Clients tend to arrive with at least some expectation of fortune telling, which has to be gently corrected by reference to the stars inclining and not compelling, to the imprecision of symbolism, and so on. Astrologers have always had to limit their clients' expectations in this way, so more of the same should not be a problem. Clients would not need to cancel their belief in astrology because once in the consulting room it would do no harm. But astrologers do not have the same option. It is cancel belief or nothing. And this is where the problem lies.

Would admitting that astrology is little more than a placebo effectively kill it off, as happened with phrenology? If so, would astrologers have no option but to defend the opposite view to the limit? Obviously a system that requires belief in claims that need not be true leads to personal and ethical issues that astrologers have generally yet to recognise let alone deal with. The similarity with religion is unmistakable.

Probably most astrologers, as their experience increases, learn to see the chart more as a guide than as a prescription. And some of them, as foreshadowed by Rose (1982), do turn a blind eye to what the chart says in favour of using it strictly as a tool, a checklist of things to talk about, as Rudolf Smit does at the end of his *Moment Supreme*, and which Arthur Mather suggests is the only valid way ahead for astrology in his *Optimum place for astrology*, both on this website under Applied Astrology. Where some go, others can follow.

Part 4. Examples

Chart exploration, non-astrological factors, experiential.

Examples of how chart exploration works

Suppose you are experiencing emotional ups and downs. The astrologer points out that your chart has Mars aspecting Venus, or the Moon in a Fire sign, or a lack of Earth, or transiting Uranus in fifth house, or any of a hundred other things, all of them indicating ups and downs and thus confirming your situation. Together you discuss the strengths and weaknesses of these factors and how any liabilities can be turned into assets, for example by avoiding situations abrasive to your sensitive Neptunian nature, or by

concentrating on the fine communicative skills shown by your strong 3rd and 9th houses. In effect your ups and downs are repacked and put into coherent order by the structure of the chart, so you see them from a new vantage point. Since you have never heard yourself explained in such a simple and appealing way, it is a revelation; you end up very satisfied with the service, which the astrologer accepts as yet more evidence that astrology works.

Rose (1982) stresses that the astrologer and client should work *together* on the chart. Having identified a particular chart factor:

"the astrologer can help him [the client] relate it to his life as he knows it: How does he recognise this process in his life? How has he used it so far? What are his past experiences and environment and have they lent colour and direction to the way he expresses it now? Has he developed it at all, or does it seem to be a factor in his chart which, in life, is lying dormant? ... through conversations with the client she [the astrologer] will guide him into his own individual lines of discovery. ... it is this shared participation between astrologer and client that constitutes the kernel of astrological counselling" (p.24)

Rose gives many examples from actual counselling sessions. Jackie's Venus in Libra prompts an exploration of possible Libra-like careers. Brian's Mars in Aries helps him understand aggression in others. Carol's Moon in Scorpio helps her explore her jealousy. Catherine's emphasis on Earth and her young son's emphasis on Fire helps her understand their relationship (all from pp.68-79). And similarly for other factors such as house position, aspects, and transits. Thus the first quarter of Anna's Uranus return leads to recognition of why her attempted suicide was so transforming (p.122).

The key point is that there is no attempt to push what the factor is supposed to mean. "It is by talking with the individual that their *actual* setting in his life becomes clear. ... can it really be sensible to try to guess definite outcomes of planetary configurations, or is it not infinitely more wholesome to [help the client] become aware of their *actual* relevance in his life and share this with someone who is prepared to listen? ... More than anything else, through the counsellor listening to and conversing with the client, the chart is automatically 'interpreted', for the client is speaking it, living it, being it" (pp.133-136).

Rose also gives examples of the danger of pushing what the chart factor is supposed to mean. For example during Jane's long period of depression, her astrologer noted how the happy lucky Grand Trine in her chart was just what the doctor ordered. But what the doctor actually ordered was "15mg Valium, 20mg Tofranol, 25mg amitriptyline, bed rest in hospital and a visit from the psychiatrist there"! (p.138). (Valium is a tranquiliser, the other two are anti-depressants.)

Examples of non-chart factors that work

An example of a non-chart factor is provided by Noel Tyl (1975:1), who homes in on the correct interpretation by "artful use of perception and dialogue", starting with the client's body language. The astrologer lists important topics such as parents, relationships, and employment, eg by simply explaining house meanings, and "watches for the slightest reaction from the client, spacing the topic references carefully to allow recognition and response to each by the client. ... He can learn from the client's slightest reaction (eyes, posture, mouth, words) where the strongest place to begin is." This is pure cold reading. In this way "the astrologer can become extremely sure of a deduction ... even though the client is extremely defensive -- even to the point of lying" (p.44).

Tracy Marks (1986:164) agrees. "First, he [the client] may indicate by gestures or facial expressions that he has been touched and affected. Second, he may respond verbally with associations and further elaborations. If he does not

react at all, we may be inaccurate in our interpretation." Maritha Pottenger (1982) describes what astrologers should look for in some detail. She notes that general rules (eg crossed arms = closed attitude) may not always apply (eg crossed arms may = feeling cold), so they should be used with caution. "People have their own idiosyncratic body language as well as world view. We need to be alert ... to these unique clues." Corinda (1958), in his classic work on mentalism, gives these hints for cold readers: (1) Watch the eyes and hands for signs that say yes and no. (2) Make the reading happy and positive. (3) Be a good listener. (4) Loosen the client's tongue with flattery. (5) Discover the problem and then tell the client what he wants to hear. Note how closely this matches Tyl's advice.

Tyl (1975:131-133) gives another example of a non-chart factor when he points out how astrologers needn't worry about chart technique or accuracy, simply because:

"it is the human being who makes Astrology work and *not* the planets or their symbols. ... The answer [to an uncertain interpretation] is found simply by asking the client ... The client knows best the behaviour that corresponds to the astrological deductions. [So] a question to the client will provide the answer [to what the chart means]. Time and time again, individuals with assertive wills and rational cognitive processes will reach beyond even the wildest 'established' orb to create a supportive aspect between two symbolic energy dimensions, to make things happen in a specific way at a specific time".

The above is consistent with what research was soon to conclude, namely that astrology does not need to be true, so its value lies in its structure and symbolism. The unsuspecting client makes the chart fit by choosing hits from a smorgasbord of ambiguity that requires the collusion of the client to become meaningful. Control hidden persuaders and the chart no longer fits. But thirty years later, instead of embracing the obvious, Tyl (2004) does a cover up. He starts by calling chart factors "measurements", presumably to disguise their true basis in fantasy, and then piles on the obfuscation: "a minor measurement, eg an asteroid, a decile aspect, a planetary node, for example -- does not blow up to have arbitrarily large effects in the whole scheme of things, i.e., it does not reasonably become dominant. [But] its significance *can* be enlarged through the astrologer's *analytical understanding and application of it to the human situation*" (p.424, his emphasis). The straightforward message that astrology has no need to be true for the client to recognise himself in its engulfing symbolism is here buried under a smokescreen of "analytical understanding".

Cold reading is only one of the many hidden persuaders that make an invalid astrology work. Another is the Barnum effect, the reading of personal detail into vague generalities, which then appear miraculously prescient. Tyl (1975:25-27) unwittingly gives a good example of Barnum variations during an actual consultation. To Eric, a new client aged 24, after an introductory exchange, Tyl says:

"we should begin with a general statement to differentiate you from ... all other people. The horoscope shows that you are gracious, friendly, that you express yourself softly [all this was already obvious, now comes the favourable Barnum], and that you're very sensitive. [Now the vague Barnum] But, Eric, there are tensions here ... linked to ... how you feel about yourself. [Now the double-headed Barnum] The horoscope suggests that, on the one hand, you're pretty particular about whom you relate to. [Now repeat vague Barnum] This might be a defense because you're not too pleased with yourself. [Now back to double-headed Barnum] And, then, on the other hand, you're friendly to the extreme in order to be accepted. Do you think that is accurate?" To which Eric replied "Yeah. That's it, right on the button. [But how could it be otherwise?] Gee, I know a little about Astrology; how do you see all that?"

To uncover hidden persuaders in this way may seem inappropriate in the light of Eric's strong emotional endorsement. After all, if short Barnums like "you have problems with money" were forbidden, normal communication might grind to a halt. Our propensity to read personal detail into vague statements is the price we pay for practical convenience. Nevertheless it is easy to forget that, for clients, the reading can be profoundly meaningful and life-changing, which can be more important than having any specific substance. This point is further explored below under "astro-poetics". But what is a believing astrologer to do when, despite everything, astrology goes wrong?

What to do when astrology goes wrong?

Astrologer Noel Tyl (2004) tackles this problem head on, saying "We must be aware of just how far we can go with what we and our clients expect from our astrology" (p.425). So what can be done when a chart factor refuses to manifest, so that "astrology can fall on its face" (p.734). Tyl suggests two solutions:

(1) "Know realistically" that chart factors usually either "manifest *at less than maximum potential and below the intensity and completeness of the client's wishes*", or "simply pass unnoticed in the client's life" (p.734, his emphasis). (2) Recognise how much "We *want* measurements to manifest in order to prove astrology to ourselves as astrologers, to hear the praise from the client when things work out well" (p.735). So "Astrologers must be cautious ... it is decidedly wiser to share the care of circumspection than to explore the chicanery of change" (p.736). Which does not stop Tyl from devoting many pages to interpreting isolated factors such as Moon through the houses.

Astrologer Roy Alexander (1983:84) says much the same thing:

"Perhaps the most basic rule of any kind of counselling ... is *Give up your need to be right*. Without exception, *all* counselors, therapists and dealers in specialist information have a tremendous emotional investment in their own particular theory or discipline. ... So the practitioner will feel irrationally threatened if his system is challenged. [In particular] the astrologer ... not only has to worry about his own personal competence but about whether his discipline is valid" (his emphasis).

That was in 1983 when there was still hope of factual validity. Today that hope has more or less disappeared, a point explored in the final section of Part 5. Next we look at other therapeutic uses of astrology besides exploring personal birth charts.

Experiential astrology as therapy

Experiential astrology or creative astrology began in the late 1970s in both the USA and UK (Jones 1991:7). It provides techniques for experiencing astrological symbolism directly. For example under guidance from an astrologer the client might (1) imagine a planetary scenario, eg being a mole underground, which can then be related to their Saturn, (2) write a play in which each chart factor is an actor, (3) describe their feelings about their situation, eg they might feel like being lost at sea, which can then be related to their Saturn in Pisces, or (4) role-play a planet, eg walking in the street like Jupiter. Here the astrologer is merely a facilitator, allowing the client to stay in control, so the methods "give the recipient a sense of achievement and discovery, a sense which can percolate through into other areas of life and restore a person's sense of meaning and confidence" (p.12).

For groups the possibilities are greatly increased. For example people can role-play different planets (eg in a particular chart or in imagined situations such as an accident or even in rehearsed plays), they can swap experiences with others having the same factor (eg Fire rising or a Pluto transit), they can display their own symbolism (eg pocket knife = Mars, credit card = Jupiter) and relate the reactions of others to their individual charts, or they can dance the paths of the planets to make abstract astronomical data come alive. They can even try to decide an unknown birth time by having others role-play possible rising signs.

Given our ability to link anything with anything else, the experiential approach can hardly fail even when the symbols are a poor fit. For example Jenkins (who conducted large-scale experiential workshops for around 100 people at a time) has noted "The planet-in-sign groups reveal [occasional] anomalies such as weak and self-doubting

Leos, chaotic, incompetent Virgos, shy Sagittarians and Aquarians who hate groups. I have sat in horrific silence with twelve Gemini-Moon individuals, have noted the weak positioning of Uranus in the charts of many astrologers, and have heard some people reporting the hardness of Neptune transits, while others describe the softness of Pluto ones!" (in Jones 1991:137). All of which are contrary to what astrology predicts. Yet the result was always a reinforcement of belief, never the opposite because, as Jenkins explains, these particular images are but one of many possibilities, so failure does not invalidate the underlying theme.

Part 5. Implications for research

Putting clients before astrology.

Implications of chart exploration for research

Given that astrology adds nothing useful to the consultation beyond placebo and other non-chart factors, as research has consistently indicated, there is a clear case for future research to abandon the pretence of genuine cosmic correspondences and to focus instead on how astrology can be improved to enhance non-chart effects. This includes changing or multiplying symbols and their meanings in order to maximise their utility, which in effect is what innovative astrologers have always done, plus attention to known correlates such as warmth and understanding, to say nothing of wisdom.

The new research would have many advantages. (1) It would embrace all the components of astrology but without presenting them under false pretences, so astrology would no longer be a target for debunkers. (2) The disagreement between systems would be of no consequence, including the disagreement over sun sign columns. (3) For psychologists and other professionals it would set out the realities of astrology in their own terms, thus eliminating misconceptions and paving the way to recognition. (4) Unlike the old research it would be of relevance to working astrologers. In particular it would meet what some astrologers see as the primary need for astrology today, namely simplicity. Thus Arroyo (1979:224) comments "If we want more people to *understand* what astrology is rather than rejecting it outright, it is incumbent upon us to develop a way of defining astrology which is ultimately simple ... [because then] we not only make it intellectually accessible to many others but we also bring it down to earth for the beneficial use of human beings." The new research would do exactly that.

On the other hand the new research would have to overcome a major stumbling block, namely how to encourage belief in astrology (on which the accompanying placebo effect presumably depends) if genuine cosmic correspondences are disclaimed. For example Szanto (1987:47) stresses that both astro-counsellor and "client must believe in astrology -- otherwise there will be no real relationship which can provide the basis for treatment". Researchers have to challenge anything that suggests astrology is a source of information, and they must do so without simultaneously depriving humanity of its potential benefits. But how? Some clues are given by the US psychotherapist Dr Michael Mayer (1984) who uses just such a system, which he calls astro-poetics to emphasise that no claims of validity are made, otherwise it is the same as conventional astrology. His views and experiences are worth describing in some detail:

Astro-poetics

Mayer (1984) justifies using astro-poetics in place of astrology because claims of validity are a liability: "Rudhyar took the important first step in shifting astrology away from a chart-centered to a person-centered approach to emphasize the power of the astrological symbols themselves as a transformative language. However, he still stays

tied to that aspect of the Jungian synchronistic stance which posits an actual relationship between cosmos and personality. By taking such a stance, Rudhyar and other astrological theorists have contributed to the continued unwillingness by the greater part of the psychological community to consider using [astrological ideas]" (p.48). See the present Appendix 2 for more on Rudhyar's approach and its problems.

Mayer explains why validity is not needed: "To say that an experimental group with the Moon in Cancer rated significantly higher than a control group on the variable of sensitivity, although providing interesting data on one level of analysis, leaves out the dimension of the person's experience of this quality. It is this later question which is of primary interest to the psychotherapist. Following this line of interest our inquiry shall focus on how, by using a certain symbol (let us say Cancer), the person experiences his or her unique way of being sensitive. Thus our interest is not in describing, diagnosing, or proving that the person is sensitive, but rather to examine the experience that occurs when astrological symbols are used" (p.186). In other words the way in which the person sees the symbol tells the psychotherapist something about the person. (On the other hand, if astrology were actually true, the psychotherapist could know all of this plus a whole lot more, so the argument is somewhat contrived.)

Mayer emphasises that, like the language of novels and unlike the language of psychology textbooks, the language of astro-poetics is close to human experience. Thus the imagery of Martian energy and Saturnian control take you to places that your MMPI scores do not. Furthermore, astro-poetics does not presuppose that the client is moulded by his past (Freud) or his future (Adler) or his stars (conventional astrology). Nor does it emphasise parts at the expense of wholes, which ignores uniqueness, nor does it emphasise wholes at the expense of parts, which reduces the person to an incomprehensible blur. Mayer argues that, as a *aid to counselling* for helping clients regain control of their lives (which is what counselling is all about), astro-poetics can be superior to orthodox techniques. He adds that its use would be contraindicated for clients incapable of abstract reasoning, or opposed to nonrational approaches, or overinclined to fantasy, or who have organic problems.

Problems with astro-poetics

But this theoretical advantage seems unattainable in practice. Thus Mayer admits that despite his best attempts to disclaim validity, and to emphasise that the birth chart is not a source of information but merely a new way of looking at the client's situation to facilitate discussion, "some clients continue to use it in a deterministic manner", which he sees as detrimental to the client (p.167). He then implies that astro-poetics should not be used for clients who believe in astrology as a source of information "where this potentiality seems to already pervade the client's life in a negative way" (p.168). He gives no estimate of how many clients this would exclude but presumably it would be many of them. Nor does he suggest a policy for clients where the potentiality is positive.

Of course there may always be a tendency for clients to rationalise the logic of any therapy, so it has to be accepted as a natural hazard in astrology and allowed for. The challenge to the client is to apply the benefits of astrological viewpoints without requiring them to be true, which process has to be guided by the practitioner. Unfortunately Mayer does not consider placebo effects or human judgement biases (hidden persuaders) and their influence on the outcome.

There are thus three problems with astro-poetics. (1) Validity is necessarily implied by a continuing insistence on accurate birth data. But this problem is easily overcome by

allowing clients to create their own birth chart, a solution not considered by Mayer, which would also bring an important new dimension to both therapy and research.

(2) Astro-poetics as a tool is too complicated for consumers to bother learning. But if clients create their own chart factors from a check list of cookbook meanings with underlying principles, nobody (including the therapist) has to learn anything. Research could then focus on establishing the optimum wording. In principle this might lead to a system with decreasing links with astrology, but in practice the appeal of astrology (which is what attracts clients in the first place) might maintain the status quo.

Similarly (3) the faith involved is now of a new kind, namely faith that the procedure can give useful insights rather than faith that cosmic correspondences exist. To psychologists this is clearly a more acceptable faith, but whether it can invoke as strong a placebo effect is a matter for research. It might not invoke as strong a following.

Part 6. Appendices

Titles, humanistic, placebos, Samaritans, pernicious psychotherapies.

Appendix 1: References plotted in the figure

Astrology books with some mention of counselling. *Cited in text.

1966-1975 Arroyo (1975), *Layman (1974), *Parker (1970), *Rudhyar (1972), *Tyl (1975). **1976-1985** *Alexander (1983), *Arroyo (1979), Arroyo (1984), Donchess (1978), *Ennis (1982), Jones (1979), *Mayer (1984), *Pottenger (1982), *Rose (1982), *Rosenblum (1983), Wilson-Ludlam (1985). **1986-1995** *Marks (1986), *Szanto (1987), McEvers (1990), *Cunningham (1994), Tyl (1995). **1996-2005** Arroyo (1999), Bogart (1996), Sharman-Burke (1997), *Tyl (2004).

Orthodox articles or book chapters on astro-counselling. *Cited in text.

Up to 1965 *Steiner (1945). **1966-1975** Donlan (1971), *Laster (1975), *Sechrest & Bryan (1968), *Skafta (1969). **1976-1985** *Askren (1980), *Kelly & Krutzen (1983), *Lester (1982), MacCleod 1982), *Perinbanayagam (1981), Pugh (1983), *Wedge (1976). **1986-1995** *Valentine (1994). **1996-2005** *Mivtzari (2002), *Noble (2001).

Appendix 2: Humanistic astrology

An updated abridgement of a critique by Kelly & Krutzen (1983).

Origins

Humanistic astrology originated in the United States in the 1920s, largely as a reaction against the not-unexpected failure of the popular astrology of the day to satisfy spiritual needs. The basic approach was formulated by Marc Edmund Jones (1888-1980), a Presbyterian minister and Theosophist-occultist who attempted to relate occult and philosophical ideas to chart factors. Jones's approach was extended in the 1930s by the Theosophist-composer-poet-painter-astrologer Dane Rudhyar (1895-1985). Rudhyar incorporated the ideas of Jungian psychology and Eastern mysticism, and called it humanistic astrology or *person-centred astrology* (Rudhyar 1972) to distinguish it from the then more usual event-centred astrology. Later, in the 1970s, he was to develop *transpersonal astrology* to describe the illumination of normal personality by transcendent spiritual power. Humanistic astrology is "non-scientific, subjective and purely symbolic" (Rudhyar 1979). It uses the same chart factors as in ordinary astrology but the aim is to provide meaning rather than anything specific (Rudhyar 1971). Humanistic astrology is thus a precursor of chart exploration.

Obscurity

Rudhyar has been the main driving force behind humanistic astrology via over a thousand articles and twenty-five books. Unfortunately Rudhyar's style of writing is obscure and difficult. When Michael Mayer's *A Handbook for the Humanistic Astrologer* appeared, it was hailed as "At last, an English translation of Marc Edmund Jones and Dane Rudhyar!" by the *Astrological Journal's* reviewer (Autumn 1974:41). The astrologer Dianna Cunningham (1994:29) comments that "Rudhyar set the standard for astropsychological linguistic impenetrability years ago, and the rest of us have struggled to live up to it ever since. ... As a reminder to speak plain English, perhaps we should institute ... the Dane Rudhyar Award for Excellence in Astro-Obfuscation".

Furthermore, Rudhyar states that the very nature of his astrology denies any objective evaluation (Rudhyar 1979). Nevertheless his writings imply that chart factors are a source of information. For example when he claims that Sun means *will* and Moon means *adaptation* and Jupiter means *excess* and Saturn means *stabilize*, there is no provision for these meanings to be allocated any other way, so it matters that they mean what they are said to mean, ie are a source of information in whatever context they are applied. So for every page of his books one could ask the question: Why should anyone believe this? But nowhere are answers provided. All we have are speculations, and clearly this is not enough. (The same of course also applies to conventional astrology.) Rudhyar's main claims in plain English, and their problems, are as follows:

The claims of humanistic astrology and their problems

(1) *Humanistic astrology deals with individual uniqueness whereas science does not.* But science is not indifferent to individuals. Thus a test of learning theory is whether Johnny learns better under the conditions specified by the theory. If not then we reject or revise it.

(2) *Humanistic astrology is concerned with potentialities, not with precise character analysis or prediction.* But how does Rudhyar know that the potentialities shown in the chart are in fact correct? The answer he gives (1979) is that the issue is not whether the indication is correct but whether the individual sees it as valid. But if correctness is irrelevant, why bother with authentic charts?

(3) *Humanistic astrology is not empirical.* Rudhyar is saying that what matters is not whether our beliefs are based on fact but whether they make us feel better. But feeling better can be explained without the need for astrology. Indeed, the symbolism chosen by Rudhyar to convey meaning is so obscure that one wonders how it could benefit anyone, even those who would normally benefit from a less-obscure astrology.

(4) *Humanistic astrology is holistic.* Here Rudhyar uses "holistic" both in its normal sense to indicate a concern with the whole person, and to elevate astrology above criticism by claiming it is meaningless to study parts in isolation. But if individual parts don't work then the whole is not likely to work either. After all, if it were true, then car repairs could not succeed, nor could cars be developed in the first place. Also, these days everyone claims to be holistic, leaving no advantage here for astrology.

(5) *Humanistic astrology embraces philosophical relativism.* What is valid or true is just a matter of cultural belief. But this is just a confusing way of saying that people and societies differ in what they believe to be true. The problem is to determine which beliefs are actually true. So relativism is the problem, not the solution. It implies that no one can be mistaken about their beliefs, which is absurd. What if we believe that relativism is

false? Or that astrology is false? It is of course possible that some falsities become so deeply embedded that they become pseudo truths, as did belief in bloodletting. What critics are interested in is establishing which beliefs are true.

Rudhyar's response to the above problems

The above problems were briefly aired in Dean & Mather's *Recent Advances*, which was later the subject of a 50-page review symposium in *Zetetic Scholar*. The six reviewers invited by the editor Marcello Truzzi included Rudhyar, who provided a response to the issues raised. Unfortunately Rudhyar's response (1979, 1980) evaded the issues in various ways: by saying his approach can be understood only in terms of his entire life's work; by debating the meaning of the words *fact* and *reality*; by invoking the error of Newtonian mechanics in the light of relativity; by denying that the scientific method can ever present us with truth; by simply begging to differ; and by successively deflecting the issue back to the irrelevance of correctness when only perceived validity is important, as if belief was sufficient to establish the truth of what is believed. If it were then all beliefs would be equally legitimate and equally defensible. In fact merit is always relative, for example in terms of usefulness and consistency with wider views.

Conclusion

The humanistic astrology of Dane Rudhyar is praiseworthy in its aims and shows an undoubted breadth of vision and concern for humanity. But it is dressed in obscurity and obfuscation. Furthermore the real foundation of Rudhyar's thesis, and his defense against criticism, is nontestability, even though his thesis still requires astrology to be a source of information (the two points being contradictory). So the issue is not just whether Rudhyar's ideas make sense but whether anything that has no provision for eliminating error is worth having. This criticism would of course disappear if astrology was not required to be a source of information.

Appendix 3. Placebo effects

A placebo (pronounced pla-see-bo) is from the Latin "I shall please", the opening word of the Roman Catholic service *Placebo Domino*, I shall please the Lord). Thus a gelatine capsule filled with sugar, and given with the assurance that it will bring sleep, will actually do so for about one person in three (Melzack & Wall 1983). Placebos are effective even when people know they are receiving them (Levine & Gordon 1984), which should help astrology's effectiveness even when people believe there is nothing in it.

The placebo effect applies both to physical symptoms (eg post-operative pain) and psychological symptoms (eg anxiety), and is increased for actual sufferers (who need relief) compared with volunteers (who do not). Two placebo pills have more effect than one, otherwise the effect of pill shape, size and colour depends on what the person likes. Overall the effect is so potent that entire books have been written about it and about the special experimental strategies needed to cope with it (eg Spiro 1986).

In a recent review of the social (ie non-medical) factors acting on the brain that influence health and well-being, but without specifically mentioning placebo effects, Ray (2004) concludes "The power that our thoughts have on the body is not magic. The mind-body connection is supported by the very best of modern-day research, and each year we learn more and more about how this connection works. It is very clear that what one thinks and believes affects one's health, one's well-being, and even one's chances of

dying." Similarly Frank & Frank (1991:89-112) point out how non-Western people (unlike Western people) can embrace a totality of mind, body and supernatural spirits as the cause of distress. The healing rituals of shaman or witch doctor can thus involve not just the person but their entire world-view, thus creating a powerful expectation (including the lethal power of spells) well beyond anything a Western person might imagine. Here perceptions and expectations are everything.

The placebo effect was observed long before it was named. For example Walsh (1912) noted how, up to that time, every new scientific discovery in physics (eg electricity, magnetism, x-rays) physical science had been followed by attempts to apply it to the treatment of disease. These attempts became the centre of public attention and produced a feeling that another great therapeutic remedy had been discovered. Sometimes wonderful effects were noted. But later, when the novelty wore off, its suggestive power decreased and the remedy lost its therapeutic power. Ironically it was several decades before the potency of the placebo effect was officially recognised. Only after a classic paper by Beecher (1955) on *The Powerful Placebo* were double-blind designs adopted as standard for evaluating drugs, a good example of a single short paper (5 pages) changing the course of scientific history. By 1980 the placebo effect was the subject of nearly a thousand articles and books, with many hundreds more since then (Roberts et al 1993:376). The placebo effect is held to be the underlying reason why any successful psychotherapy works.

In medicine placebos can be defined as "therapeutically inert", but in psychotherapy they are not at all inert, and are therefore better interpreted as "common factors", ie factors common to most therapies. As noted by Lambert et al (1986:163), "Those factors that are common to most therapies (such as expectation for improvement, persuasion, warmth and attention, understanding, encouragement, etc.) should not be viewed as theoretically *inert* nor as *trivial*; indeed they are central to psychological treatments and play an active role in patient improvement."

Placebo effect sizes (expressed as a correlation) can vary from 0 to almost 1 depending on subjects and conditions (Wall 1999). For mild psychological disorders not requiring hospitalisation, placebo therapy has an effect size typically approaching 0.30, or generally almost as good as any actual psychotherapy except cognitive behaviour therapy, which has an effect size typically around 0.35, or 0.55 where especially effective eg phobias (Lambert et al 1986). Total studies then exceeded 1200 and may now exceed 1500. Only cognitive behaviour therapy shows evidence of effects usefully beyond common factors (Erwin 1994).

Interestingly, "The history of medicine is largely the history of placebos. When subjected to scientific scrutiny, the overwhelming majority of treatments, old and new, turn out to derive their benefits from the placebo effect" (Brown 1997:57). For example among popular treatments that were actually invalid were "purging, puking, poisoning, cutting, cupping, blistering, bleeding, freezing, heating, sweating, leeching and shocking" (Shapiro & Shapiro 1997:15). When something as invasive (and worthless) as bloodletting could be accepted for so long, we should not be surprised at the acceptance of the much less invasive (but equally invalid) astrology.

Appendix 4. The Samaritans

In 1953 the Rev Chad Varah was appointed Rector of the Lord Mayor's Parish Church of St Stephen Walbrook in London, specifically to try out his idea of providing an emergency counselling service for the despairing and suicidal. The publicity attracted more clients than he could handle, who therefore had to wait in long queues, but it also

attracted helpers who "engaged the clients in conversation, plied them with coffee and cigarettes, and generally made them feel at home" (Varah 1965:23).

When the waiting clients eventually came to talk with him, he found they were free of the usual exasperation at having to wait and had improved confidence in his counselling. Many left before seeing him because the talk with a willing listener had done the trick. They didn't need him any more. This led Rev Varah to set up The Samaritans, a help service (initially by phone then face to face) for the despairing and suicidal that is now worldwide. Helpers listen attentively and empathetically but without giving advice, helping callers to work out their own way of managing their problems. In short, helpers listen while people talk themselves out of trouble. A good model for chart exploration.

Appendix 5. Pernicious psychotherapies

An abridgement of *Mind Games: Psychological Warfare Between Therapists and Scientists* by Carol Tavris (2003). Tavris is an American social psychologist and board member of several journals of scientific clinical psychology. Most of what she says is true also of astrologers.

In the USA anyone can be a psychotherapist. No training is needed. Anyone can market an unvalidated therapy, charge whatever they like, and not be guilty of a single crime. So psychotherapists proliferate, and the work of psychological researchers tends to be invisible outside universities. Many claims promulgated by therapists are actually false, for example:

- Low self-esteem causes aggressiveness, drug use, and low achievement.
- Abused children almost inevitably become abusive parents.
- Therapy is beneficial for most survivors of disasters.
- Memory is like a tape recorder and can be tapped by hypnosis etc.
- Traumatic experiences are typically "repressed" from memory.
- Early environment is crucial to a child's later esteem and success.

Indeed, the split is so wide that many psychologists now refer to the "scientist-practitioner gap," where "gap" is actually more like "war".

During the 1980s and 1990s there were three main wars (repressed memories, multiple-personality disorder, day-care sex-abuse scandals), all based on the mistaken beliefs of psychotherapists, and ended only by painstaking research. But as soon as one war ends, others (such as rebirthing, and restraint therapy, with no scientific validity) take their place. For more examples see Wright & Cummings (2005).

Why the gap exists

Ideally clinicians study the research findings and proceed from there. But more and more are coming from schools where such thorough grounding does not exist, which is why the Rorschach test persists. Also, many clinicians (who deal with individuals) argue that empirical research (which deals with people in general) is irrelevant. They argue that good therapy depends on insight and experience, not on statistics and control groups. But when clinicians fail to keep up with research they are embracing ignorance, for which their clients duly pay the price.

Science vs psychotherapy

Two core elements are central to the scientific method but tend to be absent in the

training of psychotherapists [and are always absent in the training of astrologers]: (1) A willingness to question received wisdom. (2) A reliance on tests to decide issues. These two core elements force us to avoid fooling ourselves, especially via our strong tendency to remember hits and forget misses.

Thus many psychotherapists consider only confirming cases (the people they see in therapy), and not the disconfirming cases. If observations confirm X, great, if not, then the observers are incompetent. [A situation exactly true of astrology.] Similarly, many therapists place too much faith in their leader, and never ask questions. They also tend not to be critical of what a client says (does he really have a terrible mother?).

The job of a therapist is to help the subject make sense of her symptoms and her life, not to be a detective or fact-finder or judge or jury. The latter is for scientists trained to ask "what's the evidence?". For them clinical insight and intuition are simply not good enough. It is wrong to conclude that a subject is X because they have Y without knowing what Y means for people in general.

Gap is here to stay

Even so, the gap seems here to stay. There are too many economic and institutional supports for it, including lip-service from the American Psychological Association. Which is why the American Psychological Society was formed in the late 1980s to represent scientific interests, and why every year psychologists leave the APA for the APS.

But to the public, all this remains invisible. And that's the danger. Social-scientific illiteracy is widespread and pernicious. It has torn up families, sent innocents to prison, cost people their jobs, and promoted harmful therapies. It makes people vulnerable to whatever hysterical therapy comes along next. And there will be many nexts.

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Sach's Astrology File

Sun sign hype has fatal defects

Three critiques that appeared in 1998. Two are from *Correlation* 17(1), the third is from *Skeptiker* 11(3).

Gunter Sachs, *The Astrology File: Scientific Proof of the Link Between Star Signs and Human Behaviour* Orion Books, London 1998, translated from the original German version published in 1997.

Abstract -- The book is promoted on the cover as a "world-wide best seller". Its blurb says "At last the proof which answers the age-old question: Is there anything to astrology?" and "If you do believe in astrology, here's the proof. If you didn't believe in astrology, you will now". Here the **first critique by astrologer Peter Niehenke** shows how flaws in Sachs's reasoning make his results meaningless. Sachs tested occupations (47 groups), cause of death, criminals, suicides, and compatibility. His base samples were often very large (millions of cases) and were from diverse sources such as the Swiss census of 1990. For each test he corrected for demographic effects in the total population and then applied a statistical chi-squared test to the observed and expected sign totals. There were many significant differences, which he saw as proving the effect of sun signs. But his results are largely meaningless. Many factors influence the distribution of births including climate, culture, and social class, so there are many possible explanations for the observed differences, all more plausible than astrology. And if the sample is huge, as here, even the smallest effect will become statistically significant. Furthermore, Sachs never checked the large number of existing studies, which often found differences opposite to his own. In short, his observation of significant yet contradictory results is only to be expected and does not necessarily have anything to do with astrology. The **second critique by psychologist Suitbert Ertel** points out that all data is tabulated. So despite the flaws in reasoning (see first critique) the data can be re-analysed by improved methods. Factor analysis of the sun sign data for occupations revealed no similarities between similar occupations such as industrial economy and political economy, or medicine and veterinary medicine, or medicine and pharmacy. Nor was there any general ordering such as sciences vs humanities. A similar analysis of the sun sign data for criminal behaviour was equally negative. As for Sachs's data for 350,763 marriages,

sun sign books say the compatibility between two signs is much the same regardless of which one is male or female. But when the liking of one sign for another was ranked for each male sign, and again for each female sign, the mean rank correlation between male and female rankings for all twelve signs was a negligible 0.05, not even weakly significant ($p = 0.88$). So the sun sign books are wrong. Nor was it any better when Sachs's divorces were analysed in the same way. There was no hint of the links expected if Sachs's results were genuinely due to astrology. This critique is a fascinating step-by-step look at how a sympathetic scientist applies powerful methods to astrological ideas, and at how good science sorts out bad science. Altogether the next best thing to doing the work yourself. The **third critique by statistician Herbert Basler** finds an abundance of statistical errors and is more suitable for technical readers. Most of the print-media reviews of Sachs's book were scathingly critical of how he interpreted his results. But most reviews seemed to agree that the calculations were correct, which is not the case. Sachs regularly makes mistakes, for example in the number of results said to be significant, using the wrong average to compute certain deviations, neglecting one tail of the statistical distribution (so his reported significance levels are inflated), miscalculating the statistics in his "simplified example" (which describes as nonsignificant a drug that cures 75% of cases, whereas if the illness were AIDS it would win a Nobel prize), using samples that differ from the comparison sample (there are 8.81% Pisces births but only 8.54% Pisces deaths, so 0.27% Pisces must be immortal, suggesting that statistics is something done by *Zahlenfriedhofsgaertner*, gardeners who work in the cemeteries where dead numbers are buried), and wrongly assuming that the comparison data are stable (his sun sign births during 1925-60 differ from those during 1954-76). Such frequent errors would make us doubt Sachs's claims, even if everything else was acceptable (which, as the other critiques show, is not the case). Nevertheless Sachs's book does have one good point -- it contradicts the idea promoted by astrologers that astrology cannot be tested by statistical methods.

In 1998 the British newspaper *Daily Mail* ran two articles based on Gunter Sachs's new book *The Astrology File*. The articles claimed that "scientific analysis has proved a link between the stars and how you lead your life" and that "no one has truly analysed in meticulous detail whether human behaviour and astrology really do have a link".

The book's subtitle was equally explicit: "Scientific proof of the link between star signs and human behaviour". As was the blurb: "At last the proof which answers the age-old question: Is there anything to astrology?" (from inside front cover). "If you do believe in astrology, here's the proof. If you didn't believe in astrology, you will now" (from inside back cover).

Now read the following three critiques of Sach's book and see if you agree. The authors are respectively Dr Peter Niehenke, one of Germany's leading astrologers, Professor Dr Suitbert Ertel, a longtime astro-researcher and Gauquelin expert, and Dr Herbert Basler, an eminent statistician. Each author approaches Sach's book in his own way but all reach the same conclusion. All articles first appeared in 1998, Niehenke and Ertel in *Correlation* 17(1), Basler in *Skeptiker* 11(3).

The Astrology File: scientific proof of sun sign effects?

By Peter Niehenke

To add to recent critical interest in sun signs, I would like to comment on a recent German book by Gunter Sachs called *Die Akte Astrologie: Wissenschaftlicher Nachweis eines Zusammenhangs zwischen den Sternzeichen und dem menschlichen Verhalten* [The Astrology File: a scientific proof of a relationship between signs of the zodiac and human behaviour]. Munich: Goldmann, 1997.

According to the jacket blurb, "The aim of this study is not exactly unambitious: Up to now, the hypothesis that there is a relationship between the signs of the zodiac and human behaviour has been a matter of faith. With the help of statistics, Gunter Sachs has now approached the problem with impartiality. Step by step, he produces proof that astrology is not a myth. It is based on measurable foundations."

Anyone familiar with astrological research will read this with some astonishment. It implies that no attempt has previously been made to test the accuracy of zodiac signs by statistical methods, and that strong proof is now being presented. Both points are incorrect.

The content of the study

Sachs investigated the question: How do sun signs vary among individuals classified by occupation (47 groups such as carpenter, dentist, doctor, farmer, gardener, house painter, policeman, psychologist, tailor, and teacher), by cause of death, by student's choice of subject, by driving behaviour, and so on. He also studied criminals, suicides, and compatibility. His base samples were often very large and came from diverse sources. For example his occupational groups were from the Swiss census of 1990, a total of 3,580,013 cases, and his causes of death were from all deaths in Switzerland 1969-1994 divided into 32 different causes, a total of 1,195,174 cases. For each group Sachs corrected the sign totals for demographic effects using the sign distribution of the total population. He then applied a chi-squared test to the corrected totals to see if they departed from the distribution expected by chance and from each other. There were many significant results, which he interpreted as proof of a relationship with sun signs.

Sachs' book has attracted an extraordinary amount of public interest, with many talk shows and long interviews, even in magazines such as *Der Spiegel* that are not noted for being interested in astrology. Such publicity would normally be welcomed by us astrologers, so it is distressing that I have to point out that Sachs' results are largely meaningless, being due to flaws in the reasoning. Neither Sachs nor his advisors, which included the Statistical Institute of Munich University and the head of the Institut für Demoskopie (a respected German opinion research institute), had noticed these flaws. Furthermore, it is clear that nobody had suggested checking the large number of existing studies, as is usual in worthwhile scientific activity. Such checks would have quickly identified the flaws, and would have quickly revealed that the tests planned by Sachs were a waste of time.

The flaws in the reasoning

There are four main flaws. (1) A large number of non-astrological factors are known to affect the distribution of births, including climate and culture (Huntington 1938, for a summary see Dean and Mather 1977, pp.90-91), and social class (Smithers 1984). As a result the distribution of births can vary a great deal from country to country, from year to year, from place to place within the same country, and from one class of person to another. We cannot assume (as Sachs did) that the distribution expected for any particular occupation is the same as the distribution in the general population. So we are not entitled to claim that any differences are necessarily due to the effect of zodiac signs. To put it another way, there are many possible hypotheses to explain such differences, all of them more plausible than astrology.

(2) Because many effects exist in the data, we will observe variations no matter how the data are grouped, whether by tropical sign as in Sachs' case, or by sidereal sign, or by month, or by any other period we care to choose. If the fact that variations exist between individual groups were sufficient proof (which is what Sachs claims), I would be able to prove the effectiveness of all these groupings. Of course, as Suitbert Ertel has pointed out, if it could be shown that, of all possible groupings, the tropical signs produce the most significant results, this would be a good start towards establishing the reality of signs. It would not of course be proof, but it would be a good start. But Sachs is not aware of this basic requirement.

(3) As discussed in every statistics textbook, the chi-squared test measures the *significance* of the effect, not the *size* of the effect. Given a large enough sample, even the smallest effect will become highly significant. In this case, as noted above, many effects are present, therefore Sachs' discovery of significant results is only to be expected. But we are not entitled to claim that they have anything to do with astrology. Nor are we entitled to claim that they are of practical importance. For example, suppose a certain sun sign in a sample of 100,000 plumbers is found to be significant at the $p = 0.000,000,0001$ level by chi-squared test with $df = 1$. At first sight this seems amazing. But it corresponds to only 8.94% of plumbers having that sun sign instead of the 8.33% ($= 100/12$) expected for a uniform distribution. Not amazing at all. But such is the power of large samples!

(4) The chi-squared test as applied here by Sachs is actually invalid because it assumes that the expectancies are exact theoretical values with no inherent variance due to sampling errors. But Sachs' expectancies are based on observed frequencies that are subject to sampling errors. Consequently the expectancies have a variance for which the chi-squared test makes no allowance, and which effectively inflates the observed significance.

The above flaws could not be more elementary, yet they were missed by the professional statisticians that Sachs consulted, including those from the Statistical Institute of Munich University. It is more than disappointing when a professional body, meant to help people planning research and applying statistical methods, does not do its job well.

A better approach

A better approach, which Sachs does not adopt, would be to test various hypotheses that are astrologically sound. If the observed peaks and troughs do not lie where astrology predicts, then they can hardly be said to support astrological claims, no matter how significant they may otherwise be. Such an approach was adopted by Smithers (1984) who asked British astrologers which sun signs they would expect to be most prominent among his various professional groups. The most successful prediction by the astrologers was for nurses, predicted to have negative signs prominent.

However, when we compare the nurse distributions observed by Smithers with those observed by Sachs, we find huge differences. Thus for no less than eight signs (TA, GE, CN, LE, VI, SC, SG, PI) a positive deviation from the mean in one distribution is matched by a negative deviation in the other. If we do not wish to assume that an absolute difference exists between being a nurse in Britain and being a nurse in Switzerland, then such differences show how the varying birth rates of nurses in the different periods of the year can bear no relationship to the sun signs. Such differences are nothing special and have been known about for a long time, see Dean and Mather (1977, pp.114-117). In this case it is just one more of the problems that Sachs would have avoided had he made a literature search before starting work.

Reply by Sachs

My criticism of Sachs' book was first published in the January 1998 issue of the German magazine *Esotera*. Unfortunately, "to make it easier to understand for people not knowing too much about statistics", the editor had made some simplifications that subsequently misled Sachs' reply in the March issue. My criticism was also published unchanged in the January/February issue of the German astrological magazine *Meridian*, to which Sachs and his two statisticians H W Schwenk and Dr Rita Kuentler replied in

the May/June issue. But they seemed not to have noticed the difference from the *Esotera* version. They also evaded my main criticism (that the variations are not necessarily due to astrology), dismissing it as "trivial." They also claimed, without giving any argument, that it was "self-evident" that variations would have been obtained regardless of how the year was divided, which of course misses the point. But my criticism has been confirmed by Suitbert Ertel's work [see next article below], in which case the entire Sachs' study must be dismissed as invalid.

Conclusion

Although Gunter Sachs has shown that the distribution of births differs between various groups, this does not necessarily have anything to do with zodiac signs or with astrology. His failure to consider previous research was precisely the opposite of what should have been done. His results, although interesting, are fatally flawed and are a long way from being proof of astrology. Personally I am convinced that there is not the slightest chance of such proof arising from his data.

Acknowledgements

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Scrutiny of Gunter Sachs's excursion into astrological research

By Suitbert Ertel

Famous photographer and publicity expert Gunter Sachs made an excursion into astrology. *Die Akte Astrologie* (The Astrology File), Sachs 1997, promises to deliver "Scientific proof of a relationship between sunsigns and human behaviour" (the book's subtitle). But after reading the report, and after checking its tables, I have to conclude that this promise is not fulfilled. The approach does not provide a proof of astrology, nor is it even scientific. Why? Because it lacks scientific rigor, the readiness to search among the results of one's actions for possible errors. The book thus lacks one of the most

indispensible guidelines to which the scientific enterprise is committed, ie critique, and to which Sir Karl Popper, one of its pioneering proponents, drew ample attention.

But this is no grounds to choke down applause for some of the book's good features: Its style is elegant, the chapters entertaining. Above all, the author's methods are made transparent, tables and material for scrutiny are provided. But alas, the scrutiny itself is left to the reader. So let me have a close look at this work. Suppose it had been my task to test statistical connections between sunsign and behaviour. What procedures would I have adopted, and what would I have avoided?

1. First, I would have considered pertinent studies by other scientists in order to take advantage of existing insights and results. Sachs does not do so, and is therefore not aware of the contradiction between his own seemingly positive observations and those of others (such as Gauquelin 1978, 1981) that are entirely negative. The contradictions would have raised my suspicion: What is wrong, who errs, could it be me?

2. If like Sachs I had made no attempt to take notice of pertinent literature, I would have conceded the matter in the book's introduction. I would have admitted that I was actually not informed enough to ask (as Sachs does on page 210), "How was it possible that no one -- no science and no power of the modern world -- has ever tried up to these days to get upon the track of ancient astrology?" This question will seem ludicrous to anyone familiar with the numerous published reviews of astrological research such as by Dean & Mather (1977), Eysenck & Nias (1982), and those provided by Pottenger (1995) and Kelly (1997).

3. Similarly, I would not have dared to claim, as Sachs does on pages 210-211, that "During our work we noticed much ambivalence regarding astrology. Ministers, university rectors ..., even though widely interested in astrological research, will never profess such curiosity." Apart from the numerous reviews just mentioned that attest to this curiosity, at least one university professor -- having gone public with his research into astrological matters and being eager to cooperate -- attempted to contact Sachs's group twice but received no reply.

4. Having obtained birth data, how would I analyse it? Let me first describe what Sachs did. He used two types of statistical design, applying the first one to questions like "Is sunsign at birth related to occupation?" For this he listed architects, bakers, butchers, educators, farmers etc, in columns, with rows giving the breakdown of deviations from expectancy by sunsign (Aries, Taurus, Gemini etc). He also included categories other than occupation such as fields of university study (biology, economics, medicine etc), criminal behaviour (theft, fraud, forgery etc), causes of death (asthma, diabetes, cancer etc), and make of automobile (Audi, BMW, Ford etc). Sachs reasoned like this: If a chi-squared test of sunsign frequencies gives a significant result, then the variations are caused by astrological factors.

If Sachs had asked me to comment on this rationale, I would have warned him that his demographic corrections regarding expectancies were far from sufficient. Broad demographic aggregates, Sachs's basis for expectancies, level off all local variation and might therefore give rise to artifactual discrepancies between expectancy and observation for subsamples (a point further discussed in Niehenke's letter). The size of such discrepancies is generally negligible, however, they will inevitably reach statistical significance whenever the sample size is large enough (and Sachs collected masses of data, eg nearly four million birth dates for his occupations). I would also have warned

Sachs that even if part of what he found was more than artifact, other factors, unrelated to sunsigns, might account for that, for example seasonal factors at birth (temperature, sunlight, stability of weather conditions, constancy of maternal care etc, see Wendt 1978, and Niehenke's critique). Being obliged to observe scientific caution, I would have suggested to test the more straightforward causal rivals first -- see my Appendix 1 for details.

5. Nevertheless, supposing I wanted to find proof for astrological claims, I would certainly have looked at astrology's teachings and derive from them in advance precise hypotheses such as "If astrology is true, then an association should exist between sunsign X and, say, occupation Y." Sachs ignores such hypothesis testing, significant deviation from expectancy, wherever they may turn up, are all hailed as instances of proof for the ancient wisdom. But suppose Sachs, after collecting the data without any particular hypothesis in his mind, had asked me to make the best out of his many numbers, I would have suggested him to take a close look at the total of his results and try to find, after the event, as much sense in them as possible. This would require comparing, combining, separating, ie the ordering of observations. At which point, however, he would eventually have discovered that his results actually do not make sense. Why? Let me explain.

First I looked at Sachs's sunsign results for his ten areas of university study. To these I applied a multivariate procedure called principal component analysis (PCA), which is a standard method for reducing a large number of variables to a small number of underlying factors that collectively explain most of the variation. Each of the 10 study variables (see Table below) is defined by 12 sunsign deviations (differences between observed and expected counts for Aries-born students, for Taurus-born students etc). The 12 deviations for one study area can be correlated with the 12 deviations for every other study area to give a 10x10 correlation matrix suitable for PCA analysis. The results suggested that most of the variation could be explained by three or four factors. Four factors were therefore Varimax-rotated (which maximises their separation and maximises their loadings) yielding the distribution of factor loadings shown in Table 1.

Table 1. Varimax-rotated factors underlying sunsign variations of university students (Sachs's sample)

Field of study	Factor:	1	2	3	4
1. Architecture		0.23	0.68	-0.08	-0.27
2. Industrial economy		-0.02	-0.94	-0.08	-0.08
3. Biology		0.10	-0.06	0.87	-0.17
4. Law		-0.26	0.10	0.54	0.62
5. Medicine		-0.03	-0.24	-0.37	0.78
6. Psychology		0.66	0.37	0.04	-0.05
7. Pharmacy		0.15	-0.18	0.04	-0.80
8. Veterinary medicine		0.84	-0.22	0.39	-0.25
9. Political economy		-0.80	-0.11	0.33	-0.00
10. Dentistry		-0.23	0.69	-0.41	0.04

% variance accounted for:		20.0	21.3	16.3	18.1

Each entry in the table is a factor loading, thus the sunsign variation among architecture students correlates 0.23 with factor 1 and 0.68 with factor 2. To interpret each factor we simply group together the fields of study on which it loads the most. Selecting all fields

with substantial loadings (in excess of 0.40), for factor 1 we have veterinary medicine (0.84), political economy (-0.80), and psychology (0.66). For factor 2 we have industrial economy (-0.94), dentistry (0.69), and architecture (0.68). For factor 3 we have biology (0.87), law (0.57), and dentistry (-0.41). For factor 4 we have pharmacy (-0.80), medicine (0.78), and law (0.62).

Having identified the main fields of study underlying each factor, we examine them to see what they have in common. But they seem to have nothing in common. What has dentistry to do with architecture (factor 2), or biology with law (factor 3)? We might expect certain fields to occur together in the same factor, such as industrial economy and political economy, or medicine and veterinary medicine, but they do not. Even in factor 4, the possibly related fields of pharmacy and medicine are of opposite sign, so they are, if at all, related only negatively, which contradicts expectation. In other words none of the factors can be interpreted. Sunsign-based preferences of fields of study have failed to reflect, as they should, obvious similarities between them. Nor has any general order such as sciences vs humanities become manifest.

I repeated the analysis using Sachs's results for various types of criminal behaviour, and obtained a similar chaos. At this point I would normally resign and conclude that zodiac-based variation among students or criminals is mere noise. But I have still to consider Sachs's second type of statistical design.

6. Sachs applied his second design to synastry questions in marriage such as "Do Taurus men prefer Libra women to Gemini women?" or "Do Leo women prefer Cancer men to Sagittarius men?" Using 358,763 marriages from Swiss records, Sachs derived 12 x 12 = 144 man-woman (same as woman-man) sunsign combinations, and submitted each of the 144 deviations from expectancy to a chi-squared test. Significant values popped up here and there, too many to grasp by eye (the full matrix is given in my Appendix 2), so for a clearer outcome I turned to Spearman rank correlations between the various deviations. For example, it is reasonable to assume that if an affinity exists where, say, Aries men like Leo women, then this affinity should have some correspondence with the liking by women, ie Aries women would generally be expected to like Leo men. We might even doubt the plausible correspondence and allow for an inversion, ie hypothesize repulsion instead of liking, where Aries women dislike and therefore do not marry Leo men. To check if either was supported by Sachs's results, I listed the deviations given by Sachs for each combination of Aries men and non-Aries woman, and for each combination of Aries women and non-Aries man, as follows:

Partner's sign	TA	GE	CN	LE	VI	LI	SC	SG	CP	AQ	PI
AR men	35	34	-58	68	5	-18	-90	-63	-30	-50	34
AR women	-47	-50	-106	109	-63	-44	-55	125	-38	-15	49

The more positive the deviation, the more popular the combination, and therefore the more the liking between signs. I then ranked the deviations, highest first, and obtained the following ranks for the rankings by Aries men and Aries women:

Partner's sign	TA	GE	CN	LE	VI	LI	SC	SG	CP	AQ	PI
AR men	2	3.5	9	1	5	6	11	10	7	8	3.5
AR women	7	8	11	2	10	6	9	1	5	4	3

When ranked in terms of signs, with the most popular combination first (the two signs like each other the most) and the least popular combination last (the two signs like each other the least), the results are as follows:

	Most										Least	
AR men like	LE	TA	GE	PI	VI	LI	CP	AQ	CN	SG	SC	
AR women like	SG	LE	PI	AQ	CP	LI	TA	GE	SC	VI	CN	

In the above table some sunsigns such as LE seem consistently liked, others such as SC seem consistently disliked, while others such as SG show no consistency. Ranking signs in this way hides the fact that the differences are small throughout, for example the most liked sign is typically only about 6% more numerous than expected by chance, the least liked sign is only about 6% less numerous than expected by chance. If there are influences at work at all, they cannot be large. But rather than dwell on individual signs it is more important to know the general trend. Is the order of liking by Aries men related to the order of liking by Aries women? This question is easily answered by calculating the Spearman rank correlation rho between the two sets of rankings, which in this case gives $\rho = 0.18$, an insignificant value of correspondence. This is just for Aries. What of the other signs? I analyzed these in the same way and obtained the following mean correlations between the order of liking by men and the order of liking by women:

Sign	AR	TA	GE	CN	LE	VI	LI	SC	SG	CP	AQ	PI	Av
Mean	.18	-.13	-.15	.21	-.06	-.19	.01	.21	-.23	.63	-.25	.36	.05

Half the correlations are positive and half are negative, whereas we might expect the direction to be consistently large and positive. The highest correlation of 0.63 is individually significant ($p = 0.03$) but not when corrected for the number of tests ($np = 0.38$). The mean correlation of 0.05 is not even weakly significant ($p = 0.88$ for a sample of 11 pairs).

In the above tests each sunsign combination occurs twice, first as say AR-LE and again as LE-AR, so the 11 correlation rho's are not completely independent. Each isolated mistake, each glitch in the data, could therefore make itself felt on two separate occasions. To avoid this problem I applied the same Spearman analysis to the $12 \times 11/2 = 66$ pairs of unique combination AR-TA, AR-GE, ... AQ-PI. The mean correlation rho was 0.075, again not even weakly significant ($p = 0.53$). The outcome was not any better when I applied the same strategy of analysis on Sachs's divorce numbers, the correlation being -0.12 ($p = 0.31$). Altogether there is no hint of the correspondences we would expect if Sachs's results were genuinely due to astrology. Instead, as before, there is only noise.

In summary, what I would not have done in the first place to publish such noise nor would I have pretended that the results were scientific and meaningful. I would have been aware that publicizing this chaos of numbers could damage the reputation of other approaches into astro-psychological relationships conducted by those who live up to the ideals of Popper's critical science.

However, even if I had neglected all this, I would have returned to my hobby (photography) less hastily. In his final chapter titled "Astrology Adieu" Sachs sets an abrupt end to his excursion, pictures, he says, attract him more than numbers. I do not argue hedonic values. But before leaving the stage I would first have invited critical

readers to discuss the book's formidable message. And before eventually leaving the battle field, probably with losses, I would nevertheless make the masses of my original data available for other researchers who would, more thoroughly than I did, want to test possible correlations between the variables birth, death, crime, marriage, divorce, profession, etc, and cosmo-ecological factors.

After the present article was completed, another critique of Sachs's "Akte Astrologie" by statistician Herbert Basler (1998) appeared in *Skeptiker*. Basler points at errors in the statistics as applied by Sachs, some of which had escaped my attention. Basler also provides an extensive explanation for possible sampling artefacts as noted above in (4), second paragraph. [Basler's article follows this one.]

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Ertel Appendix 1

Testing for more straightforward causal rivals

A crucial test of the sunsign hypothesis can be based on a simple approach that is also mentioned in Niehenke's critique. The approach is not new (others like John Addey and Donald Bradley have already applied it) but it has been generally forgotten. It works like this:

The sunsigns (Aries, Taurus, Gemini, etc) form a sequence of categories that is discontinuous. That is, symbolic differences (such as those based on polarity, triplicity

and quadruplicity) between adjacent signs such as Aries and Taurus are not smaller than between non-adjacent signs such as Aries and Gemini, and are possibly even larger.

By contrast, non-astrological factors aligned on the calendar scale (January, February, March etc) are continuous. Thus differences in temperature and rainfall are smaller between adjacent months such as January and February than between non-adjacent months such as January and March. The contrast between astrological factors (discontinuous) and non-astrological factors (continuous) allow a straightforward test.

For example if the differing counts of, say, professions in the twelve sunsign groups reported by Sachs were due to sunsign symbolism, they would be detectable only if the temporal boundaries of sunsign categories are strictly maintained. Consider people born between 21 March and 20 April; these are Aries people. Shift these dates arbitrarily by, say, one week to 28 March and 27 April; of the people born in this period, two-thirds are Aries people, the rest are Taurus people. Thus, by only slightly shifting temporal boundaries, the twelve samples are severely spoiled, at least in terms of sunsign astrology (Aries and Taurus are supposed to be quite different, like apples and potatoes). But there is no severe spoiling in terms of non-astrological seasonal factors.

Now, if the differences of counts among people grouped by sunsign (Sachs's differences) were due to sunsign factors, the variation of counts between those groups would be maximal. So the variation should rapidly dwindle away as the sign boundaries are successively shifted a day at a time for each new computation; and the variation between groups should reach its lowest level at a shift of around 14 days. On the other hand, if the variation between sunsigns had nothing to do with sunsigns and was due to seasonal factors, the variation should stay more or less at an average level, perhaps with smooth oscillations above and below the average level.

Ertel Appendix 2

Man-woman sunsign deviations from expectancy

The table below shows the deviation from expectancy in 358,763 Swiss marriages 1987-1994 for each man-woman sunsign combination. The deviations are from Sachs's book. For Aries-Aries there were 3154 actual marriages and 3021 expected marriages, so the deviation from expectancy is 133. For Pisces-Pisces there were 2738 actual marriages and 2741 expected marriages, so the deviation from expectancy is -3. My text shows how to make sense of this confusing array of numbers.

Men	Women --											
	AR	TA	GE	CN	LE	VI	LI	SC	SG	CP	AQ	PI
AR	133	35	34	-58	68	5	-18	-90	-63	-30	-50	34
TA	-47	93	-85	37	-106	-23	114	71	6	50	-47	-62
GE	-50	27	129	-32	-15	-43	45	7	23	-42	-22	-27
CN	-106	5	37	17	12	32	-67	22	-3	-66	53	65
LE	109	-31	-33	41	15	21	-11	9	-49	27	-123	25
VI	-63	39	-27	2	-51	120	23	56	4	2	-52	-54
LI	-44	-35	58	26	70	-27	83	-66	25	-19	-29	-44
SC	-55	-65	-77	61	-4	-14	6	34	-14	19	2	107
SG	125	13	-29	-4	21	-24	-26	-38	115	-72	20	-101
CP	-38	48	-34	-63	-32	-8	-50	9	-40	146	21	39
AQ	-15	-161	45	-53	67	44	-21	-122	-1	42	155	21
PI	49	32	-19	26	-45	-82	-78	107	-3	-56	73	-3

"Die Akte Astrologie" by Gunter Sachs from the viewpoint of mathematical statistics

By Herbert Basler

The following critique appeared in *Skeptiker* 11 (3), 104-111. It has been translated from the original German article by the Dutch statistician Dr J W Nienhuys. Some parts have been condensed to save space. Dr Basler is a well-known statistician whose textbook *Grundbegriffe der Wahrscheinlichkeitsrechnung und Statistischen Methodenlehre* is in its 11th printing. In general Basler focusses on statistical faults and not on design faults, even though the latter are usually more important.

"Yet another criticism" many readers will think, reflecting on the fact that the 1997 book by Sachs received much attention from the media, and that most of the reviews in the print media were scathingly critical of Sachs's claims. But most of the reviews criticised only his interpretations of the statistical results. All reviewers seemed to agree that the results themselves were correct -- except for "small superficial errors" noted by the reviewer of the *Frankfurter Allgemeine*. For example the *Suddeutsche Zeitung* says that "A statistics professor of the university of Munich has declared in writing that the study is statistically correct."

This article will counter such views. Indeed, during his calculation of the statistical results, Sachs regularly makes mistakes in his analysis. For example, in the exposition of the connection between starsigns and suicide (extensively discussed by Niehenke) we find the following: Sachs claims that the actual number of suicides deviates significantly in 5 out of 12 cases from the corresponding chance expectation. But calculation shows that this is wrong in four cases, or at any rate these four deviations are not significant at the level indicated by Sachs.

Allensbacher Institute star sign study: Comparing the incomparable

In the second part of the Sachs book (120 pages) is an account of extensive investigation by the Allensbacher Institute for Demoscopy on the possible relations between the answers of the persons questioned and their star signs. Altogether the answers of 13,283 people on 923 questions were studied. The star sign could be determined for only 10,758 of these people because 2525 people failed to give their birthday. The results of the questions are given on pp.280-332 of the book (page numbers refer to the second printing). 30 characteristics were graphically represented, because in them significant deviations turned up. For example on p.233 we find "Deviations from the average for special interest for building, modernising and remodelling, from which we can see that 17.6% showed 'a special interest'", which we will abbreviate as "yes". Pisces gave 22.1% yes cases, so graphically we see a deviation of $22.1\% - 17.6\% = 4.5\%$.

The deviations in the graph, in percent, starting with Capricorn (January) and ending with Sagittarius (December) are: 0.6, 0.4, 4.5, 0.8, 2.2, 3.4, 2.7, 0.5, -1.2, 1.0, -0.3, 0.9.

If we look at these deviations, we see immediately that there are more positive deviations than negative deviations, whereas we would expect them to even out. In other words we suspect that an error has increased the positive deviations. On p.290 we then read that the Gemini deviation is highly significant with 3.4%, and similarly Pisces with its even greater deviation is also significant. So Allensbach says that there is a highly significant relation between the star signs of the polled people and their answers.

Naturally we suspect that this isn't so, as the positive deviations are probably erroneous. This suspicion is correct. The "average" refers to all 13,283 people, and not to the 10,758 people that gave their birthdays. When we compute from the given numbers of polled people and the given percentage, the number of yes answers (e.g for Capricorns $837 \times 18.2\% = 152$), we obtain altogether 2038 yes answers, which is 18.9% of the whole group with known star sign, rather than the inadmissible value of 17.6% that Allensbach marks as the "mean value". If Allensbach had used the correct mean value, then the deviations would not have been "highly significant" (an actual test would have used the chi-squared test in a 4-field table, which does not give a significance level of 1%). [Note by translator: I think we should first make a 12x2 chi-squared test on all signs together before picking out the high values. Thus for all signs together I get $p=0.24$, indicating that nothing special is happening, so there is no need to look for outliers in individual signs. This matter is discussed at length in Basler's follow-up article, not included here.]

These frequent errors makes us doubt all evaluations done in the Allensbach study and their reported significance, for example on the interest people take in politics, environmental issues etc. Readers may wonder how such a serious error can occur, where we end up comparing incomparables. Maybe readers will think this reviewer is wrong. Maybe they will think that that it wouldn't have made any difference since the 10,758 polled persons with star sign and the 2525 without would answer similarly. But this is not the case. From the given percentages we can compute the total number of yes answers as 2238 for the "star sign group" and 300 for the "no star sign group", which means 18.9% yes compared to 11.9% yes. (Here a chi-squared test of the difference gives $p=10^{-16}$.) This means that the target question related to "building" was answered in a different way by people not willing to give their birthday.

This effect, where answering behavior differs between responders and non-responders, is very inconvenient for polling purposes. Also, the strength of the effect is different across the 923 questions, so a uniform correction is not possible. This problem in demoscropy is well known, namely that non-responders influence the aggregate result. It appears here in a very harsh light.

I won't go into the methodological objections to the execution of very many single tests with the same material (which is actually mentioned by Sachs as the "multiple test problem"), or the lack of a global comparison for all 12 zodiacal signs (which is what Sachs requires of himself in the first part of the book, see p.48.). Despite these problems, the Allensbacher Institute calls its investigation a mere "pilot study", as a kind of prophylactic plea for forgiveness of their statistical sins.

Star signs and suicide

In the chapter "Who chooses voluntary death?" Sachs presents the data to be analysed as follows: "We had available birthdates of 30,358 women and men that had chosen voluntary death in the years 1969 through 1994 in Switzerland. The officials of the Statistical Federal Office in Bern provided the following table" (which is then given).

The text is seemingly clear but it needs additional information for a statistical investigation. In the previous chapter, "Who dies of what?" we read (p.149 ff): "As basic material we had the dates of all men and women that died in Switzerland from 1969 through 1994, divided according to their star sign and 32 different causes of death. Altogether this concerns 1,195,174 death cases. In agreement with the advising statisticians, this database was processed by leaving out death causes for which the

numbers were too small, and those that lacked meaning according to astromedicine. In this way "the decisive data material was reduced to 20 causes of death and 687,850 death cases", in other words a reduction of more than 40%. The 20 selected causes of death do not involve suicide, so the table heading "Deathcases Switzerland 1969-1994" means only non-suicides with 20 causes of death.

For the statistician a connection between star sign and suicide should be tested by means of a 12×2 chi-squared test. This asks whether any of the 12 empirical suicide fractions (eg 2725 out of 30,358 = 8.98% for Aries) and the corresponding fraction for the whole sample (eg 61,582 out of 687,850 = 8.95%) are significantly different.

It is therefore immediately clear that Sachs makes a modelling error. His chi-squared test assumes the suicide fraction 8.95% for Aries constituted a portion of all Aries deaths, and this is certainly not the case. [That is, the two samples are not properly matched, see later under the heading "immortal Pisces".] The fractions of the different star signs are not constants, neither for "the death cases", nor for "the births", as we shall show.

The annual fluctuations in the numbers are relatively small in large populations, so that in this case the wrong test and the right test do not give very different answers. Nonetheless, these small fluctuations can explain the otherwise strikingly significant results. Remarkably Sachs doesn't make this mistake in the chapter "Who dies of what?". There he applies the correct tests when he compares the separate death causes and the star signs.

Test results

Sachs indicates that if an error probability of 0.00084 (the result of his wrong test) is accepted, then the empirical distribution of suicides deviates from the distribution of all deaths. This probability number is correct and corresponds to the chi-squared value of 31.7 (Sachs nowhere mentions the actual value of the test variable, which makes checks considerably more difficult.) However, contrary to this result, the correct test yields $p=0.0014$, which is an astonishing result for astro-skeptics, at least for the time being. Sachs then tests each of the star signs separately, to see whether it deviates significantly from its corresponding death fraction, again with the wrong test. He gets the following five significant results (p.162):

- Taurus, Cancer, Sagittarius $p=0.05$ each
- Pisces $p=0.01$
- Libra $p=0.001$

If we use the correct test for these five star signs we find (in the same order as above) the correct significance levels are 0.02, 0.07, 0.09, 0.02, 0.002. So only for Taurus is Sachs right.

It is easy to explain such a serious discrepancy between Sachs and the correct values, simply because Sachs makes a distinction between positive and negative deviations when he discusses single signs. In technical terms he believes he is allowed to apply these tests *one-tailed* with $p=0.05$; but he then rejects the null hypothesis not only if the empirical deviation is in the 5% rejection region in the negative part, but also if it is in the positive 5%. This means that the supposed error probability of 5% is actually 10% instead! Which explains the difference between the five "significant" signs of Sachs and the correct test results.

A one-tailed test is allowed, but only if the investigator has decided before the results are known, which direction (positive or negative) shall apply. Such a decision typically occurs when earlier studies or theoretical considerations lead us to choose, say, a positive direction because a negative direction isn't interesting anymore.

The question whether such advance decisions for a one-tailed test have actually been made before looking into the data, sometimes leads to discussions between statisticians who deal with pure theory and those who deal with real data. In our case the matter is quite clear: Sachs nowhere makes any advance decisions. Sachs even proves this by making remarks that his findings "do not always conform to the picture drawn by astrological literature" (p.161). In other words he stresses that in each single test he is open to the possibility of positive and negative deviations, which means he should have applied two-tailed tests. Also we might remark that Niehenke says that astrology cannot make statements about zodiacal signs and suicide.

This one-tailedness error continually pops up in Sachs's book. For instance in his chapter "Who marries whom?" he examines every one of the $12 \times 12 = 144$ star sign combinations to see if any deviate significantly from the expectation. Because Sachs says he uses $p=0.05$ one-tailed, he effectively uses $p=0.10$ two-tailed, so among his 25 significant cells (pp.74 ff) we may expect $144 \times 0.10 = 14.4$ fake significances, with no way of telling which of these are actually fake. This recurring methodical problem (to be distinguished from the one-tailedness error) is treated in the book by Sachs and he calls it the multiple test problem (p.208), but he doesn't draw the appropriate conclusions.

(The licensed statistician Dr Rita Kunstler who advised Sachs writes p.208 that there was the possibility of a multiple test problem. But it was decided in the case of professions and illnesses to consider "light significant" results only as indications, not as proofs, because the number of individual tests is so large, namely $12 \times 47 = 564$. But even this precaution was the consequence of a "decision", and the advisor thought it was not imperative.)

If we want to be methodically unobjectionable we should act as follows: if we are dealing with a first investigation, we can observe statistical significance only in global independence tests. The results of tests on individual cells can be taken only as conjectures or indications, which should then be tested on new material, at which point it is allowed (before looking at the results) to settle on a one-tailed test. Only *after* that can we proclaim methodically flawless significance statements, for example that there is a highly significant negative connection between Aquarius men and Taurus women, as Sachs so hastily does (p.74). No doubt such statements greatly increase the book's profitability, which is not an unreasonable expectation because the costs so far of the study (below the 1997 factory price of a Porsche 911, see p.210) have probably already been recouped as bestseller royalties, even after taxes.

The above concerns about the "multiple test problem" also apply to the Allensbach study, because there the evaluation of the samples involved $12 \times 923 = 11,076$ single tests for the 923 questions.

Significance -- a magic word?

When there are so tremendously many significances as in the Sachs book, it is certainly important that we do not misjudge the fundamental meaning of a statistically significant result, and that we do not overvalue them. This seems to be a problem for Sachs,

because he explains to his readers the meaning of a "consciously simplified example" in the following way:

"Let us assume 100 people are ill with an unknown disease. All 100 receive a new medicine. 75 patients are cured. According to our criteria this is not significant, as the curing power of the drug is statistically not proved. When 95 of 100 sick people are cured, we can describe the action of the drug as lightly significant. Only at 99 cures can we call the curing power significant" (p.70).

Any lay person will object that something here must be wrong. Because if the unknown disease were incurable like AIDS, then the discoverer of a new drug that cures 75 out of 100 would be an immediate candidate for the Nobel prize, and the Nobel committee wouldn't bother about consulting a statistician. [Note by translator: If the drug produced 75 cures and also 25 deaths, the discoverer might be an immediate candidate for something other than praise for his lethal concoction.] But if we make the example more precise, for example by supposing the chance for spontaneous recovery to be 50%, then 75 cures in 100 patients would be very highly significant, well below $p=0.001$. (Actually a one-tailed test would be appropriate here, but even that would reach $p=0.001$ for only 66 cures.) [Note by translator: The author fails to mention how Sachs seems to confuse "the chance that a sick person gets cured" with "the probability that this or a weaker result would occur if the null hypothesis were true".]

This means that Sachs's example conjures up hopelessly exaggerated interpretations of significance. After this we cannot exclude the possibility that his bizarre misunderstanding is the reason for the rather unbridled astrological interpretations of what Sachs calls significant results. [The author then describes tests showing that Sachs's marriage results can be easily explained by assuming 4% of the population are influenced by astrology when making their marriage preferences, which is very small compared to the 50% or more who read newspaper horoscopes.].

Are there immortal Pisces? Or what is a sample?

If we perform any kind of statistical test, we must suppose that the data material being evaluated is a statistically random sample. This holds also for the statistical investigations we deal with here. We shall see that these assumptions are seriously compromised.

Suppose we test the null hypothesis that the star sign distribution in the general population is identical with that in the death cases. From the Sachs book (pp.114-116) we take the Swiss census data of 1990, which consists of 2,731,766 births between 1925-1960. We take this as the star sign distribution in the general population, and as sample we take the already mentioned 687,850 death cases in Switzerland 1969-1994. The chi-squared test gives $p=10^{-8}$ for 11 df. For example there are 8.81% Pisces births (240,677 out of 2,731,766) but only 8.54% Pisces deaths out of all death cases.

Such a result suggests that some Pisces must be immortal. A typical critical reaction would be: statistically correct, but factually probably incorrect, which would express once more the widespread opinion that statistics is something done by dumb calculators and gardeners at number cemeteries [*Zahlenfriedhofsgaertner*, gardeners who work in the cemeteries where dead numbers are buried.] However, a more sensible conclusion from this example is: The set of death cases is not a random sample from the birth population, as far as the star sign distribution is concerned.

But what has this example to do with the comparison of suicides with death cases? The point is, in both cases we can see that the samples are not representative of the population to which they are being compared. This is clearly so in the case of the deaths (as nobody is immortal). And in the Sachs comparison of suicides with other deaths, the age and birth year are probably not the same. [Note by translator: True. People usually die of old age at around 75, whereas suicides are very roughly the same in all age groups, at least in the Netherlands, which makes the average suicide younger at death than a non-suicidee.] Sachs does not give information about this. Differences would not influence the comparison if the star sign distribution of births was stable across the years, as recognized by Sachs (p.107) when he states: "... the distribution of birth dates over the year is virtually the same over the years, so we can assume, for practical purposes, a relative constancy of the birth distribution across the years."

In fact, if we compare the Swiss star sign distributions for 1925-1960 with those (pp.108-110) for 1954-1976, they turn out to be highly significantly different. For example there are only 8.48% Pisces in 1954-1976 compared to 8.81% in 1925-1960. (Here a chi-squared test gives $p=10^{-40}$ for $df=1$, which is so small that we don't even have to worry about the overlap in years). We might agree with Sachs that for "practical purposes" we might assume a relative constancy, but not for statistical investigations, where such large numbers mean that even the tiniest and most uninteresting differences would yield significant results. Large sample sizes turn every statistical test into a sharp sword that needs much training and care in handling. The danger is that such significances based on tiny effects will lead to hasty and spectacularly wrong interpretations, for example astrological ones.

These remarks do not mean that all of Sachs's significant results will turn out to be false after elimination of errors. But they do require re-investigations in which, for example, data are used only if the people have the same birth years. As we already mentioned in the section "starsigns and suicide" further investigations are even more urgent because of the "multiple test problem".

But reason can be cunning

Maybe it will surprise some readers that I have the opinion -- notwithstanding all my criticism of the *Akte Astrologie* -- that the Sachs book does have some merit, inasmuch as it has widely disseminated the insight that astrological hypotheses can be tested with statistical methods. It is well known that proponents of occult hypotheses reject this idea as a first defense, as it were, against empirical checks.

We have also seen how easily errors can creep in to undermine the results. But we have also seen how we can avoid errors by careful re-examination and investigations with new data. It would be great if Sachs himself would use these possibilities to continue his work with an Act II. If there would remain difficult-to-explain connections between star signs and human affairs, then these would be real hard nuts for astro-skeptics to crack. The road from *Akte* to Act II would then be a nice illustration of Hegel's idea of the *List der Vernunft* [Cunning of Reason] which occasionally also promotes the advance of reason by small detours.

Astrology really works! **This approach really doesn't**

Geoffrey Dean

The original review, of which this is a slightly expanded version with an added appendix on declination probability, appeared as "Crooked Thinking is Alive and Well" in *Skeptical Inquirer* 1997, 21 (2), 46-48.

Astrology Really Works! By the Magi Society. Hay House, Carson CA, 1995.
ISBN 1-56170-134-3. 327 pp. Softcover, \$12.95.

Abstract -- This is a strange book. It claims to present irrefutable evidence that astrology really works, but there is no reference to any astrologer, article, book, or published research. It claims to advance astrology into the 21st century by tossing out all chart factors except aspects, parallels and contra-parallels, and by supposedly proving astrology via various observations such as aspect counts among the rich and famous. The observations are restated as Six Challenges To Skeptics, which on close inspection are clearly artifacts and clearly unwinable. Whatever our opinion of astrology, unbelievable books like this one can only make it worse. Includes a look at the probability (0 through 1) of a contact in declination, which within 0.03 is orb/12.

Anyone familiar with the difficulty of getting positive research results in astrology will be instantly intrigued by this title. The front cover announces that astrology has been "proven by the Magi Society." The back cover announces "The book that advances astrology into the 21st Century!" So might this book represent the research breakthrough we have all been waiting for? The answer is a decisive no. The serious researcher will find nothing in this book worthy of attention except as examples of how not to do research.

A strange book

To start with, it is a strange book. It claims to present irrefutable evidence that astrology really works, so we might expect it to cite some of the many hundreds of published research studies. Not this one. There is no reference to any astrologer, article, book, or published research. The name Gauquelin is nowhere mentioned. The authors are

identified only as the Magi Society, "an international association of men and women who know that astrology works" (p.318), contactable only via a New York telephone number (212) 867-2905 (p.61), which is an answering machine. Calls made by a New Yorker on my behalf were not returned, possibly because (as I learnt later) it was receiving 10-15 calls a day. There is a glossary and over 120 birth charts, but no index, so abandon all hope of easy retrieval.

It gets stranger. The text includes scientist-bashing ("no one outside of their own circle is allowed to evaluate or criticize their conclusions" p.227), astrologer-bashing ("there are only a handful of legitimate astrologers in the whole world" p.317), fundamentalism ("the fact that astrology works ... will be the closest thing to proof of God" p.240), and astro-creationism ("astrology proves that the fittest are not those who have the best genes, but they are those who have the most favourable astrological aspects in their natal charts" p.219). Which may explain why, right from the start, the text reads like a sermon complete with breathtaking self-assurance: "After researching the birth charts of all the most successful men and women in America, we found that astrology unquestionably works. But of course, we, of the Magi Society, knew that all along due to our extraordinary and unsurpassed knowledge of astrology, which we call Magi Astrology" (p.1).

Strangely, their extraordinary and unsurpassed knowledge is not without error. Thus aspects (specified angular separations) were not used four thousand years ago (p.10), Newton was not an astrologer (p.16), astrologers do not try to avoid using aspects (p.41), signs were not formulated thousands of years ago (p.131), and Darwinists do not claim we evolved from apes (p.225). But I digress.

The Magi breakthrough

The Magi explain that "astrologers and others have made many failed attempts to prove that astrology works" (p.37), so "we decided that astrology, as it was generally practiced and understood by the average astrologer in 1994, was not yet solid enough to be proven". In other words it needed its own Newtonian revolution "before it could be proven and accepted by most of its critics" (p.39). To make a breakthrough it needed a breakthrough. Therefore "we will take astrology the necessary monumental giant leap ahead by adding a whole new dimension to it; by doing so, astrology becomes provable" (p.39).

The Magi's monumental giant leap consists of (1) tossing out all birth data except the date, and (2) tossing out all chart factors except interplanetary aspects, parallels and contra-parallels. A parallel or contra-parallel exists if two planets have the same or opposite declination (angular distance from the celestial equator). Astrologers who insist that birth times are essential, and that only the whole chart may be used, might well feel compromised. Indeed, on this basis the Magi would fail the elementary exam of most astrological teaching bodies. Declination is the supposed "new dimension", even though it has been used by many astrologers from Ptolemy onwards, albeit with much disagreement over its utility, for example my own survey of over 100 astrological sources found that user opinions were divided roughly 2:1 in favour of it being unimportant. A Magi birth chart (one is shown on the cover) has planetary declinations in the area traditionally reserved for houses.

The justifications for this giant leap are revealing. Birth times are out because "even birth certificates that have exact times are almost always wrong" (p.40, how can they know this?). Declinations are in because "it is impossible to fully interpret birth charts

without them" (p.58, most astrologers do it all the time). Which is like arguing that, because wheel alignment is never absolutely exact, cars can do without wheels but not cigarette lighters. Furthermore, because popular ephemerides (tables of planetary positions) do not show declinations, be sure to buy the Magi's one, available from Hay House (p.53), or their software package (p.151). Of course, even in the 327 pages of the present book, there is a limit to what can be said, so "in the future we will be publishing more books" (p.295). At which point the commercial advantages of promoting an astrology dependent only on date and your own publications will be apparent.

Proving Magi astrology

Having taken this giant leap, the Magi then proceed to prove astrology by various observations. Along the way they give particular aspects Capitalised Names to indicate their Connections. The super rich and famous (eg Rupert Murdoch, Clint Eastwood) "almost always have at least one, and on the average, two to three" of twelve Super Aspects so powerful that "anyone who possesses even one of these aspects has a jump start on achieving great success" (p.67). The average champion athlete has two Super Aspects plus two of seventeen Sports Champion Aspects (p.205). The difference between Super Aspects and Sports Champion Aspects is complicated and confusing (seven aspects are common to both), but in broad terms Sports Champion Aspects involve Mars and Super Aspects do not. Among other things planetary aspects affect the stock market (p.113), the success of companies (p.245), personal relationships (p.271), and business opportunities (p.293). Positions midway between planets in celestial longitude or in declination behave like planets and are just as important (p.147).

Unfortunately these observations are presented uncritically without controls or statistical tests, ie in a manner that will be dreadfully familiar to readers of astrology books. Nevertheless the Magi assure us that everything has been subjected to "rigorous scientific statistical tests", the details being conveniently omitted because they are "beyond the interest level of most of our readers" (p.304), which I suppose is an interesting commentary on their target audience. However, "anyone who wishes to obtain the study can contact us", although just asking for it implies "a very deep-rooted skepticism of astrology. In such a case no amount of statistical validation may be enough" (p.305). So in February 1997 I wrote for details of their study but to no avail.

Six challenges to skeptics

At which point astrologers and skeptics alike might justifiably view the Magi's observations as beyond the pale. But what makes the Magi's book worth at least passing attention is that their observations are restated as Six Challenges To Skeptics. To my knowledge no other astrology book has challenged skeptics so directly. "Astrology really works and is proven unless the skeptics can meet all of our challenges" (p.317). Which at first sight seems fair enough. Two of the six challenges involve predicting the future, and are discussed later. The rest are as follows:

- List famous long-established athletes who do not have a Neptune enhancement of the Sun. The Magi will list those that do. You lose if your list is not ten times longer than their list (p.61).
- List American sports champions who have no Sports Champion Aspect and not more than one Super Aspect. The Magi will list those who have at least one of each. You lose if your list is shorter (p.206).

- Choose a number of two-year-old horses who have no Sports Champion Aspect, no multiple aspect involving Mars, not more than one Super Aspect (here choice is limited to nine), and who have not raced. The Magi will choose an equal number who have at least one Sports Champion Aspect or at least two Super Aspects. You lose if your horses win less money than theirs during the next two years (p.221).

- List successful corporations with no Super Aspects in their charts. The Magi will list those with at least two. You lose if your list is shorter than theirs. "If skeptics do not meet this challenge, we have the right to say that astrology is proven" (p.246).

The middle two challenges are immediately ambiguous because the Magi do not explain how to deal with those Sports Champion Aspects that are also Super Aspects. That aside, the twelve Super Aspects (p.68) and eleven of the seventeen Sports Champion Aspects (pp.204-205) are all "enhancements". An enhancement exists when two planets are mutually in conjunction, trine, parallel, or contra-parallel. The orb (permissible inexactness) is 3 degrees for the aspects and 2.5 degrees for the rest (pp.52,71).

Probability calculations

The orb is crucial because it determines the probability of occurrence. For a parallel or contra-parallel the probability also depends on where the planets are in their orbits, because like a person on a swing each spends more time at the extremes of declination than at the mid-point, which of course increases the probability of occurrence. The probability will also depend on retrogradation (the apparent reversal of planetary motion as seen from the earth, which increases the time spent at whatever declination the planet happens to be at), and on planetary latitude (which shifts declination up or down as a whole).

In short there are so many complications that controls are essential. But as a guide my computations indicate that the long-term probability of an enhancement is something like 0.26, most of which is due to the declination component, see Appendix. So, with twelve enhancements to choose from, the average chart will contain about $12 \times 0.26 = 3.1$ purely by chance. The Magi's observed average of two or three for the rich and famous is therefore unremarkable. More to the point, their first challenge is unwinnable - if the total population of famous athletes is N , then purely by chance (irrespective of any astrology) the Magi will find $0.26N$ with an enhancement, leaving us to find $2.6N$ with none, which is impossible. It would be easier to toss coins and always get heads.

In the other challenges (ignoring ambiguities) we need to find cases with no enhancements while the Magi need to find cases with at least two. For the twelve Super Aspect enhancements, the probability of finding none will depend on the time period, but will generally be something like $(1-0.26)^{12} = 0.027$, whereas the probability of finding at least two, calculated binomially, is given by

the sum from $r=2$ to $r=12$ of $12Cr \times 0.26^r \times (1-0.26)^{(12-r)}$, where $12Cr = 12!/(r!(12-r)!)$,

which comes to 0.86. In fact the Magi later include a handful of other aspects as Super Aspects (p.142), so in effect the 12 in the above calculation should be increased, which means that the above difference in probabilities is conservative. Similar probabilities apply to the seventeen Sports Champion Aspects.

What the probabilities tell us

So what do these probabilities tell us? As before, if the total population of cases is N , then whether we count corporations or cats, we will find around $0.027N$ cases with no enhancements. But purely by chance (irrespective of any astrology) the Magi will find around $0.86N$ cases with at least two enhancements, or over 30 times as many. Which means that the Magi will have over 30 times as many horses to choose from and a correspondingly better chance of picking winners. It also means that we cannot possibly exceed the Magi's count of $0.86N$ because only $0.14N$ non-Magi cases remain. In other words the corresponding challenges are unwinnable. Or as the Magi Society says, it "has examined the birth charts [sic] of EVERY superstar of American sports, and we know skeptics cannot meet this challenge" (p.206). The skeptics' failure to win will of course have nothing to do with astrology and everything to do with statistical probability. In effect the deck is stacked absolutely in the Magi's favour, which did not stop a reviewer in the *Astrological Journal* (1996, 38, 263-264) concluding that the Magi's evidence is "certainly persuasive."

The Magi generously offer to reduce the orbs to 2.33 and 1.83 degrees for aspects and declination respectively, thus supposedly making success "harder for the Magi ... and ... easier for skeptics" (p.312). This increases our count to around $0.06N$, but reduces theirs only slightly to around $0.76N$, so the deck is still stacked absolutely in their favour. In effect skeptics are being challenged, not to show that butchers differ astrologically from bakers, but to show that butchers tend not to have two arms and two legs. Note the irony: Even if this were possible, it would say nothing about astrology.

Challenges involving prediction

The remaining two challenges involve predicting the future by transits and progressions (future planetary positions judged in relation to birth positions):

- Make money on publicly-traded stocks and commodities (no real estate) by investing on days when, by Magi rules, there are bad transits to your birth chart. "The Magi Society will tell you when you cannot make money. Contact us and we will prove it" (p.123).
- Choose any well-known group of American athletes and predict their performance over the next few years better than the Magi Society. You cannot choose athletes who have favourable transits and progressions (future planetary positions) according to Magi rules. "We are very anxious to compete with skeptics on this challenge. Please do not disappoint us" (p.129).

The first requires actual investment, not pretend investment, so you will need plenty of spare money. But in both cases there is a severe problem, because "until you read one of our subsequent books, you will not know how to correctly evaluate your transits and progressions" (p.272). This means we cannot make any probability calculations or check what the Magi Society tells us. Even though these essential books were published after this review was written, there seems no reason to suppose that either challenge is more soundly based, or less stacked, than the others. No sensible person will bother.

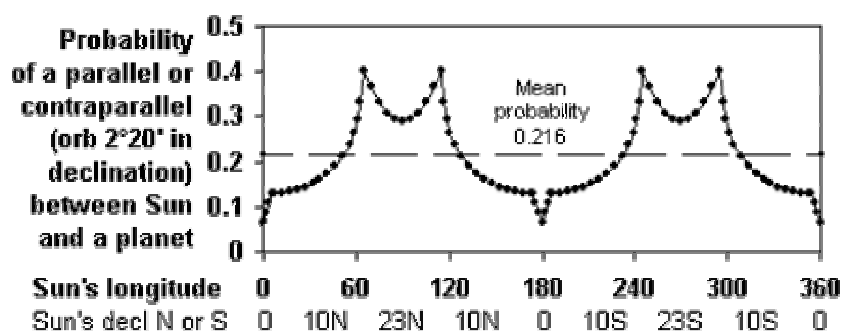
Gullibility really works!

So what might skeptics conclude? "After they have read this book, only those skeptics who want to be unreasonable and do not want to accept the truth will continue to refute the validity of astrology. We know that they cannot meet our challenges. Nonetheless, we expect to be attacked and vilified by the most diehard of skeptics. What we have

written will be misrepresented, taken out of context, and nitpicked" (p.316). Well, maybe. But whatever our opinion of astrology, unbelievable books like this can only make it worse. Until the Magi abandon their sermons, stacked decks and naive counting in favour of scholarship, controlled studies and adequate reporting, their "irrefutable evidence" for astrology is evidence only that crooked thinking is alive and well. Gullibility really works!

Appendix: Probability of a contact in declination

The plot below shows how the probability of a parallel or contra-parallel with a planet (in this case the Sun) depends on where the planet is. Each dot is the mean probability during a full 360-degree cycle by the other planet, and for the sake of demonstration the orb in declination is 2 ° 20' min or 2.33 degrees. Start on the left.



As the Sun moves from left to right, the probability is minimum at 0 (= 0 Aries), where the Sun has zero declination. As soon as the Sun moves away from zero declination it allows contra-parallels to exist, which causes an initial steep increase in probability. As the Sun moves towards 90 (= 0 Cancer and maximum 23N declination), the probability slowly rises to a peak and then falls somewhat as the orb extends past the limit of travel. As the Sun moves past 90 the probability plot is a mirror image of the first half. As the Sun moves out of the graph into S declination, the entire plot is repeated.

The maximum probability is 0.405, more than six times the minimum probability of 0.064, and the mean probability is 0.216 (halve this to get the mean probability of a parallel or contra-parallel only). If the two bodies differ in latitude by two degrees, which is often the case, the mean probability is slightly decreased to 0.211. The probability of a conjunction or trine of orb 3 degrees is about $3 \times (3 \times 2) / 360 = 0.05$, so the probability of an enhancement is about $0.21 + 0.05 = 0.26$. The variation of declination probability with orb is not straightforward, especially if the planets have latitude, but the approximate probability is within 0.03 of orb/12.

Because the probability of a contact depends on where the planet is, it will also depend on the time period, which for slow-moving planets can cause severe sampling problems. For example Neptune had zero declination in 1862, maximum N declination in 1903, zero declination again in 1943, and maximum S declination in 1986. So if our charts happen to come from the 1860s or 1940s they will necessarily contain fewer declination contacts to Neptune than if they happened to come from the 1900s or the 1980s.

Astrology, Science and Culture **Postmodern futility**

Astrology, Science and Culture: Pulling Down the Moon By Roy Willis and Patrick Curry. Berg, Oxford 2004. ISBN 1-85973-687-4. 170 pages including bibliography and index. £15.99 paperback.

Abstract -- This is a highly unreadable book. Both authors are postmodernists, and they seem to want to outdo each other in being impenetrable. They claim that the only real astrology is horary astrology, or divination, which fills the world with magic and meaning. In real astrology the world is filled with gods (ie planets), spirits, and magic that our minds can become attuned to. It is a form of religion that brings back mystery into our lives and makes the world seem wonderfully meaningful. Like any other religion, real astrology values mystery (enchantment) before concrete knowledge (disenchantment), and does not need to be true. Although the same conclusion had already been reached by empirical research, the authors dismiss empirical findings and contrary views (even astrological ones) out of hand, so readers never get an impartial overview. The authors never examine an actual study or finding or the various empirical approaches. They never examine how a chart is prepared and interpreted. They never give you a feel for what divinatory success means, or how frequent it is. The result is like conducting a war game out of sight of practicalities. The arguments when stripped of their protective fog of philosophyspeak are often ludicrous, as when the inability of science to determine absolute truth is quoted as a reason for dismissing the idea that we can tell when an astrology reading is wrong. Ultimately the book is futile because the authors dismiss science as "just one of a plurality of mythological narratives", just as their own view is. So their own view can equally be dismissed as a mythological narrative worth no more attention than any other. An update presents Curry's brief reply including his claim that a longer reply would waste his time; the authors' response to each of Curry's brief points including how he contradicts his own claim of engaging in wide discussion; and a survey of other reviews. Three by astrologers are generally positive. Two by academics are generally negative.

The subtitle "Pulling Down the Moon" refers to the women diviners of ancient Thessaly who, Plutarch said, can pull down the moon. Roy Willis is a social anthropologist at the University of Edinburgh. Dr Patrick Curry is a social historian and Associate Lecturer at the Sophia Centre for the Study of Cultural Astronomy and Astrology, Bath Spa University College.

In order of increasing controversy, astrology has been seen as a topic of great historical importance, a useful fiction to promote therapy by conversation, a cloud in which meaningful faces can be seen, an expression of underlying world order, and an independent source of knowledge. Underlying these various views is a single issue, namely the merit of astrology as a source of (1) facts and (2) meaning.

Neglect of the distinction between facts and meaning has led to much unproductive debate between astrologers and critics. To improve the debate, astrology urgently needs (and www.astrology-and-science.com attempts to provide) competent reviews of relevant areas. The title *Astrology, Science and Culture* seems to promise such a review, but ironically (and, these days, inexcusably) the book fails to deliver, all with an aggressive unreadability that is equally inexcusable.

Most of the book is written by the authors separately. A joint introduction claims that the historical roots of astrology require it to be seen as divination. Chapters 2-3 by Willis look at the history of astrology and sacred myths. Chapters 4-9 by Curry look at the

history and variety of astrology, how science has led to disenchantment, and how only astrology as divination can lead us back. Finally chapters 10-11 by Willis argue that divination, and thus astrology, is part of the evolution of consciousness.

Once past their joint introduction the authors almost always use "we" and "our" rather than the "I" and "my" demanded by their separate authorship. Some examples for Willis are: "we take our cue", "we begin", "our topic", "our intention" (pages 127, 129, 130, 148). And for Curry: "we agree", "we are saying", "our case", "Our own view" (pages 92, 95, 100, 113). Many more examples could be cited, all of them implying that the book's arguments are shared by both authors. Therefore the present review generally refers to "the authors" regardless of whether Willis or Curry wrote the passage in question.

Overall the book claims that the only real astrology is horary astrology, or divination, which fills the world with magic and meaning. Unfortunately empirical findings and contrary views (even astrological ones) are dismissed without proper examination. These and other points are discussed below.

Postmodern impenetrability

According to astrologer Garry Phillipson's review in the *Astrological Journal* (2004, 46(4), pp.36-37), Willis and Curry's book is "epochal." In thirty years' time it "will be seen as a key text from the period when astrology was taking its first, tentative, steps back into academia." (This refers to the recognition in 2000 of Kepler College in Seattle, and in 2002 of the Sophia Centre in Bath, as academic institutions where astrology can be studied for a degree.)

However, Phillipson does warn us that the book is "frequently abstruse." And that is precisely the problem. Other than the introduction, each chapter is written either by anthropologist Willis (who focusses on ancient roots) or by astrologer/social historian Curry (who attacks science). Both authors are postmodernists, and they seem to want to outdo each other in being obscure and long-winded. Indeed, there seems to be nothing so simple that the authors cannot make impenetrable. This is a highly unreadable book. After being told that astrology involves "the human dialogical engagement with divinity", by which they mean that astrology boils down to a conversation with an intelligent universe, the reader has constantly to struggle with sentences such as:

"Here let us note certain fundamental consequences of our dialogical reading of human nature. In its essential, necessary openness -- the inherent duality of dialogue which is also, and most fundamentally, a many-voiced plurality -- this reading permanently guarantees us against any possibility of collapse into monolithic solipsism." (p.2)

And this is only 10% into the Introduction! Nobody who writes like this can be accused of clear thinking. Willis and Curry's ideas can in fact be expressed simply and clearly, but they never are. The problem is that, once the impenetrable overburden is removed, the flaws become obvious and the case falls apart. What should have been a useful and informed discourse ends up as a parade of pretentious inutility. Of which more later.

Key point

The authors' key point is a simple but profound one. They claim that what most astrologers call "astrology" is in fact bogus. Real astrology is horary astrology, or divination, and can never be other than divination. Thus bogus astrology is popular today because it taps our ancestral urge for divination. In real astrology the world is filled with gods (ie planets), spirits, and magic, that our minds can become attuned to. It brings back mystery and enchantment into our lives and makes the world seem wonderfully meaningful. To achieve this all we need do is believe.

In other words astrology is to do with meaning, not facts, and the present belief in astrology is explained by an earlier belief in divination. The blurb says "this book not only persuasively demonstrates that astrology is far more than a superstitious relic of years gone by, but that it enables a fundamental critique of the scientism of its opponents." Ironically it does this by assuming what it sets out to prove, namely that real astrology is real religion, a point that many astrologers would vigorously dispute. But this is to get ahead of ourselves. To establish their case the authors seem to be following four broad rules of engagement as follows:

Rule 1: Reject quantitative methods

To promote their ideas the authors deliberately reject quantitative methods, "daring to privilege sensory quality over a row of digits" (p.1). There are two problems here. First, if we reject the quantitative testing of ideas, we are rejecting a useful adjunct to purely qualitative testing such as checking an idea for consistency or how it compares with alternatives. For example without quantitative methods we might be hard pressed to decide whether the earth is or is not at the centre of the universe, which might affect how we interpret its enchantment. In effect the authors seem to be rejecting the same pluralism (diversity of values and opinion) that they are advocating as the "touchstone of divination" (p.75), the "inherently pluralistic" basis of astrology (p.80), and the "irrevocably pluralistic" basis of postmodernism (p.133). In short the authors seem committed to dietary diversity while forcing readers to live by bread alone.

Second, the authors support their rejection of quantitative methods by misrepresenting them. For example they dismiss tests of astrology by psychologists as "crude attempts to demonstrate that astrological effects are attributable to something else (usually forms of cognitive error) that psychologists are more comfortable with" (p.4). In fact psychologists test astrology simply to see if its claims are true. Should it fail to deliver useful effect sizes (which for factual claims has invariably been the case) they then ask how astrologers could believe in something that is effectively not true. The answer (because human judgement is good at creating wrong impressions like seeing meaning in Barnum statements, a view confirmed by thousands of published studies and dozens of books, none of them cited by the authors) is here highly inconvenient, not to say fatal.

As when Willis, unacquainted with astrology other than having to invent newspaper horoscopes while a trainee journalist (an "exercise in deception" p.5), had his birth chart read and found it "corresponded remarkably well with my inner perceptions" (p.11). This of course is the usual outcome even when the chart happens to be the wrong chart, which is awkward. Just as awkward is Willis's devoting seven pages (pp.5-11) to an account of his becoming convinced by precisely the kind of astrology that is dismissed here as bogus. Indeed, Willis does not seem to have visited any horary astrologers, ie the kind he presumes to write about, if only to check Martin Luther's experience that "the divinations of astrology ... are wrong so often that there can be nothing less trustworthy" (Garin, *Astrology in the Renaissance*, Routledge & Kegan Paul 1983:4). To say nothing of Charles Carter's experience four centuries later that the horary charts cast for him "have usually been downright wrong and never strikingly right" (*Astrological Journal* December 1962). For some reason Carter's experience is not mentioned despite its exemplary relevance (Carter was the leading British astrologer of his day).

Rule 2: Embrace bias

Indeed, anything inconvenient is swept aside or distorted. For example the authors seem to see all scientists as bad scientists, obsessed with "crude reductionism", always

implacably opposed to astrology and always bent on disenchanting the world, which allows any inconvenient scientific finding (and there are many) to be dismissed out of hand. They cite an article in the *Astrological Journal* (1994, 36, pp.60-68) as providing "a good discussion of scientific double standards ... in astrological research", but fail to mention that a later critique (in 36, pp.258-259) noted how the "good discussion" was itself ruined by double standards, a point evident to any informed reader.

Similarly the authors fail to mention that, even in their own anti-materialist camp, it is not hard to find positive views towards science. Indeed the anti-materialist Charles Tart in his book *Transpersonal Psychologies* (Harper & Row 1975) addresses precisely the same general area as Willis and Curry do, but argues precisely the opposite case with a clarity and open-mindedness that leaves them for dead:

"The realm of the spiritual, and the connected realm of altered states of consciousness, is one of the most powerful forces that shape man's life and destiny. I think attempting to keep these realms and the realm of science separate is dangerous, and I hope we will go on to develop state-specific sciences and similar endeavours that will start building bridges between them. To those who think it can't be done, I can only reply that we have to find that out by trying, not by limiting ourselves in advance by preconceptions" (p.58).

Thus Tart notes that "a data base for future sciences is of exceptional importance" (p.27), as is "the need to achieve testability of our theories about spiritual phenomena and ASC [altered states of consciousness] phenomena" (p.35). Which is clearly not what Willis and Curry want to hear.

Similarly the anti-materialist Rupert Sheldrake in his book *The Rebirth of Nature: The Greening of Science and God* (Century 1990) argues that new developments in science are leading to "a new understanding of nature in which traditional wisdom, personal experience and scientific insight can be mutually enriching." Indeed, in his later book *The Sense of Being Stared At and other aspects of the Extended Mind* (Hutchinson 2003), which is a consciousness-related topic as controversial as horary and of greater antiquity, Sheldrake shows how the scientific approach leads to insights unattainable in any other way. All in plain English, after which Willis and Curry's paralysing prose might easily be mistaken for another Sokal hoax.

(Physicist Alan Sokal's now-famous and deliberately nonsensical 1996 article "Transgressing the Boundaries: Towards a Transformative Hermeneutics of Quantum Gravity", heavily adulterated with physical clangers and full of incomprehensible quotes from postmodernists, was published by the postmodern journal *Social Text* because, in Sokal's opinion, it sounded good and flattered editorial preconceptions.)

Despite the privilege supposedly accorded to "sensory quality", Willis and Curry also ignore qualitative studies of astrology if the outcome is inconvenient. For example sociologists who observe client sessions have noted how astrologers can explain any error via their own fallibility or via a contrary indication previously overlooked. The participants remain unaware of this win-win self-deception, so the end result can hardly fail to reinforce belief in astrology (as in fact happened to Willis). The nearest the authors get to recognising this is "the experience of enchantment does not make it true in an objectivist sense, nor does it need to be" (p.112), which as usual is sufficiently rarefied to obscure what is really happening. More on this later under Rules 3 and 4. For the moment here are further examples of bias.

Recipe for smokescreens

Even inconvenient *philosophical* criticisms (for example I.W.Kelly's "Modern Astrology: A Critique" in *Psychological Reports* 1997, 81, 1035-1066 and expanded on this website under Applied Astrology) are dismissed without examination as "purely ideological" (p.100). Similarly the assertion "science has banished [disembodied spirits], of course, en route to attempting to get rid of human subjectivity too" (p.120) is made with no hint of its conflict with much of the philosophy-of-mind literature. For example philosophers such as Chalmers, Searle, and Nozick would have problems with disembodied spirits but do not deny subjective experience. It seems that readers must be protected from honest discussion of anything that might upset the authors' ideas.

Ironically, although the authors constantly criticise "reductionist" scientific studies, such studies are made welcome when they seem to support the authors' position. For example genetic studies are cited to support the idea that we are "all psychically connected, not only to one another, but also to the universe" (p.131); and the idea that we are born with an "innate impulsion to dialogue with a multiverse of intelligent beings, starting with fellow humans and including every animal and plant, every rock and river and ocean; also the clouds in the sky, winds and storms and rain, and all the luminous inhabitants of the starry vault" (p.132). But do we really need genetics to tell us that we interact with our surroundings?

Similarly the authors tend to quote only those philosophers whose views agree with theirs and ignore the rest. In this way all sorts of philosophers including Wittgenstein, Husserl, and Merleau-Ponty, none of whom were interested in astrology, are recruited into laying the groundwork for the authors' speculations. Furthermore, the selected philosophers are quoted without argument or critical examination of their position, and without noting where we could agree with their position and still not believe in astrology. The reader never gets an impartial balancing of views from both sides, which is surely what they are entitled to expect from authors who hold academic positions. In other words the authors are rather like promoters of phlogiston as the only way to think about combustion. (In postmodernist terms phlogiston is equally as good as oxygen for explaining why fires burn.) Reject quantitative methods, embrace bias, avoid specifics, garnish with impenetrable rhetoric, and the smokescreen is complete.

Varieties of astrology

On pages 65-76 the authors provide a foggy survey of how they see the varieties of astrology, namely sun signs (popular but shallow), horary (divination), neo-Platonic (spiritual), Ptolemaic (astral determinism), scientific (eg Gauquelin), and psychological (currently predominant among working astrologers). The last claims that character/destiny is in our inclining-but-not-compelling stars, so the stars "only ever advise courses of action in relation to a constantly shifting future" (p.75). The authors say the problem with all of these varieties except horary is that they do not engage with gods and therefore by definition lead to disenchantment. That is, they contain a corrupting element of fatalism. Even so, all of them "could best be understood as divinatory [ie engaging with gods], each in its own way" (p.67). So now you see it, now you don't.

Later (p.122) the authors briefly note that astrologers can have a view of horary precisely opposite to their own. As examples they cite two eminent astrologers of the 1900s, namely Alan Leo (who described horary as "the vilest rubbish imaginable") and Alfred J Pearce ("absurd and unwarrantable"). They could have cited many other astrologers such as Jeff Mayo in 1964 ("sheer nonsense") and Ingrid Lind in 1962

("savours of the bead curtain and fortune-telling booth"). These are not your average everyday astrologers -- Mayo was principal of the Mayo school, Lind was patron of the Faculty of Astrological Studies, two bodies that were reputable and world-famous (they still are).

The authors could also have cited Charles Harvey, president of the Astrological Association 1973-1994 and then its patron, who in the *Astrological Journal* (1994, 36, pp.396-398) condemns the view that almost all astrology is grounded in divination. As usual, Harvey writes with a vigour and clarity (and long experience) entirely missing from Willis and Curry's book, so he is worth quoting at some length:

"Whilst it [the pro-divination view] appears to explain why quantitative research has found so little evidence to support astrologers' beliefs and experience, it at the same time seems to remove from astrological practice any secure basis for interpretation. ... More importantly, we are still left with the question as to how this astrological divination works? How can it be enhanced if the principles upon which its interpretations are based are not true in any testable sense or are of secondary significance? If this were actually the case, then it would be impossible to programme a computer to produce reports which, although imperfect, can often identify many of the key issues in an individual's life and psychology. Experience shows that some computerised reports can prove remarkably to the point. But perhaps the most potentially problematic and pernicious outcome of allocating an almost exclusively divinatory foundation to astrology is that it encourages the view that there is no systematic way in which astrological interpretation can be improved and enhanced. By such a move the magnificent contributions to astrology this century of, for example, Witte, Ebertin, Addey, Barbault, Liz Greene and Jim Lewis are all too easily marginalised and several whole dimensions of astrology's universe negated."

Recall also the views of Charles Carter cited previously. One wonders why eminent astrologers should be so hostile if horary was as marvellous as the authors claim.

Divination and consciousness

On the questions that can be asked in divination, we are told that divination is not about foretelling the future but asking for advice, "so the asker (whether diviner or client) is left perfectly free, in principle, to proceed or not." Allowable questions are not "What will happen? but *What should I do?*" (p.57, their emphasis). In other words other kinds of question cannot be answered, and "It is our contention that this kind of question is still the appropriate one for astrology" (p.58). Ironically their contention is flatly contradicted by William Lilly's *Christian Astrology* (1659), which is regarded by many modern horary astrologers as *the* horary bible, and which has been adopted as a textbook by the APAI-accredited Qualifying Horary Diploma Course.

APAI is The Association of Professional Astrologers International, a body set up in the UK in 1990 by a group of experienced professional astrologers concerned about maintaining standards. Its aims include protecting the image of professional astrology, protecting the public from professional astrological malpractice, and offering the public a safe, fair and reliable service. Membership is restricted to astrologers with Diplomas (not Certificates) from schools accredited by APAI.

Lilly devotes over 350 of *Christian Astrology's* 850 pages to answering questions such as: Do I have brothers or sisters? Is my brother alive or dead? Shall I have children? Will my illness be long or short? Is she cheating on me? Are my goods lost or stolen? Will the thief be caught? When will I die? Will my journey be successful? Will I get the job? But according to Willis and Curry, such what-will-happen questions are not allowable and

cannot be answered. They cite William Lilly as being perhaps the last of the old-style astrologers using divinatory magic (p.67), but they make no mention of how his work contradicts their thesis.

On horary astrology itself, the authors assert that divinatory chart readings involve "expansive changes in consciousness of both client and astrologer" where they become attuned to the symbolism and "are able to become participants with divine agencies ("daemones") in a joint negotiation of the client's destiny" (p.148). Or as Charles Harvey puts it, divinatory chart readings are "not based on anything that is in any normal sense objective, measurable, or factual. [They] do not contain qualities in and of themselves but [are] assigned by the consciousness of the astrologer" (p.397).

Willis and Curry make no attempt to validate their claim except by references to shamanism, ancient beliefs, and any philosopher (no matter how uninterested in astrology) whose views seem even remotely compatible. The result is like supporting the idea of levitation by references to angels and Jules Verne. Incompatible philosophical views (in philosophy there are always incompatible views) are ignored. Human judgement biases like the Barnum effect are briefly mentioned but are dismissed as irrelevant because astrology is simply the "experience of its truth", and ascribing it to "something else is not to understand astrology, but to replace it with something else, in keeping with a very different agenda" (p.101). As if ascribing combustion to oxygen is not to understand combustion.

The above "very different agenda" is the supposedly universal aim of all scientists everywhere to discredit astrology by all possible means, as if bona fide scientific study could not possibly occur. On top of this, the authors seem to think we have to accept astrology or not, as if it was impossible to accept part of it and reject the rest. Similarly they refer often to scientists' rhetoric but never to astrologers' rhetoric, as if astrologers were incapable of it (any astrology writing will quickly dispel that one). Nor do they tell us about astrologism, the astrological equivalent of scientism, where for example astrology is the way, the truth and the light, and (given the right technique) is able to explain everything. Ironically, in an article in the *Astrological Journal* (1994, 36, pp.69-75), Curry uses the same belief in "one way, truth and life" to dismiss both Christianity and the "so-called scientific method." This is not a book for readers who are expecting credible scholarship.

It boils down to religion

If, as the authors claim, real (ie their) astrology makes the world seem wonderfully meaningful, exactly what does this mean in practical terms? What do paying clients stand to gain? What criteria should we use to compare astrology with its many competitors? Unfortunately the authors do not tell us in a coherent way, as in a shopping list, nor do they tell us how clients might recognise a suitable astrologer (do good outcomes depend on good rapport?). The result is like discussing restaurants without ever visiting one or mentioning food.

However, the authors do say that real astrology is "a specific form of religious life" (p.111) that has no need of "experience of truth in an objectivist sense" (p.112), so it seems that the benefits are generally those of any religion. Real astrology does not need to be true. Like any religion, real astrology values mystery (enchantment) before concrete knowledge (disenchantment), and presumably after priestly status (judging from the authors' lofty sermonising). Ironically the authors fail to mention that empirical research has already reached the same conclusion about astrology not needing to be

true, but no doubt they wished to avoid any hint that such research can actually get it right.

Similarly the authors seem unable to appreciate that both science and religion are responses to our thirst for understanding, so to accept the latter and reject the former (as they do) is hardly reasonable. Which is not to say that others on both sides have not done the same.

Regrettably the authors scarcely mention how the role of divination was hugely disputed in the Renaissance. Thus in 1495 Pico della Mirandola dismissed divinatory astrology as a confusion of real physical planets with stellar divinities. He asked "Shall we accept as divine the things which we have disproved as irrational, imitating the astrologers who refer all the things men do to the stars without reason?", and so on for twelve volumes (Garin, *op cit* p.88). In the 12th volume he sees the history of astrology as the progressive influx of ancient religious beliefs into the realm of natural philosophy, a direction that was of course to be reversed two centuries later. In effect Willis and Curry seem to be back in the Renaissance, arguing against Pico in the style of the day. They are of course entitled to see Pico as making a wrong turn, but by the same token readers are entitled to hear Pico's arguments and their response. No entry on "Renaissance" appears in their index.

Rule 3: Attack via distortion, hypocrisy, and straw men

The chapter on "Science and Astrology" attacks what researchers say in their interview in Phillipson's *Astrology in the Year Zero* (Flare, London 2000), also available in expanded form on this website under Doing Scientific Research. The attack proceeds via the usual selective quoting and distortion. For example the researchers are quoted as asking "Was astrology true?", which is taken as their "stated starting point" and then dismissed as being impossibly sweeping and akin to asking "is science true?" (p.96). However, their actual starting point, or how they got involved in astrology back in the 1970s, is as follows:

"We were intrigued by astrological claims, and by the depth and complexity of the subject. Was astrology true? Could the stars really correlate with human affairs? How could it work? Scientists love challenges like that. The problem was the lack of evidence -- a situation no longer true. So we set out to explore the claims in depth." (Phillipson p.124)

In other words a less selective quote tells a different story. Examples of claims to be explored are then philosophised away. For example when the researchers ask "Is it true that positive signs are extraverted?", testing is dismissed because it ignores context, even though the claim is made not by the researchers but by every astrology textbook. (No matter that the same argument would dismiss the claims of horary astrology such as "first house signifies the querent.") Similarly, when the researchers note how astrologers show "dramatic disagreement on fundamentals", this is dismissed because fundamentals also depend on context (p.97). Which is like arguing that traffic accidents can be dismissed because they depend on a particular road and driver.

Ultimately the attack reduces to asserting that real astrology (because religious) is not amenable to the researchers' scientific approach, which makes the researchers guilty of "naivete, bordering on sheer ignorance, or else hypocrisy" (p.98). But here the hypocrisy lies with the authors, who fail to mention that the researchers insist on exactly the same

caveat. Thus when Phillipson asks them "Are there some astrological claims to which scientific research might be irrelevant?", they reply as follows:

"Some astrologers claim that scientific research is impersonal or unspiritual or insensitive to deeper truths. ... Or they claim that astrology involves subtle factors not yet known to science. In each case they conclude that science is unsuited to astrology, period. But apart from its emphasis on critical evaluation, science requires only that events be observable in some way. ... if astrologers can observe the claimed correlations, so can scientific researchers ... Does this mean that science must apply to all areas of astrology? Not at all. If no possible observation could rule out a particular claim, then the claim is untestable, and scientific research is irrelevant. It is as simple as that. ... Even so, we can still compare astrology to other systems that claim to give direction and purpose to our lives (astrology has no monopoly here), in the same way that we can compare the origin and maintenance of religious beliefs." (Phillipson p.128)

In other words the scientific approach is relevant only where astrology is testable by observation, or where concrete statements are involved, or where empirical comparisons are being made. Apart from attacking a straw man, Willis and Curry are in effect claiming that real astrology is beyond observation. They are placing astrology on the same level as fantasy, which makes their long-winded obscurities largely redundant. Indeed, having noted that you cannot predict when astrology will successfully predict, presumably a reflection of stars inclining but not compelling, they add "And being unavoidable, this is no failing!" (p.102), which is placing astrology on the same level as guessing. What took all of 170 paralysing pages could have been said just as plausibly in a few lines. In terms of advancing the debate on astrology, the book adds generously to the noise but little to the signal. Which leads to Rule 4.

Rule 4. Keep well away from the coalface

The authors seem committed to keeping their arguments shrouded in philosophyspeak, like shadow boxing in the blue beyond. Indeed, there seems to be nothing so concrete that they cannot make vague and abstract, presumably in the hope that this will be mistaken for profundity. For example on page 12 Curry says he "came to astrology early"; it seemed "to offer a Key" and "perfectly suited my character." But he tired of astrology's "marginality" and its "lack of certainty." After several years in academia he realised that science had "as much ultimate uncertainty as astrology" and therefore offered no hope of demystifying it. He then discovered horary, which "contextualized astrology as a kind of divination, a dialogue with the unknown, which opens it up and enlivens it", whatever that means. In all of this there is no mention of what he actually did to reach that conclusion, or what tests he made or did not make, so readers come away with only impressions and no real understanding. And as with page 12, so with the book. The reader is always kept well away from the coalface by torrents of vagueness and obscurities.

For example (in English translation) the authors argue that science is mechanistic, so it cannot be used to test a non-mechanistic astrology. Conclusion: all existing tests are meaningless. But the argument is implausible. The aim has been to test what an astrologer claims ("people fit their charts") by asking straightforward questions ("do people fit other people's charts just as well?"). Or by comparing one view ("what matters is when you think of the question") with another ("what matters is when I receive your question"). If astrologers can observe support here for their claims then so can anyone including scientists. Issues of mechanism do not come into it. Indeed, a look at any

recent well-designed test would be a big help, but the authors seem incapable of being this simple, preferring instead to retreat into obfuscation.

Similarly they never examine an actual study or finding or the various empirical approaches. They never examine how a chart is prepared and interpreted. They never step you through an actual act of divination. You never get a feel for what divinatory success means, or how frequent it is, yet (as Sheldrake shows for acts of staring) such things should not be difficult. The result is like conducting a war game out of sight of practicalities. The arguments when stripped of their protective fog of philosophyspeak are often ludicrous, as when the authors dismiss the idea of controls because you cannot test astrology if it is absent (p.102). And when they quote the inability of science to determine absolute truth (p.103) as a reason for dismissing the idea that we can tell when an astrology reading is wrong. But the futility does not end there.

Postmodern futility

In the end the authors shoot themselves in the foot. As committed postmodernists they dismiss science as "just one of a plurality of mythological narratives" (p.127). But so is their own view. Didn't they notice? So their own view can equally be dismissed as a mythological narrative worth no more attention than any other.

For further insight into the futility of postmodernism, listen to what Curry said in 2004 in his Carter Memorial Lecture to the Astrological Association (see *Astrological Journal* Nov-Dec 2004 pp.7-17): "The researchers will always find a perfectly good reason, in their terms, why your [astrological] result is not valid." For Curry the reference to "in their terms" allows him to dismiss the reason out of hand, because in postmodernism any set of terms is as good as any other. You can dismiss whatever you want just because you don't like it, period. Which is like claiming a change of terms will save you if you jump off a cliff. If on the way down you dismiss the researchers as hopeless bigots, then according to Curry "they will simply ignore you." So what would he have them do, believe that gravity is a silly idea?

Update

The above review also appeared on the philosophy website www.butterfliesandwheels.com, to which Patrick Curry sent the following reply dated 27 Nov 2005:

Curry's reply

I am writing as one of the co-authors of *Astrology, Science and Culture*, "reviewed" by Geoff Dean for this website. On page 107, note 7 therein, I mention that Dean, as a longstanding critic of astrology, has two principal rhetorical strategies: "One is to tendentiously 'summarize' his opponent's arguments and then deal with the resulting creation. The other is to engage in apparently endless reply and counter-reply, while conceding nothing, to the point where his opponents sensibly decide that the process has become fruitless and decline to continue -- whereupon Dean claims victory."

The first strategy is what, yet again, he has done with our book, and I have no intention (having a life) of giving him the opportunity to engage in the second. So I will only comment that it is a shame that Dean continues to refuse to engage with - as opposed to merely attempting to destroy - any arguments which throw into question his own foundational assumptions. (Thinking is hard, but that's no excuse.)

For the same reason, I would invite readers, if they are interested in the subject, to read the book for themselves and then make up their own minds.

Response from reviewers

In January 2006 Curry was invited to provide a more reasoned response but did not reply. Until he does, here is an interim response from the reviewers:

The Butterflies and Wheels website imposed their own title "Pulling down the Moonshine", and failed to mention that there were other contributors to the review besides Geoffrey Dean. That the review summarises the book's arguments is hardly a sensible criticism -- reviewers have no alternative but to proceed in this way, and indeed Curry does exactly the same when reviewing our own work.

Nor is it the case that Dean routinely engages "in apparently endless reply and counter-reply, while conceding nothing." For example Wout Heukelom in *Correlation* 13(1):24 describes Dean and Mather as "having open ears" and "without any feelings of superiority of their own opinions", and Joanna Ashmun in 16(2):68 describes Dean as using "every relevant comment he can get ... he is not stuck on his own opinions at all." Indeed, Garry Phillipson's interview of the researchers (see this website under Doing Scientific Research) would hardly have happened if they conceded nothing.

Is Curry a case of "do as I say, not as I do"?

We disagree that our review fails to engage with the book's arguments. Curry needs to justify this and his other statements with examples. If he had time to write a book then he should have time for a proper response to a considered review, if only because this is an occupational commitment when an academic. Bear in mind that the Sophia Centre was made possible by the Sophia Project, and that according to the Project's website www.sophia-project.org.uk one of the Centre's goals is "to undertake the academic and critical examination of astrology and its practice." Curry's reaction implies that this goal is not to be taken seriously, at least not where views contrary to his own are concerned.

Furthermore, in his Carter Memorial Lecture, Curry stresses that education involves "not imposing your ideas" but discussing them "as widely as possible ... so a big part of what we do [at Sophia Centre] is to try to make possible new connections and wider conversations." Curry's response to our review so far would seem to reduce these fine ideals to mere lip service, a case of "do as I say, not as I do."

However, a proper response now seems unlikely. Early in 2006 Bath Spa University College announced that it is discontinuing the study of astrology at the Sophia Centre. Dr Curry's position there ceased at the end of June 2006.

What have other reviews concluded?

Curry's suggestion that people should "read the book for themselves and then make up their own minds" seems to assume that nobody but us would find problems with it. So what have other reviews concluded?

Reviews by astrologers have been generally positive. Garry Phillipson's view in the *Astrological Journal* (2004, 46(4), pp.36-37) that the book is a "key text" although "frequently abstruse" has already been cited. Jane Ridder-Patrick (www.scimednet.org) says the book challenges "assumptions in science and western culture", and hopes it will lead to "productive debates on the subject." Mark Urban-Lurain (*Journal of Scientific*

Exploration 2005, 19(1), 142-145), after an excellent chapter-by-chapter overview, concludes that the book is "thought-provoking" and "a pioneering work that brings a postmodern perspective to this ancient subject." He notes that the book's postmodern view "that there is no preferred perspective" is problematic because the view "is itself a preferred perspective." Readers "are likely to be sympathetic to the objections Willis and Curry raise to scientism, but they may find this work a bit too eager to throw out the baby with the bathwater."

Reviews by academics have been less positive. For example Jon Marshal (*Australian Journal of Anthropology* 2005, 16(2), 277-279, available online from www.findarticles.com), writing from a social history perspective, notes that Curry's use of disenchantment "simply names what is observed and makes that an explanation." Despite the subtitle, culture "is neglected beyond the suggestion that astrology gives bursts of enchantment", and restricting astrology to divination conflicts with the diversity of its present roles in society. So the book is "problematic" but is at least "a base from which others can venture."

Similarly Alessandro Giostra (*Reviews in Religion and Theology* 2005, 12(1), 125-127), a historian of philosophical and scientific thought, notes that "Some correct statements in this book, such as the important role of astrology in the history of knowledge or opposition to the absurd pretensions of scientism, do not justify belief in a sort of pantheism with no order and logical coherence, founded upon an even more generic conversation with the celestial bodies."

Cosmos and Psyche

The well-travelled road to disaster

Geoffrey Dean

The original review, of which this is a much-expanded version, appeared as "Saving a disenchanted world with astrology" in *Skeptical Inquirer* 30(4), July/August 2006.

Cosmos and Psyche: Intimations of a New World View

By Richard Tarnas. Penguin Viking, 2006.

ISBN 0-670-03292-1. 569 pp. Hardcover, \$29.95.

Abstract -- Richard Tarnas is a professor of philosophy and depth psychology in San Francisco. He is convinced that astrology works, and that it promises an escape from the disenchanting scientific world view. His claim is based on thirty years of research with birth charts and historical events, examples of which fill the major part of this thick book. The examples are drawn from philosophical, religious, literary and scientific sources and involve two kinds of comparisons, namely historical events versus aspects between the outer planets Jupiter through Pluto, and prominent people versus their birth charts. In each case he explains what the particular archetype means, and then shows how it can be discerned in the events or births that are coincident with it. But his approach has fatal defects. Mostly he looks at isolated factors, often with very wide orbs, and not the whole chart. Birth data and birth charts are rarely given. No controls are used despite being essential. Similar work by other astrologers is generally ignored and scientific studies are dismissed -- even Gauquelin rates only a passing mention. Despite his erudition, Tarnas seems incapable of writing concisely or vigorously, or of organising his material coherently. Once the noise is removed the flaws become obvious and the case falls apart. Unless you see the combination of paralysing unreadability, inferential incompetence, and unfounded conclusions as a virtue, give this book a miss.

Thanks largely to science, argues Tarnas, we live in a meaningless disenchanted world. But we can be saved by astrology, which offers "a royal road across the threshold of the disenchanted universe into a living cosmos of profound unfolding meaning and purpose." He says his claim is based on thirty years of research, examples of which fill the major part of this thick book.

Passion of the Western Mind

Anyone familiar with astrological writings will have heard such claims before. This time the difference is that Swiss-born (of American parents) Tarnas is a professor of philosophy and depth psychology at the California Institute of Integral Studies in San Francisco. His 1991 best-seller *The Passion of the Western Mind: Understanding the Ideas that have Shaped our World View* has been adopted as a text by many American universities. His views would therefore seem to deserve attention.

According to the Institute's website <http://www.ciis.edu>, the Institute is an accredited university "that connects the spiritual and practical dimensions of intellectual life." It has about 60 faculty, and about 1000 students typically aged around 30, of whom 75% are female. Tarnas teaches courses in archetypal studies, astrology and esoteric studies, history of Western thought and culture, philosophy, and depth psychology (approaches based on the unconscious and on Freudian psychoanalysis).

In an interview in *The Mountain Astrologer* (Dec 2005/Jan 2006, 45-51), with a preamble from which the above royal-road quote is taken (p.43), Tarnas says *Passion* started out as a history of astrological ideas and ended up as a history of Western world views. *Passion* divides world views broadly into (1) Greek, from 500 BC, where everything reflects fundamentals such as the Good and the Beautiful, and opposites such as light/dark, many personified as gods. (2) Christian, peaking in the Middle Ages around 500-1500, where the church and holy scriptures have absolute authority, and to love Christ is better than all knowledge. (3) Scientific, roughly 1700 onwards, where all effects have causes that can be discovered by proper investigation, and man, not God, is in charge. *Passion* then hints at a coming world view based on "the emergence of a dialectically integrated, participatory consciousness reconnected to the universal" (p.440), but gives no further explanation.

However, in an article in *Astrological Journal* 33(4), 226-232, July/August 1991, the year *Passion* was published, Tarnas gives an explanation. We are peripheral (Copernicus) to a universe that is impersonal (Descartes), and unknowable (Kant), so we feel alienated. But astrologically we are one with the universe and are thus not alienated at all. So astrology provides "a cosmic avenue to a new world view." Indeed, "Only astrology so totally threatens the Bastille of the old regime. It is testable. And every one of us can test it in our own lives -- and, if the evidence proves persuasive, every one of us can glimpse a new universe" (p.232). Remember that statement, for we shall return to it.

Cosmos and Psyche

In his new book Tarnas slowly confirms that *Passion* was hinting at astrology. He sees the modern world as disenchanted, "voided of any spiritual, symbolic, or expressive dimension" (p.20). He believes "that the disenchantment of the modern universe is the direct result of a simplistic epistemology and moral posture spectacularly inadequate to the depths, complexity, and grandeur of the cosmos" (p.40).

Such a world view serves Tarnas's purpose in promoting astrology as an escape from disenchantment. But it is not the world described by people such as Carl Sagan and Richard Dawkins, where science provides the very enchantment that Tarnas wishes to deny. To quote Sagan:

"I maintain there is much more wonder in science than in pseudoscience. And in addition, to whatever measure this term has any meaning, science has the additional virtue, and it is not an inconsiderable one, of being true." (From *The Burden of Skepticism*, in Basil R (ed), *Not Necessarily the New Age: Critical Essays*, Prometheus 1988, pp.361-371)

Nor is it the world described by many secular philosophers who argue that all the meaning we need in life can be found in the way we lead our lives. Even religiously oriented philosophers such as John Cottingham have provided alternatives that avoid Tarnas's assumptions about disenchantment. Indeed, modern journals such as *Science & Spirit* address these very issues, as does Michael Shermer in his recent booklet *The Soul of Science* (see www.skeptic.com). Shermer is a former born-again Christian and now an agnostic (one who sees God-related issues as insoluble). He is also co-founder in 1992

of the Skeptics Society and publisher of their *Skeptic* magazine. In his booklet he asks "Can we find spiritual meaning and purpose in a scientific worldview?" He defines spirituality in the same way as Tarnas does, as a way of being in the world, a sense of one's place in the cosmos, a link with something that extends beyond ourselves. His answer is Yes. He points out that there are many sources of spirituality. Religion may be the most common but it is not the only one. Anything that generates a sense of awe may be a source of spirituality. Science does this very well.

Shermer further illustrates how science can be a source of spirituality in his book *How we believe: The search for God in an age of science* (Freeman, New York 2000), which among other things is based on a survey of 1650 members of the Skeptics Society and a random sample of 960 ordinary Americans. His concluding words are:

"But for me, and not just for me, a world without monsters, ghosts, demons, and gods unfetters the mind to soar to new heights, to think unthinkable thoughts, to imagine the unimaginable, to contemplate infinity and eternity knowing that no one is looking back. ... To share in the sublimity of knowledge generated by other human minds, and perhaps even to make a tiny contribution toward that body of knowledge that will be passed down through the ages -- part of the cumulative wisdom of a single species on a tiny planet orbiting an ordinary star on the remote edge of a not-so-unusual galaxy, itself a member of a cluster of galaxies billions of light years from nowhere, is sublime beyond words. ... Skeptics and scientists cannot experience the numinous? Nonsense. You do not need a spiritual power to experience the spiritual. You do not need to be mystical to appreciate the mystery. Standing beneath a canopy of galaxies, atop a pillar of reworked stone, or inside a transept of holy light, my unencumbered soul was free to love without constraint, free to use my senses to enjoy all the pleasures and endure all the pains that come with such freedom. I was enfranchised for life, emancipated from the bonds of restricting tradition, and unyoked from the rules written for another time in another place for another people. I was now free to try to live up to that exalted moniker -- *Homo sapiens* -- wise man." (pp.237-238)

Unfortunately contrary views such as these are not discussed by Tarnas, so readers are immediately led astray. Instead, both here and in *Passion*, Tarnas argues that science has failed us due to the rise of pollution, social alienation, and so on. Greek slaves and heretics being burned at the stake might not agree.

Jung and synchronicity

Tarnas then proceeds by way of depth psychology, Jung, and synchronicity to astrology, a word not mentioned until page 61. Nor does it appear on the jacket. The mention of Jung and synchronicity seems to be obligatory in any astrology book wishing to appear respectable, but Tarnas (like every other such author) fails to identify the problems that emerge on a careful inspection of Jung's *Collected Works* (the relevant volume is volume 8, 1960) and *Letters* (volume 2, 1976).

For example, Jung defines synchronicity as a meaningful coincidence inexplicable by chance, but he gives no probability calculations to support this view. In fact the probability of experiencing a meaningful coincidence is quite high. Suppose two people compare their cars, jobs, etc. If each theme, eg make of car or type of job, has N categories, eg 10 makes of car and 10 types of job, only 0.35N themes are needed for a 50% chance of at least one coincidence, and 1.5N themes for a 95% chance. Because categories can be multiplied almost indefinitely (car colour, make, age, number of seats,

place of purchase, and so on), as can themes, striking coincidences of one kind or another are almost inevitable.

See Diaconis P and Mosteller R (1989). Methods for studying coincidence, *Journal of the American Statistical Association* 84, 853-861.

So there is no reason to suppose that synchronicity has anything to do with it. Furthermore, we never have time to explain every coincidence, so inevitably some will seem mysterious. Indeed, an important part of our world view lies in knowing what not to bother explaining. Thus we may worry about why our teeth ache but not about why people wear hats. And how coincident is coincident? Jung initially says synchronicity must be simultaneous (1960:850), but later says it can be "more or less simultaneous" or even "not yet existent ... distant in time" (1960:984). Furthermore it depends on the observer having intense emotions during archetypal (ie universal) situations such as birth, marriage, illness, and death.

Jung argues that, because archetypes are not bound by time and space (people dead or unborn can be Great Mothers or Wise Old Men), they are responsible for synchronicity, and "for the most part" there can be no synchronicity without archetypes. He stresses that synchronistic phenomena cannot be evoked on demand (1976:541): "They occur spontaneously ... In the same way, the archetype is not evoked by a conscious act of will; experience shows it is activated, independently of the will, in a psychic situation that needs compensating by an archetype." Such archetypal situations tend to be emergencies and crises (illness, danger to life) so overwhelming that victims "find themselves compelled by fear to utter a fervent prayer: the archetype ... is constellated by their submission and may eventually intervene." In effect this says that archetypes tend to cause noncausality -- an ironic difficulty which caused Jung to retreat into obscurity. As might be expected, synchronicity "is a relatively rare phenomenon" (1960:938n).

Note the problems for astrology: (1) Synchronicity does not require simultaneity whereas astrology does. (2) Synchronicity is facilitated if the chart reader is in the grip of intense crisis-type emotions, but even then it may not appear. (3) Synchronicity arises from the reader, not the chart, so it obviates the need for a correct chart. In other words synchronicity has nothing to do with the supposed relationship *as above, so below* and therefore cannot be relevant to astrology. If it was then every hit in a chart reading would be accompanied by the relevant archetype, requiring the reader to experience intense fear, anger, joy, sorrow, love, hatred, or whatever. No reader or client could stand it.

Noticing astrology

Tarnas tells us that "Like most products of a modern education [he graduated from Harvard], I myself long viewed any form of astrology with automatic skepticism" (p.62). Which argument needs to be seen in the light of surveys that have consistently found this automatic skepticism to be a minority product of American education. Tarnas then noticed that many famous people in history (eg Plato, Aquinas) had supported astrology, apparently without also noticing that many famous people (eg Cicero, Augustine) had rejected it. He also noticed that many new ideas such as "the multidimensional nature of reality", whatever that means, were "not inherently incompatible with the astrological perspective" (p.63), apparently without also noticing that many other new ideas such as those uncovered by research into astrology (see later) were not compatible with it.

But the clincher came when he started looking at the birth charts of himself and others, and at historical events. Like everyone else who does this without controls, he was "deeply impressed by the range and complex precision of the empirical correspondences" (p.65), even though much was "vague, overspecific, or quaintly irrelevant" (p.66). He adds:

"Certainly much astrological theory and practice entirely lacked critical rigor. It seemed to me that considerable waste, misdirection, and even harm occurred as a result of many astrological teachings and consultations. Nevertheless, a certain core of the astrological tradition -- above all, the planetary correspondences with specific archetypal principles, and the importance of major geometrical alignments between the planets -- appeared to have a substantial empirical basis. ... The coincidence between planetary positions and appropriate biographical and psychological phenomena was in general so precise and consistent as to make it altogether impossible for me to regard the intricate patterning as merely the product of chance." (p.66)

Like Jung, Tarnas gives no probability calculations to support his views. Nor does he consider other ways by which apparent coincidences can arise such as biased inference, neglect of hidden persuaders, nonfalsifiability, and retro-fitting after the event. More later on the consequences of this.

The nature of astrology

Tarnas describes his observed correspondences as follows:

"A key to this emerging perspective, I came to realize, was the concept of archetype as developed by Jung ... Only as I more fully appreciated the multidimensional and multivalent nature of archetypes -- their formal coherence and consistency that could give rise to a plurality of meaning and possible manifestation -- did I begin to discern the precise nature of astrological correlations. ... Compared with, for example, the aims and modus operandi of various forms of intuitive divination and clairvoyance, with which astrology in earlier eras was often systematically conjoined, the essential structure of this emerging astrological paradigm appeared to be focused not on the prediction of specific concrete outcomes but rather on the precise discernment of archetypal dynamics and their complex unfolding in time." (p.67)

Finally, after thirty years of looking at charts:

"I have become convinced, after the most painstaking investigation and critical assessment of which I am capable, that there does in fact exist a highly significant -- indeed a pervasive -- correspondence between planetary movements and human affairs, and that the modern assumption to the contrary has been erroneous." (pp.68-69)

As above so below = a new world view

Tarnas dismisses the idea that planets could have physical causes such as those due to radiation or gravitation. Instead he favours the idea of *as above so below* where the universe is: "a fundamentally and irreducibly interconnected whole, informed by creative intelligence and pervaded by patterns of meaning and order that extend through every level, and that are expressed through a constant correspondence between astronomical events and human events." (p.77)

In such a view the planets do not cause anything, they merely indicate, just as a clock indicates time but does not cause it: "It seems that a fundamental new kind of causality must be posited to account for the observed phenomena. ... an archetypal causality that in crucial respects possesses Platonic and Aristotelian characteristics, yet is far more complex, fluid, multivalent, and co-creatively participatory than previous conceptual models -- whether from physics, philosophy, or astrology -- have been able to accommodate." (p.78)

The result was his firm belief that astrology promises "the emergence of a new, genuinely integral world view," one that "can reunite the human and the cosmic, and restore transcendent meaning to both" (p.490).

Archetypes

The archetypes that Tarnas claims to have validated are essentially the principles behind each planetary god as given with minor variations in astrology textbooks, for example *Jupiter expansion*, *Saturn limitation*, *Uranus change*, *Neptune intangibles*, *Pluto intensity*. Unfortunately Tarnas fails to point out some of the problems inherent in the idea of archetypes:

One problem with an archetype is that it cannot be examined directly, only its image, which varies between cultures and between people in the same culture, even though the underlying archetype remains the same. This looseness makes it possible to fit any archetype to almost any image, which is seen by proponents as a strength. For example Marie-Louise von Franz, one of Jung's co-workers, says "If one knows enough mythology one can make a completely consistent web from every great archetype to every other great archetype" (*On Divination and Synchronicity*, Inner City Books, Toronto 1980, p.63). But this is precisely the problem, for if every archetype somehow merges with every other archetype (even opposites such as Jupiter and Saturn merge by virtue of being meaningless without each other, just as day is meaningless unless there is also night), then almost anything can be proven, making the doctrine impossible to falsify.

Another problem is Jung's justification for archetypes in the first place. He writes of patients who, with no obvious knowledge of other cultures, nevertheless had dreams showing striking parallels with myths from other cultures. He concludes that the dreams arose from sources outside of their personal experience, hence the need for archetypes and a collective unconscious. But people may disown their inner happenings (eg "I don't have the brains for that idea") because the happenings can arrive subconsciously and therefore seem (incorrectly) to have an independent existence. So archetypes are not needed to explain the dreams of Jung's patients. Nor are they needed to explain similarities between myths. All cultures face the same basic problems of finding food and shelter, avoiding enemies, raising children, and so on, which means that similarities in their myths are inescapable. Especially when loose imagery is part of the deal.

The practical outcome of these problems will be familiar to any reader of astrology books, and of *Cosmos and Psyche*: Being an archetype requires that its meaning be blurred to cover all possible outcomes until it reads like an entry in Roget's thesaurus. Take *Jupiter expansion* for example. Here is Tarnas's "brief summary" of the Jupiter archetype:

"Jupiter: the principle of expansion, magnitude, growth, elevation, superiority; the capacity and impulse to enlarge and grow, to ascend and progress, to improve and magnify, to incorporate that which is external, to make greater wholes, to inflate; to

experience success, honor, advancement, plenitude, abundance, prodigality, excess, surfeit; the capacity or inclination for magnanimity, optimism, enthusiasm, exuberance, joy, joviality, liberality, breadth of experience, philosophical and cultural aspiration, comprehensiveness and largeness of vision, pride, arrogance, aggrandizement, extravagance; fecundity, fortune, and providence; Zeus, the king of the Olympian gods." (pp.90-91)

Ironically his brief summary for Saturn *limitation* is more than twice as long. Indeed, when pairs or triplets of planets are involved, the resulting collective archetype requires many pages to even briefly describe the possible outcomes. More later on the consequences of this.

The way in which these archetypes work is illustrated by a massively erudite array of examples that with notes occupy more than 400 pages. The examples are drawn from philosophical, religious, literary and scientific sources and involve two kinds of comparisons, namely historical events versus aspects between the outer planets Jupiter through Pluto, and prominent people versus their birth charts. In each case Tarnas explains what the particular archetype means, and then shows how it can be discerned in the events or births that are coincident with it.

Tarnas does not mention that his approach was established in his monograph *Prometheus the Awakener*, written in 1979, where he notes that the accepted principle behind Uranus is more like the mythical Prometheus (who promotes change) than the mythical Ouranos (who resists change). When he looked at charts and events where Uranus was involved, in the same way as he now does in *Cosmos and Psyche* (which includes this early work), he found strong confirmation of the Prometheus archetype. A later version of this monograph work appears in *Astrological Journal* 1989, 31(4) 187-196 and 31(5), 243-250,

Archetypes in historical events

As an example: In Uranus-Pluto cycles the archetype is Pluto *intensity* intensifying Uranus *change*, or alternatively Uranus *change* liberating Pluto *intensity*, indicating radical social change and rebellion against authority. Like any other planetary pair it manifests when the planets are in major aspect to each other, especially the conjunction, square, and opposition. Conjunctions occurred in 1845-1856 (upheavals throughout Europe, women's suffrage, radical socialism, travel breakthroughs eg railroads), and 1960-1972 (women's lib, black civil rights, Mao's Little Red Book, space exploration). Oppositions occurred in 1787-1798 (French Revolution, abolition of slavery, start of feminist movement, continuation of Industrial Revolution), and 1896-1907 (upheavals in America, Boxer rebellion in China, suffragettes in England). It was the close fit and precise timing of these astrological events that seemed to require "a fresh assessment of the ancient astrological vision of the universe, far beyond what conventional modern explanations could provide" (p.204).

Similarly for Saturn-Pluto, where the archetype is Pluto *intensity* intensifying Saturn *limitation*, or alternatively Saturn *limitation* restricting Pluto *intensity*, indicating widespread conservatism and repression. A conjunction occurred in 1913-1916 (World War 1), a square in 1939-1941 (World War 2) and 1954-1957 (Suez crisis), and an opposition in 2000-2004 (New York 9/11). It can manifest as "genocide, ethnocide, and mass killings" (p.217), and as "resolve to reestablish traditional values" (p.227), so you can have it both ways.

Next come Jupiter-Uranus (radical change and creativity), Uranus-Neptune (spiritual change as in 1913 when Steiner founded anthroposophy), and Saturn-Neptune (materialistic Saturn conflicts with spiritual Neptune) indicating either the enlightening of

materialism or the dimming of spirituality, so again you can have it both ways. A Saturn-Neptune conjunction occurred in 2005 (Asian tsunami, New Orleans flooding), or given the traditional connection of Neptune with the sea, "death caused by water" (p.471).

Archetypes in birth charts

Everyone has transitting Uranus opposition their natal Uranus around ages 40-44, indicating sudden changes or bursts of creativity, for example Descartes published his *Discourse on Method*, Newton published his *Principia*, and Freud began writing his *The Interpretation of Dreams* (p.112). Similarly everyone has transitting Saturn conjunct their natal Saturn around ages 28-30, indicating a more practical turn of events such as a major career appointment (Kepler appointed Imperial Mathematician), a first major achievement (Marie Curie discovers radium), entering one's mature calling (Mark Twain publishes his first work), meeting a mentor (Jung begins correspondence with Freud), or simply moving house (Leonardo moves to Milan) (pp.120-121).

Tarnas considers the possibility that such events might be expected anyway at such ages. But the exactness of the timing, and the correspondence with the planet transitted (thus Uranus transitting natal Venus differs from Uranus transitting natal Mars), leads him to discount that possibility (p.114). He adds "I have seldom researched a biography for which I had sufficiently detailed records of the major inner and outer events in a person's life where I did not find the above patterning readily visible" (p.125). Which seems unremarkable given the diversity of archetypes and of admissible events.

Archetypes are also shown by aspects between planets in the birth chart. People with Sun conjunct Uranus (eg the freedom-loving poet Shelley) tended to show archetypal Uranus traits and those with Sun conjunct Saturn (eg the pessimistic philosopher Schopenhauer) tended to show archetypal Saturn traits. However, Tarnas stresses that "any given archetypal complex ... could be embodied in an extraordinary diversity of ways ... Not every person with a Sun-Uranus conjunction precisely resembles Shelley, nor are all those born with Sun-Saturn conjunctions just like Schopenhauer" (p.128).

Nevertheless, despite this diversity, Tarnas could always recognise the underlying archetype. For example a Sun-Uranus aspect might describe a "leading feminist pioneer or a free-wandering irresponsible missing parent, a major scientific innovator or a harmless eccentric, a celebrated cultural liberator or a lifelong juvenile delinquent" (p.128), while a Sun-Saturn aspect might describe a "person noted for maturity of judgment, discipline, self-reliance, and comfort with solitude, or in a person prone to depression, loneliness, and rigidity" (p.128). Astrology showed the archetypes but not the specific way they would manifest. Therefore "the expression of a specific archetypal complex in a virtually limitless variety of forms is, I believe, not only characteristic of all astrological correspondence but essential to it" (p.128). In other words it is like being sure of seeing faces in clouds, but never which face nor which cloud. (In case you wondered, the closest aspect in Tarnas's own chart is Sun trine Uranus.)

Salvation by astrology

Tarnas is confident that his findings are valid, and that astrology provides "a comprehensive conceptual structure that makes intelligible the complexities of human experience in a manner unmatched by any other approach I have encountered" (p.133). Astrology "can play a crucial role in the positive unfolding of our collective future" (p.489). It saves us from disenchantment and promises "the emergence of a new, genuinely integral world view", one that "can reunite the human and the cosmic, and restore transcendent meaning to both" (p.490).

Tarnas dismisses skeptical views. For example he notes that astrology's bad press is due to numerous factors including newspaper horoscopes, fatalistic implications, and skeptics "who do not deeply examine what they zealously reject" (p.138). Astrology's acceptance requires "a flexible combination of critical questioning, freedom from a predisposition of closed skepticism, and patience" (p.459), especially as "The fundamental skepticism of the modern and postmodern mind ... has become a permanently confining end in itself, an armored state of intellectual constraint and spiritual unfulfillment" (p.486). He is dismayed that skeptics "assume the entire universe is ultimately a soulless void" (p.40) when astrology so clearly indicates the opposite.

Two comments here. First, by definition no true skeptic assumes anything in advance. If they do view the universe as a soulless void, it is the consequence of empirical tests subject to disconfirmation by further tests or by critical philosophical review. Second, the implication that an open mind and proper investigation will automatically support Tarnas's views is demonstrably wrong.

Proper investigation

In 1974 it was precisely with this attitude that Arthur Mather and I, with the help of over fifty relevant experts, began a critical review of the astrological and related literature. Like Tarnas we had observed striking correspondences with birth charts and were convinced that it deserved scientific investigation. Eventually we managed to summarise material from 310 astrology books (out of over 1000 consulted), 410 astrology journal articles, and 300 scientific works. The result was *Recent Advances in Natal Astrology: A Critical Review 1900-1976*, a book of 608 pages and 1020 references published in 1978 and now long out of print (and just as well because it dated very quickly, see *Origins* under the Historical section on this website).

We concluded: "The picture emerging suggests that astrology works, but seldom in the way or to the extent that it is said to work" (p.7). We uncovered many reasons such as the Barnum effect for thinking we might be fooling ourselves into seeing validity where none existed. Even events (which are about as straightforward as you can get because they either happen or don't happen) proved problematic. For example Chester Kemp, an astrologer renowned for precise working, compared the chart of a fictitious person (CS Forester's Horatio Hornblower) with more than 30 fictitious major events, all of which fitted with precision and striking symbolism. Nevertheless we noted that "charts are often so exactly right in such unlikely ways that coincidence or gullibility would seem to be ruled out" (p.25). There were also a number of seemingly positive findings such as those of Vernon Clark (matching tests), John Nelson (radio quality), John Addey (harmonics), and Michel Gauquelin (planetary effects) that warranted further investigation. Much was uncertain but the door on astrology was far from being closed.

Thus far our views were essentially the same as Tarnas's. But they changed once we (and others) looked more closely at the ways we might be fooling ourselves. We also checked the seemingly positive findings using computers and meta-analytic techniques, none of which were available in the 1970s. This subsequent work occupied us for nearly 30 years. In effect we applied the procedures and precautions that have long been accepted in experimental psychology and which Tarnas has so far failed to apply.

Today the uncertainties about astrology have mostly disappeared and the door is much closer to being closed. The new procedures and precautions uncovered only artifacts (non-astrological effects) that we and others had mistakenly seen as astrological effects. Hundreds of rigorous tests found not a single effect size commensurate with astrological

claims. As a result we had to change our previous positive view. As Rudolf Smit shows in his autobiographical *Astrology my passion* on this website under Applied Astrology, a change of view can be traumatic for believers in astrology. But the chips fall where they may. It is now easy to see huge flaws in Tarnas's book.

Huge flaws

Tarnas's thirty-year labour and familiarity with diverse sources is impressive, and his aims are clearly noble. But others in the field with equally noble aims have laboured just as long and have produced just as impressive a volume of findings (Witte, Ebertin, Barbault, Carter, Addey, Harvey, Lewis, Church of Light, to name just a few), using the same looking-at-charts approach but with conclusions that often conflict with Tarnas's. For example Charles Carter, the leading British astrologer of his time, did not agree that astrology can give only archetypal results, just as his successor John Addey did not agree that astrology is untestable by science. My point is not whether these views are right or wrong but that Tarnas's book fails to note that he is on a well-travelled path, so it gives the wrong impression that he is some sort of pioneer.

For example, Tarnas tells us that he carefully read through many astrology books including *Mundane Astrology* by Michael Baigent, Nick Campion and Charles Harvey (Aquarian 1984, updated 1992), but he does not tell us that this work comprehensively sets out the links he claims to have discovered, and more. The above authors also identify the real pioneer in this field, whose name and work are not mentioned by Tarnas: "the resurrection and systematic reconstruction of mundane astrology on a methodical basis is due almost entirely to the industries of one man, Andre Barbault ... [who since the 1940s] saw the absolute necessity of continuously monitoring methods and approaches by putting them to the test of published prophecy" (1984 pp.167-168). They add that an analysis of Barbault's predictions for 1965, which included the Algerian war, by Jacques Reverchon in his self-published *Valeur des Jugements et Pronostics Astrologiques* (1971) found them to be characterised by vague generalities, hazy language, and a level of accuracy no better than that achieved by informed guessing: "what most surely appears from this analysis is the perfect inanity of the astrological undertaking ... what was announced did not happen, what happened was not announced" (1971 p.13). As shown below, similar wrong predictions by other astrologers are not hard to find:

HITLER DOOMED, WILL FALL NEXT YEAR.

Says Horoscope Reader.

Upheaval In Central Europe,
But No War.

(From a Special Correspondent.
By Air Mail).

LONDON, December 3.

Next year will see the eclipse of Hitler, according to a leading horoscope reader who prophesied the abdication of King Edward VIII. and the accession of King George VI. The prophet is the Hon. Ralph Shirley, a former editor of the old quarterly review known as "The Horoscope."

In the third issue of his paper, 26 years ago, was published the horoscope of Prince Albert, then a child, now King. It was stated that "the boy will be extraordinarily lucky and will reach in due time a higher sphere than that to which he was born."

Forecasting the doom of Hitler he declared this week: "Hitler will, I am convinced, be right out of the picture after next summer. Then the outlook will be brighter. Watch the summer round about August in connection with Hitler. I think there is some upheaval coming in Central Europe. We may have serious cause for anxiety, before then."

"But I do not believe in any repetition of the Great War, but menace of war I daresay and fighting in Europe and popular riots."

Wrong prediction from the *North Queensland Register* of 24 December 1938. The child Prince Albert was later King George VI (1845-1952). Great War = World War I. Ralph Shirley was also editor of *The Occult Review*.

At the very least we deserve a survey of previous work and the reasons why we should believe Tarnas rather than contrary views.

Similarly Tarnas is not the first to categorise historical events. For example Bernard Grun's thick book *The Timetables of History: A horizontal linkage of people and events 4500 BC to present* (Simon & Schuster NY 1991) lists notable events for each year in seven categories -- History-Politics, Literature-Theatre, Religion-Philosophy-Learning, Visual Arts, Music, Science-Technology, and Daily Life. So almost at a glance the reader can see what is happening and when.

More distressing is Tarnas's failure to refer to the large body of research findings already mentioned, some of which (like the findings on inferential and cognitive biases) could hardly be more relevant, see later. The nearest he gets is a brief mention of Gauquelin's planetary effects for eminent professionals (pp.75-76) with no hint of Gauquelin's repeated failure to find effects for planets beyond Saturn or for other chart factors, plus an even briefer mention on page 501 that Tarnas has consulted the astrological research journal *Correlation* from 1976, which is curious because it did not begin until 1981.

Interestingly, Tarnas's belief seems to receive academic support from Roy Willis and Patrick Curry in their 2004 book *Astrology, Science and Culture* (Curry teaches graduate astrology courses focusing on cultural astronomy at Bath Spa University College in England). Like Tarnas they argue that our disenchanted world can be saved by

astrology. But contrary to Tarnas the astrology that will save us is *divinatory* astrology, which Tarnas sees as an "unexamined (and often problematic) conflation of ... archetypal insight and concrete prediction" (p.502), a pseudo-astrology dependent on external intuition. (See this website under Book Reviews for a review of Willis and Curry.)

Deep trouble

Unfortunately Tarnas dismisses statistical studies as "methodologically inadequate for entering into the archetypal frame of reference central to the astrological tradition" (p.76), which lands him in deep trouble. Consider Tarnas's approach to historical events. He looks at the astrological interpretation or "archetypal dynamics" of major aspects between the five outer planets using an orb (permissible inexactness) of 15-20 degrees on either side (p.148), and then at concurrent historical events. And vice versa. If correspondences are found he concludes that astrology is proven.

(Interestingly. the astrologer Marjorie Orr, in her book *The Astrological History of the World*, Vega, London 2002, uses the same approach as Tarnas and finds the same correspondences, but considers only conjunctions with orbs of a few degrees.)

Now, unlike Tarnas, apply some arithmetic. Among five outer planets there are ten possible pairs, of which Tarnas considers six. With his orbs, and regardless of the historical event chosen from an almost unlimited supply, there will nearly always be several pairs in major aspect to compare it with. And vice versa. More specifically, it can be shown that among six pairs with an orb of 15 degrees, at least two pairs will exist 98% of the time and three pairs 90% of the time. Among ten pairs with an orb of 20 degrees, and allowing for overlap, at least five pairs will exist 99% of the time and six pairs 95% of the time. Since a whole pageful of words may be insufficient to describe the archetypal possibilities of each pair, finding a correspondence in all this mess will be even easier than finding faces in clouds, and just as meaningful. With so much going on up there, one wonders how the Dark Ages managed to be so Dark.

Similar problems arise when Tarnas looks at birth charts, where the orbs he uses (5 degrees for transits and rather more for natal aspects) would be seen by most astrologers as overly large, if only because large orbs create too many factors for synthesis. Which leads to an even worse sin: Apart from rarely giving the birth chart or even the birth data (the "trust me" syndrome), Tarnas's chart interpretations routinely break the #1 Golden Rule of Astrology, perhaps the only rule that astrologers have ever agreed on, namely *no chart factor shall be judged in isolation*. Only the whole chart with nothing left out can mean anything, just as we cannot extract tomato from a pizza and conclude it is tomato pie. But Tarnas rarely looks at the whole chart. Astrologers sensitive to standards in astrological writing might well reject his book out of hand.

Tarnas stresses that "astrology is not concretely predictive but, rather, *archetypally* predictive ... focused not on the prediction of specific concrete outcomes but rather on the precise discernment of archetypal dynamics and their complex unfolding in time" (p.67, his emphasis). (Tarnas does not let on that millions of Eastern astrologers might disagree with him.) Thus a strong Mars does not indicate bullying or trading in knives but only the "archetypal dynamics" of Mars (energy, assertiveness) whose precise nature can be seen only after the event. Since we all have to be energetic and assertive at various times just to survive, a positive match is guaranteed. Why be disenchanted when you can have nonfalsifiability?

Tarnas might of course see the above as yet more evidence for his claim that astrology "presents an epistemological challenge that transcends the competence of quantitative testing" (p.463). But recall his claim in the 1991 *Astrological Journal* cited above, that astrology "is testable. And every one of us can test it." Tarnas evidently wants it both ways. So let us look a little closer.

Need for controls

Recall that Tarnas considers only positive cases. But as every first-year psychology student knows, positive cases do not necessarily indicate a correspondence. The correlation between John Nelson's astrology-like forecasts of shortwave radio quality and observed quality was a negligible $r = 0.01$, but by counting positive cases he got an apparent hit rate of 93%, which for thirty years led him to promote the wrong conclusion. So we need to know if Tarnas's positive cases can also be found for *control* events and *control* birth charts. If so, we conclude that no correspondence exists unless more rigorous tests show otherwise. But Tarnas does not use controls or even hint at their importance in drawing conclusions, let alone weighty conclusions about world views and the future of mankind, despite being helped by "more than thirty trusted colleagues ... in shaping and refining the final text" (p.545). Such an abuse of elementary reasoning might be forgiven in a newspaper horoscope but not in a Penguin Viking book by a professor of philosophy helped by thirty trusted colleagues.

As it happens such controls have already been applied in astrology, either inadvertently, as when astrologers unknowingly use the wrong birth chart, or deliberately, in the same way that psychologist Ray Hyman famously gave reversed indications in his palmistry readings. The results show that wrong charts match people and events just as well as right charts. Which is exactly what we would predict from the ambiguity of the astrological symbolism and the *cherchez-la-correspondance* way in which it is applied by astrologers including Tarnas. Dozens of more rigorous tests where astrologers match birth charts to case histories including events, or where people try to pick their own chart reading, both under blind conditions, show when meta-analysed no evidence to support Tarnas's claims.

See Hyman R (1977). Cold reading: How to convince strangers that you know all about them. *The Zetetic* (now *Skeptical Inquirer*), 1(2), 18-37. For an example of reversed readings in astrology, see Dean G (1987). Does astrology need to be true? Part 2. *Skeptical Inquirer* 11(3), 257-273. For examples on this website of perfect fits from wrong charts see *Effect sizes* under Doing Scientific Research.

In fact tests have found that astrologers do not usefully agree on what a birth chart means in the first place. Thus the mean agreement between astrologers in 28 studies involving a total of 559 astrologers reading a total of 762 birth charts was a negligible $r = 0.10$, whereas the minimum agreement generally accepted by psychologists for procedures applied to individuals (as astrology is) is around $r = 0.80$, where perfect agreement is $r = 1.00$. Such results are especially significant here because tests of agreement require no assumptions about validity (so the usual quibbles about birth data accuracy do not apply), and because they are ideally suited to the "archetypal frame of reference" that Tarnas claims is not possible to test. Surveys of the scientific evidence for and against astrology, and of the issues they raise, can be found elsewhere on this website.

In short, there are recognised ways of analysing Tarnas's kind of data for the correlations he claims to have found, but he ignores them in favour of ways known to give misleading results. So there is good reason to dismiss Tarnas's conclusions until such time as he adopts the proper procedures and precautions.

In his interview Tarnas says his courses and seminars in archetypal astrology "have been extraordinarily popular with the students and have influenced the rest of their studies in psychology, philosophy, or cosmology," which shows how "astrology represents an intellectually rich and rigorous mode of inquiry" (p.51). But if his courses are as unrigorous as his book, their popularity is unsurprising. You need only watch American TV to see how easily enchantment beats critical thinking.

Other reviews

From December 2005 through May 2006 a total of two editorial reviews and 23 customer reviews of *Cosmos and Psyche* had appeared on www.amazon.com. The editorial reviews were generally guarded: "a tough sell with the more scientifically hardheaded" (*Publishers Weekly*), "heavy going ... a book for those who are as intrigued by and as convinced of astrology's validity as Tarnas" (*Booklist*).

Of the 23 customer reviews, three were negative: "pure idiocy, boring, bailout [ie nonfalsifiable] conceptions." The rest were positive: "compellingly rational, stunning patterns of significance, very well researched, magnificent, exciting and brilliantly woven, one of the greatest books of all time, breaks new ground, many new insights, a must read, ahead of its time, changed how I see the world, exciting and amazing, a tour de force, makes compelling sense, a masterpiece, a breakthrough, surpasses all of my expectations, a scientific triumph, challenging and mind-expanding, stunning visionary history." The reviews by astrologers were especially positive, with comments like "the most important book about astrology in decades (maybe centuries)" and "has made me again proud to call myself an astrologer."

The above reviews all have two things in common. (1) They seem unfamiliar with the wealth of research into astrology that now exists, which means they are arguing from positions of ignorance. (2) They mistake Tarnas's impressive embrace of historical events as an impressive way of analysing them, when in fact (as pointed out above) the analysis is entirely wanting. No matter how impressive the data, a faulty analysis is still a faulty analysis. If Tarnas wishes to make a point then he has to analyse his data properly. It is as simple as that.

Reader unfriendliness

There is one feature of Tarnas's book that I have yet to mention, namely its unrelenting reader-unfriendliness, which is also mentioned in some of the above reviews (eg "slow to read and digest ... lots of big words"). Despite his huge erudition, Tarnas seems incapable of writing concisely or vigorously, or of organising his material coherently. His points drown in torrents of long words that induce mental paralysis and a strong disinclination to read further. Indeed, there seems to be nothing so concrete that Tarnas cannot make vague and abstract.

For example Tarnas uses nearly forty chapter headings for his planetary results without ever mentioning which planets are involved, leaving you to struggle with abstractions such as "Awakenings of the Dionysian" and "Great Heights and Shadows" (are you any the wiser?). The notes for each of his eight parts start from scratch, so there are always up to eight notes with the same number, but no differentiation appears in the notes section other than the part heading, which appears only once and never in the text headers. Since the notes occupy 41 pages of fine print, don't expect to find a particular note in a hurry. The index is equally frustrating, with for example twenty undifferentiated page references to Marx or Jung, and no entry for important items such as orbs or his tables showing dates of outer-planet aspects. There is no bibliography or

list of references, only a list of sources for Tarnas's more than 200 literary quotes ordered by page number.

It needn't be like this. Books such as Dean Simonton's *Psychology, Science, and History* (1990) on quantifying historical events, and Frank Sulloway's *Born to Rebel* (1996) on creative lives, deal with much the same imponderables as Tarnas does, and with even larger databases. Yet they are highly readable (indeed hard to put down) and filled with controls and effect sizes every inch of the way. If Simonton and Sulloway can do it, we should demand nothing less of Tarnas.

Conclusion

So in the end what can be said about Tarnas's turgid book? According to previews on the jacket, it "shatters our cosmological assumptions ... awakens us to a living universe ... eloquent, compelling ... will still be read two hundred years from now ... is majestic, sweeping and profound." But once the noise is removed the flaws become obvious and the case falls apart. Astrology may still have a place in society as a means of helping therapy by conversation. But unless you see the combination of paralysing unreadability, inferential incompetence, and unfounded conclusions as a virtue, give this book a miss.

Acknowledgement

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Self-Defence / Case for Astrology

Two militant books self-destruct

Geoffrey Dean

An expanded version of a book review in *Skeptical Inquirer* 1993, 18, 42-49, and (in a Dutch translation by Wim van Dam) *Astrologie in Onderzoek* 1993, 8(1), 48-53. In a postscript to the Dutch version, van Dam notes his wholehearted agreement with most of the review, except on four points in the second half, to which Dean then responds. These exchanges are included below, in smaller type, as they arise.

Astrology's Complete Book of Self-Defence. By Robert Parry. Quantum (an imprint of Foulsham), Slough UK 1990. 224 pages. Paper, £7.95.

The Case for Astrology. By John Anthony West. Viking Penguin, 1991. 527 pages. Cloth, £20.00 \$US22.95 \$Can29.95; paper (1992), £8.99 \$Can15.99.

Abstract -- In these two books a pro-astrology author strikes back at non-believers. The blurb on Parry's book promises "a carefully argued defence against all possible attack" based on "great depth of research". The blurb on West's hardcover book says "Sceptics will never lightly dismiss astrology again", while on the paperback version Colin Wilson calls it "The most serious and important study of astrology ever written". The implication is that convincing new evidence in support of astrology will be revealed. What actually happens is the selective reporting of dated studies with a relentless blind eye for crucial issues. Parry identifies 12 main attacks on astrology (eg sun sign astrology is nonsense, tropical signs ignore precession), of which 7 are also identified by West, who adds 5 more (eg the sun cannot affect our consciousness, astrology cannot predict mass deaths). Both authors attempt to refute these attacks with varying degrees of success. But the real problems arise when the authors cite evidence to allow astrology to fight back. Parry's evidence is seriously out of date (much had been overturned even when it was written), and West

deliberately suppresses negative evidence because the details "do not really concern us". As a result both books perpetuate confusion and error, and neither book contributes towards a balanced assessment of astrology. 13 references.

In these two books a pro-astrology author strikes back at non-believers. The blurb on Robert Parry's book, *Astrology's Complete Book of Self-Defence*, promises "a carefully argued defence against all possible attack" based on "great depth of research". The dustjacket on John Anthony West's hardcover *The Case for Astrology* says "Sceptics will never lightly dismiss astrology again", while on the paperback version Colin Wilson calls it "The most serious and important study of astrology ever written". The implication is that convincing new evidence in support of astrology will be revealed. What actually happens is the selective reporting of dated studies with a relentless blind eye for crucial issues.

Astrology's Complete Book of Self-Defence (Parry)

In the first book, Parry aims to provide believers with a defence against attack by critics. The first of three parts (42 pages) looks briefly at astrology's popularity, techniques, history, and types of astrologer (pop, hobbyist, semi-pro, pro). Part 2 (97 pages) is the defence proper.

Four types of enemy

Parry first identifies four types of enemy (narrow, emotional, logical, aggressive), which correspond to the four elements Earth, Water, Air, Fire. If they turn out to be bullies you should block their arguments with respectively reason ("at least we can agree to disagree"), feelings ("this is unnecessarily distressing for me"), wit ("if I need a comedian I'll give you a call"), and boredom ("is there anything behind your charisma?"). If this fails you should respectively run, exit hurt, exit with repartee, and laugh it off. Informed impartial skeptics seem not to exist in Parry's experience, which if he follows his own advice is understandable.

The 12 main attacks

Then comes what Parry identifies as the 12 main attacks on astrology. These attacks, with Parry's defence in parentheses and my occasional comment in italics, are as follows:

Sun sign astrology is nonsense (agreed, it is not real astrology but journalism). Free will makes astrology nonfalsifiable (free will is part of astrological philosophy) *evades the issue*. Astrology is heathen superstition (many astrologers are practising Christians). Astrology is old-fashioned and irrelevant (it is widespread and popular). Few accurate world predictions are made (many are successful) *meaningless because no allowance for chance hits*. People born at the same moment in time do not lead similar lives (some do) *ditto*. Tropical signs ignore precession (precession is not important) *Eastern astrologers might disagree*. Should be moment of conception (but the birth moment works) *contradicted by controlled studies, see later*. Earth-centred views are out of date (they are merely a convenience). Astrologers ignore new planets (they do not). Gauquelin says induction ruins astrology (most astrologers disagree). Planets cannot affect us (extraterrestrial influences exist) *see later*.

Advice to astrologers

Part 3 (41 pages) offers advice to astrologers for assuring astrology's future. They should avoid weirdness, extremism, testimonies, ego-tripping, and reductionist

statistics. And they should always be lawful, informed and humble. This admirable message is then negated by Parry's closing advice, namely they should never doubt the worth of astrology, and walk in pride. The book ends with references, glossary, addresses, reading list, and index.

Empirical evidence

What of the empirical evidence for astrological claims? Parry first cites indirect evidence such as the Piccardi effect and alleged lunar effects on oysters. (But lunar effect on oysters may be illusory, see Quincey 1993 and Enright 1993; both strongly dispute the alleged effect.) Parry argues that such extraterrestrial influences prove that astrology is credible, which is like arguing that money exists therefore everyone is rich. As pointed out by Kelly et al (1989) in their response to pro-astrology arguments, it is a huge jump from such influences to the claims of astrologers. If there really was a connection then we would expect planets to have added to our understanding of living organisms in the same way that say genes have. But they have not.

Parry then cites direct evidence, mainly Nelson (forecasting shortwave radio propagation), Gauquelin (planetary links with occupation and heredity), and matching tests of astrologers (eg pick the murderer's birthchart). This evidence is seriously out of date, and Parry seems unaware that much of it has been overturned by recent studies. Furthermore Gauquelin's negative results (no support for signs, aspects and transits) are ignored, and the support from his positive results is overstated -- astrology does not predict that only half the planets work for eminent people and none for ordinary people, it predicts weakness not strength for the favoured positions, and the effect sizes are trivial. In short, Parry's evidence for astrology is no evidence at all.

Fatal problems

Worse still, having promised "a carefully argued defence against all possible attack", Parry's book ignores two problems that effectively pull the plug on any defence. The first is that astrological claims (albeit not the Gauquelin effect) are readily explained by the perceptual, inferential and small-sample biases to which people in general, and astrologers in particular, are abundantly prone, see Dean et al (1992). For example, knowing that Scorpios are supposed to be secretive, our observations will invariably confirm it, simply because everyone is secretive at times and we are disinclined to test non-Scorpios. The second is that, even if the first be disregarded, the effect sizes and reliabilities of astrologers' judgements are still trivial, see Dean (1987). So even if we grant that astrology is not an illusion, it still behaves like one. Direct comparisons of effect size show that orthodox techniques of predicting personality, IQ, and work performance are far superior to astrology, see Dean (1992).

To put it another way, as pointed out for parapsychology by Glymour (1987), no sensible person will opt for a paranormal explanation of tiny effect sizes. Tiny changes in experimental outcomes can be due to a huge number of ordinary causes, most of them impractical to control even if known. So a sensible person will say that, as long as the effect is tiny, it is more probably due to some combination of ordinary causes. For astrology to be plausible what is needed is not tiny effect sizes but Big Stuff that nobody can ignore, like guessing sun signs with perfect accuracy all the time.

Van Dam feels my point about Big Stuff is mistaken, because even very good physicians do not demonstrate "perfect accuracy all the time", so why require it of astrology? Look at it this way. No doubt physicians have a poor record in some areas like diagnosing rare diseases. But in other areas like diagnosing a broken leg or low blood sugar they do demonstrate good accuracy. And it is the latter cases, not the former, that compels recognition and respect by

skeptics. I am suggesting that the same should apply to astrology. Nevertheless, perhaps my point would be more acceptable if Big Stuff was exemplified as "like guessing sun signs with near-perfect accuracy".

Astrology means different things

There is a further problem with Parry's book. An adequate defence of astrology must first recognise that astrology can be broadly viewed either as art, religion, or science. Consequently it means different things to different people. As art, the symbolism of astrology can greatly enrich poetry, paintings, and plays. As religion it can meet the spiritual needs of believers. As science it can be viewed in two ways, (1) as a source of presumed *benefit*, eg by providing a focus for conversation or by meeting our need to conform and yet feel unique, and (2) as a source of presumed *knowledge*, eg "Moon-Saturn indicates early problems in childhood with your mother". The point is, only the last qualifies for the kind of defence involved here. Let me explain.

If I am freaked out by this painting of Taurus at bay, or by Shakespeare's use of astrological symbolism, or by zodiacal iconography inside a church, or if I am spiritually uplifted by the writings of Dane Rudhyar, or if I gain insight into my behaviour by studying horoscopes, or if I find an especial closeness to ladies with Ophiucus rising, or if I find it more rewarding to circulate at cocktail parties saying *what's your sign?* rather than *hi*, then these things would be generally uncontroversial and hardly deserving of a defence, if only because they involve my personal values. An attack on scientific grounds, say by quoting controlled studies, would be useless because to me it would not address anything that matters. But quite the reverse applies if I claim that astrology is a source of knowledge, and that the sky when you were born will indicate your destiny, because scientifically there seems to be no way it could work *to the required extent*. (Of course we cannot deny the possibility of a finite effect, just as we cannot deny the possibility that surfing in Hawaii affects the waves in Australia, but my claim here is for an effect that is *usefully large*.) Such a claim requires a rigorous defence.

To be sure, my values are not immune from criticism, any more than art is immune from literary and artistic criticism, but the criticism is of a different kind from that appropriate to astrology as knowledge -- the first involves values, the second validity. It is one thing to prefer apples to oranges, and quite another to say they fall upwards. In Parry's book these distinctions are not made. Which did not stop a reviewer in the UK *Astrological Journal* (1991:208) calling it "a real godsend".

The Case for Astrology (West)

The same defects apply to the second book, *The Case for Astrology* by John Anthony West, which is a rewrite of the original 1970 edition co-authored with the late Jan Toonder. The original edition is historically important because, back in 1970, based on the then-emerging research, skeptics could reasonably believe that some parts of astrology might have substance. In the new edition West claims that the case has strengthened, albeit with a new twist -- this time he is arguing the case for *astrology*, not the case for *astrologers*, on the grounds that astrologers rarely perform better than chance whereas the evidence for astrological effects (extraterrestrial influences, Gauquelin effects) is substantial. More on this later.

Ancient origins of astrology

The first of six parts (128 pages) looks at the origins of astrology and is largely irrelevant. Most of it is a repeat from the original 1970 edition, but a section on ancient astrology is new. Here West cites the Egyptologist Charles Muses, who suggests that

astrology existed before ancient Egypt (and thus long before its accepted origin in Babylon), where it was used not for prediction but to time important ceremonies. In other words the original function of astrology was to assist working with the gods, and "astrologically determined periods were opportunities to tune in to personally resonant moments" p.66. A modern counterpart might be an astrologer who declares "today there is a lot of Mars about."

This view of astrology's ancient origins is provocatively in tune with modern resonance theories such as those of Dr Percy Seymour. However, it rests crucially on Muses's interpretation of a bas relief from the Second Shrine of Tutankhamen, shown in West's Figure 8 (a standing figure in profile), which seems to show rays of energy from the stars influencing the mind of man. West comments "Taken by itself, this little relief is enough to prove astrology existed in Egypt" p.57. However, when the original relief in the Cairo Museum was inspected on my behalf by Roz Park, an astrologer and student Egyptologist, she found that a crucial element had been omitted from Figure 8, namely the face (which appears clean-shaven) should have had a curved beard. A curved beard indicates that the person is dead. So a more reasonable interpretation is not the arrival of energy but the departure of the soul to the imperishable stars. In which case the relief proves nothing about the existence of astrology in ancient Egypt.

Popular objections and rebuttals

Part 2 (86 pages) replies to popular objections and includes long rebuttals of Culver & Ianna's *Gemini Syndrome* and Bok & Jerome's *Objections to Astrology*. Here crooked thinking has a field day. West notes how C&I stress that "no bit of established knowledge ... has come about in any other way but through the scientific method", and counters that truly important knowledge (the difference between cats and dogs, the dangers of hot stoves) comes not from science but from experience. Furthermore there are many kinds of truth (of art, of philosophy, of love) that cannot be reduced to the scientific approach. But this misses the point. Human judgement skills are perfectly adequate for recognising hot stoves. But once the task becomes complex, as in judging the validity of astrology readings, we take on board so many biases that our conclusions can be totally wrong (Dean 1987, Dean et al 1992). No amount of artistic truth would help here, because only the scientific approach is concerned with avoiding such biases.

West then takes C&I's statement that science "is fair and objective, even if scientists are not" p.160, and says it "may well be among the silliest statements ever made by human beings. It is like saying justice is impartial, even though judges are corrupt" p.161. It is also like saying astrology works even if astrologers perform no better than chance, which is West's rationale for his entire book. So by his own argument his book could not be sillier. Why did he bother?

Van Dam objects that I make a false analogy between science being "objective" and astrology "working". However, C&I's statement continues with "it [science] transcends bias and personal opinion ... and produces evidence for anyone to see and judge" (West p.160). So the statements being compared in my analogy are as follows:

- Evidence for science is substantial and does not depend on the quality of scientists (C&I's statement).
- Evidence for astrology is substantial and does not depend on the quality of astrologers (West's rationale).

I hope readers will consider this to be a fair analogy. In passing, van Dam feels I should have given an opinion on C&I's statement. My opinion is that their statement seems uncontroversial.

Double standards

Similar shootings-in-the-foot follow. "When astrology is at issue, ... or any other subject that challenges the spiritually flat inner world of the rationalist, the scientific method is drafted into service as a means of preserving dogma, not as a means for discovering truth" p.161. Apart from being wrong, this point is conveniently forgotten when the scientific method is later recruited in support of the Gauquelin results, these being "the single body of evidence that stands as scientific confirmation of astrology's most basic premise" p.313. Again, when scientists investigate astrology, the results are worthless because "Only those data are carefully examined which enforce the preconceived position" p.161. No matter that this is precisely West's own approach. More on this later.

Having concluded that "*The Gemini Syndrome* is not science", West then argues that, because people are moved by astrology in much the same way as they are moved by a Mozart flute solo whose significance is beyond scientific measurement (not true, see Valentine 1962), the whole application of science to astrology is invalid. No matter that this instantly disallows his later reliance on the Gauquelin results as proof of astrology -- the point is that it absolves West from examining C&I's results in detail, and from the nitty gritty of deciding whether a person fits his own chart better than a control. If astrologers, like composers, made no claim of a link between their work and external reality, then West's argument would be valid. But they do, and it isn't. The rebuttal of Bok & Jerome is in a similar inept vein.

12 popular objections

West then answers 12 popular objections to astrology, of which 7 are also in Parry's book (the final 7 listed by me earlier). The other 5, with West's answers in parentheses and my occasional comment in italics, are as follows:

The sun is merely an incandescence with no direct effect on our consciousness (maybe, but it is more scientific to assume that consciousness is universal and is thus possessed by the sun) *begs the question*. Fraternal and identical twins should be alike but they are not (a legitimate problem, but then science itself is not without anomalies, also it applies only to the interpretation and becomes serious only if interpretation is a science, which it is not) *evades the issue*. Astrology cannot predict mass deaths (does not deny that an individual astrologer can) *like who?*. Births at high latitudes have distorted houses (houses are not essential). Tests of horoscope factors are negative (does not deny that better tests may be positive) *like what?*

Speculation in lieu of evidence is not the only problem in this section. The text is frequently unbelievable, for example "science cannot prove a difference between Spaniards and Swedes" p.215 (try giving them a test in Swedish). And having assured us that "there is no major objection to the astrological premise or practice that goes unanswered or unaddressed" p.11, West ignores the same crucial issues and distinctions that were ignored by Parry. The result is the same needless confusion that can only perpetuate the shouting match between astrologers and critics. Surely the case for astrology deserves better than this?

Evidence for astrology

Part 3 (168 pages) looks at the evidence for astrology. Just over half is devoted to the Gauquelin work, including an account of the CSICOP involvement (with embarrassing examples of scientists refusing to recognise unwelcome results), of early work by Suitbert Ertel, and of the harmonic studies by the late John Addey. Unfortunately there are more anti-science polemics that are just so daft that one wonders how they got past

Penguin's editors, for example on p.271 scientists "are not interested in the truth at all ... They are interested in being right. Their egos are entirely bound up in their rightness and can brook no opposition ... Thus science is probably the only major profession in the twentieth century that is hypocritical at its core".

West then looks briefly at a handful of other positive studies such as sun-sign guessing and matching tests (but not at the subsequent studies which negated their results), at extra-terrestrial influences such as sun spots and the Piccardi effect, and at physical explanations, notably that of the astronomer Percy Seymour. Of interest here is a reprint of Nigel Henbest's critique from *New Scientist* (12 May 1988) and Dr Seymour's lengthy reply. Briefly, Seymour suggests that the planets exert a tidal force on the magnetosphere, which modulates geomagnetic activity, which induces currents in the neural network by resonance. Henbest points out that, due to planet retrogradation, the diurnal planetary frequencies overlap, so they cannot be distinguished by resonance. Seymour's answer is that the phases will differ, so once the fetus locks on to the right planet it will stay locked on. West fails to ask how it locks on to the right planet in the first place. There is also the problem that diurnal planetary frequencies (around 10^{-5} Hz) are some six octaves below the known lower limit for a reasonable biological response.

West concludes that the two basic astrological premises are established beyond doubt. These are (1) *celestial events correlate with terrestrial events*, which is uncontroversial but not its implication -- what has say moonlit baerbecues or people waking at sunrise to do with astrology? If astrology is reasonably defined as anything requiring a birth chart, the answer is nothing at all. And (2) *planetary positions at birth correlate with human personality*. This is based on the Gauquelin results, which West describes as "unsinkable" p.191. But such a conclusion is premature because in *Skeptical Inquirer* Ertel (1992) has shown at least some of them to be sinkable. It is also dead wrong for 99.994 per cent of the population, namely those who are not eminent. Moreover the correlation with personality (but not with occupation), and by extension the results of Addey, now appears to be a methodological artifact. So, contrary to West's claim, the basic astrological premise is not even established, let alone beyond doubt.

Van Dam says that the validity of the Gauquelin results "should be admitted even by Dean". But the review was appearing in a journal where such matters had been thoroughly aired a year earlier by Ertel (1992), so other than my reference to this, a longer admission seemed hardly necessary. Furthermore, if I had claimed that the Gauquelin effect was scientifically proven, readers might rightly object that by scientific standards the number of people who have studied the Gauquelin effect is very small. So artifacts might still be discovered. In other words, as with the sun-sign attribution effect, I could reasonably claim that the *effect* is proven, but I could not reasonably claim that the *cause* is astrological, at least not in the sense meant by astrologers. [That was in 1993. Later work has reinforced this point, see this website under Gauquelin.]

Validity of astrological practice

On the validity of astrological *practice*, West concludes that the evidence is uncertain but favourable on balance. And to make sure we agree he deliberately suppresses the negative evidence: "Since the aim of this book is to present the positive evidence, intimate details of the bulk of the negative evidence do not really concern us" p.234. Thus most of the recent tests cited by me in Dean (1987) are not mentioned. West argues that the negative evidence does not deny that positive evidence may yet be found, so "these negative results are effectively irrelevant to our case" p.353. But nowhere does he spell out the areas wherein such uncompromising verisimilitude might be found. Given that a recent meeting of UK research astrologers could think of no new areas to test, concluding that "if anything major was possible then it would have been suggested already" (Anon 1992), West's argument is anything but convincing.

West's approach is thus like that of a Flat Earther who says never mind the negative evidence for a flat earth, just look at the positive evidence. Which of course is a recipe for disaster. Reasonable judgements can be made only by considering *all* the evidence, not just the bits that happen to fit a particular case. Else we are in danger of pulling tomato out of the pizza and declaring it to be tomato pie. When selection bias is removed, the evidence for the validity of astrological practice becomes distinctly unfavourable, see the review by Kelly et al (1990). For the record, West was sent a copy of this review by Kelly, but no reference to it appears in West's book.

Parts 4 through 6 (98 pages) are largely irrelevant, being a diatribe again skepticism, the press, and rationalism, with comments on counselling, interpretation, and free will. The book ends with a useful 10-page summary, an appendix listing the 186 scientists who signed the 1975 statement against astrology, a bibliography of more than 120 books (but no articles), a subject index, and a name index.

A big book with big faults

Altogether this is a big book (527 pages) with big faults. Negative evidence is dismissed as irrelevant, crucial issues are ignored, and the text is frequently unbelievable. As shown by my quotes, West's style is one of sustained ridicule, as if violent language can somehow bludgeon a way through. When this polemic tone was criticised by the pro-astrology reviewer Derek Parker (1991), West (1991) replied "my aim is not to convert skeptics ... [but] to present that large, literate audience of closet believers with irrefutable evidence that says there's something to astrology after all, and to provide astrologers with ammunition to devastate their critics. To that end it is essential to discredit the opposition by exposing its 'objectivity' for the sham it is. I like to think my combination of scholarship and ridicule an appropriate tack". Not everyone will agree. To me at least, West's book exhibits all the faults he condemns in others. At which point I should warn that West identifies me as "a bitter opponent of astrology" p.349, so watch out for my sham objectivity.

Van Dam notes that I reproach West for his ironic style, but feels that my own style is even more than ironic -- it is sometimes bluntly scornful. But my complaint about West's style was not its irony but its use of ridicule and violent language in lieu of scholarship. Just as readers of a book review are entitled to hear what the book contains, and only then the reviewer's opinions, so the readers of a book like West's are entitled to hear the evidence, and only then the author's opinions.

Conclusion

In summary, both books perpetuate a needless confusion. To be sure, anything as popular as astrology deserves serious consideration. But anyone familiar with the results of controlled tests, and with the pitfalls of human judgement, must inevitably be suspicious of astrologers' claims. Unfortunately astrologers have mistaken this sensible indifference for dogmatic hostility. In both books there was an opportunity to explore this confusion and set the record straight. But it was missed, and neither book contributes towards a balanced assessment of astrology -- in fact quite the reverse. If nothing else, you could always give copies to astrologers to set them up for later slaughter.

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Artifacts in data

Often wrongly seen as evidence for astrology

Geoffrey Dean

Abstract -- The controversy over astrology is largely about artifacts, or whether the claimed results could have ordinary explanations. Artifacts are fake effects due to hiccups in data (this article) or in reasoning (see the article *Artifacts in reasoning*). They are never mentioned in astrology books yet they occur throughout astrology, leading to wrong conclusions that astrology works. You will be led seriously astray if you learn about astrology without first learning about artifacts. This article looks at artifacts in the data, as when sun sign counts are not corrected for the earth's elliptical orbit (the sun spends two days longer in Cancer than in Capricorn). Some artifacts in data became famous in their day as the best claimed evidence for astrology. They include Nelson's correlation between planets and radio quality, Brown's lunar effects on oysters, Bradley's Jupiter Pluvius rainfall effect, Jung's astrological experiment with married couples, Vernon Clark's matching tests, John Addey's harmonics, the Mayo-Eysenck zodiac zig-zag, and Gauquelin's planetary effects. All have taken considerable time (decades) for their artifacts to be uncovered. So we should be cautious about any new astrological "proof". Of course the presence of artifacts does not deny the existence of genuine effects. But unless research can confirm such effects when artifacts are controlled (which so far is not the case), we have good reason to suspend belief. Artifacts of data and reasoning have always raged out of control in astrology. 27 references.

When astrologers claim that astrology works, they imply that all non-astrological influences leading to the same result have been ruled out. Such influences are called artifacts, not to be confused with artefacts as in man-made objects of archaeological interest. Artifacts are fake effects due to hiccups in data or reasoning that mimic

astrology and persuade us (wrongly) that astrology works. Artifacts in data are discussed in the present article. Artifacts in reasoning are discussed in the companion article *Artifacts in reasoning* on this website under Doing Scientific Research.

An artifact is something other than astrology that would result in apparent astrological effects. Astrological effects have tiny effect sizes (see *Effect sizes* under Doing Scientific Research), and it does not need much of an artifact to produce a tiny effect size. But you will not find artifacts mentioned in astrology books. In fact astrologers have shown no interest in preventing artifacts, and every interest in using procedures known to encourage them. You will be led seriously astray if you learn about astrology without first learning about artifacts. Don't believe that astrology works unless you can be sure that artifacts have been ruled out. This and other articles on this website will get you started.

Some artifacts in data should be obvious, as when sun sign counts in the astrologers' tropical zodiac are not corrected for the earth's elliptical orbit (the sun spends two days longer in tropical Cancer than in tropical Capricorn), or when astronomical constraints are ignored (thus Venus cannot be square the Sun), or when the claimed frequency of astrological features is to be expected by chance anyway (for examples see the review of *Astrology Really Works!* on this website under Book Reviews). Other artifacts in data are more subtle and resistant to detection, as in the following examples, some of which became famous in their day as the best claimed evidence for astrology.

Nelson's correlation with radio quality

A claimed correlation between planetary positions and radio propagation quality (Nelson 1951) was due to the close but unequal spacing of planet days, which meant that small differences from radio days were more likely than large differences (Ianna and Margolin 1981, Meeus 1982). For 5507 of Nelson's published predictions of radio quality, the correlation between predicted quality and observed quality was 0.01, or effectively zero (Dean 1983ab), where 1 = perfect correlation and 0 = no correlation. A correlation of 0.01 is equivalent to a hit rate of 50.5% when 50% is expected by chance. These findings led to the gradual disappearance from astrology books of Nelson's work being cited as hard evidence for astrology, for example the 1970 edition of West and Toonder's *The Case for Astrology* said it "unequivocally supports" astrology, whereas the later 1991 edition makes no mention of it. But the disappearance was generally slow, and nearly twenty years later it was still not complete, eg Slevin (1999).

Brown's lunar effects on oysters

Alleged lunar effects on oysters when the oysters were moved a thousand miles inland from their original sea location (Brown 1954) disappeared when the data were given a proper time-series analysis, and were evidently due to inadequate data, failure to apply controls, and wishful thinking (Enright 1965). The oysters showed no consistent rhythms, so the issue of lunar-induced changes is irrelevant.

Bradley's Jupiter Pluvius rainfall effect

A claimed tendency for heavy rainfalls to peak when Jupiter was in a multiple-of-90-degrees aspect to the local meridian when the Moon entered sidereal Capricorn, the Jupiter Pluvius effect (Bradley 1957), would, if true, rank among the most remarkable in astrology. This is because the connection does not involve Jupiter's position at the time of the rainfall but its position at successive moments averaging 27.32/4 days apart (27.32 days is the Moon's sidereal period), which would seem to deny any physical influence and to support only an astrological one. But the effect was later found to be an

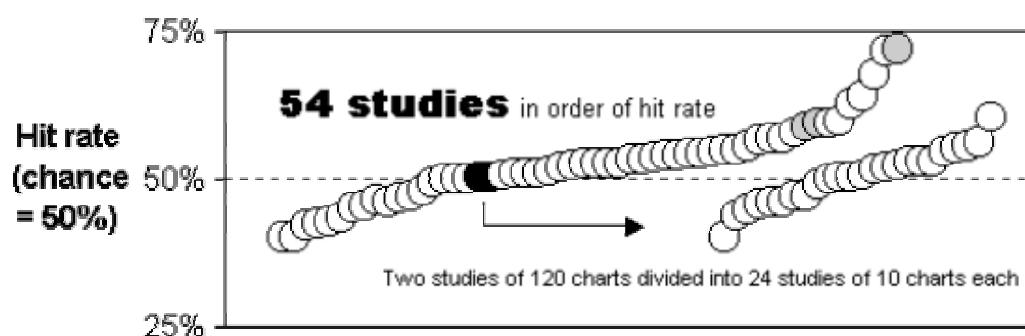
artifact. In 27.32 days Jupiter moves about 2 degrees (with considerable variation due to retrograde motion) and the earth rotates 27 full circles plus 89 degrees (with a variation due to small fluctuations in individual lunar periods). So the difference overlaps 90 degrees, which then tends to produce the observed multiple-of-90-degrees effect (James 1981). The tendency need only be small to match the small difference between peak and average rainfalls (peak rainfalls average only 5% more than the mean).

Jung's astrological experiment

Apparent support for astrology arose when the birth charts of married couples showed a small tendency to favour aspects between them indicative of marriage (Jung 1960). But the charts had come from the files of an astrologer, whose advice to the couples had nudged the sample into detectable conformity. Also Jung chose the aspects after examining the results, which inflated his statistics (and even the *inflated* effect size was only 0.09, equivalent to a hit rate of 54.5% when 50% is expected by chance). The effect did not replicate when artifact-free data were used (Dean 1996).

Vernon Clark's matching tests

Claimed success in matching charts to case histories (Vernon Clark 1961) was consistent with the use of small samples, typically 10 birth charts, whose huge sampling variations were mistaken for genuine effects (Eysenck and Nias 1982:86-87). That is, the apparent success was due to a small sample that (thanks to huge sampling variations) happened to contain a disproportionate number of hits, which then gave the appearance of success due to astrology when in reality the success was due to sampling variations. This was confirmed by (1) meta-analysis of the 54 existing matching tests, which among other things compares the expected variations due to sample size with the observed variations in the results. If the former exceeds the latter, as is the case here, then the results including the best and worst are entirely explained by sampling variations, leaving nothing to be explained by astrology. And by (2) sub-dividing a sample of 240 birth charts that showed almost no effect into 24 sets of 10 charts each, which then showed the predicted artifact. See figure below.



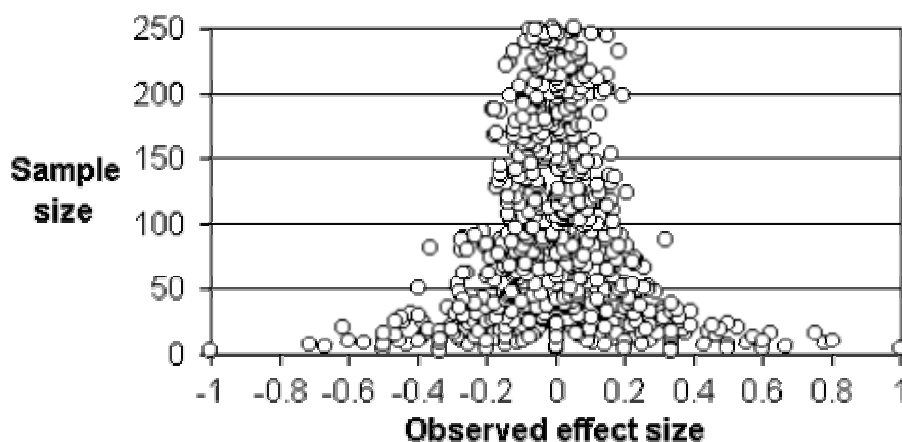
Observed effect sizes in 54 matching tests where a total of 742 astrologers matched a total of 1407 birth charts with their owners. Clark's three results are shown as grey dots. By meta-analysis the mean effect size weighted by sample size is 0.035 sd 0.117, equivalent to a hit rate of 51.7% sd 5.8%, no different ($p=0.77$) from the 50% expected for guessing. The expected sd due to sampling variations alone is 0.199, considerably higher than the observed sd of 0.117, which leaves nothing in the results (including Clark's results) for astrology to explain. So the scatter in results is entirely due to using too few birth charts (typically 10) per study. When two studies using 120 charts each (black dots) averaging 50.3% hits are sub-divided into 24 studies of 10 charts each, the same scatter emerges, showing how scatter is an unavoidable artifact of small sample sizes. If the samples are further sub-divided, the scatter increases, exactly as predicted.

Thus the scatter of results in the above figure can be entirely explained by sampling variations, a point further considered in the next section, which means that the results

(including Clark's results) provide no support for astrology. Further analyses suggest that the slight preponderance of positive results (ie hits over 50%) is due to publication bias, the reluctance of editors to publish negative results. Unfortunately most astrologers seem unaware of the many tests that now exist, and how the current verdict is no longer biased by the large sampling artifacts of the earlier tests. For example Geoffrey Cornelius (1994), after citing 9 early tests, says "I have not heard of other experiments of this type" (p.84), while Ken McRitchie (2004) says "few tests have been conducted" (p.28).

Illusory results due to sampling variations

The sample size needed to reliably detect effect size r , expressed as a correlation, is roughly $10/r^2$. In technical terms to *reliably* detect r means detecting r in 4 out of 5 tests at a two-sided significance level of $p = 0.05$. So if we want to reliably detect an effect size of say 0.10, which is already more than the average of 0.04 typically observed in both Gauquelin and Vernon Clark studies, we will need a sample size of around $10/0.10^2 = 1000$, or very considerably more than what astrologers traditionally use. The fatal consequences of using small samples are shown in the figure below:



Observed effect size in 1000 sub-samples taken at random from a very large sample in which the effect size is known to be 0.000. The sample sizes range from 3 to 250, mean 80, and the mean observed effect size is -0.004 sd 0.198, equivalent to a mean hit rate of 49.8% sd 9.9%, which as expected is not significantly different from the expected 0.000. In small samples such as those commonly used by astrologers, the observed effect size (thanks to sampling variations) can be wildly different from what is actually there, leading to wildly wrong conclusions.

As the above figure shows, just by using their usual small sample of ten birth charts, or even a hundred birth charts, astrologers are virtually guaranteed of finding something that is interesting, exciting, full of promise, and totally spurious. As next.

John Addey's harmonics

A revolution in astrology was promised by harmonics (Addey 1976). It was claimed that astrological influences were not boxlike, as in signs and houses, but varied continuously in harmonic waves around the circle with an influence related to the number symbolism of the harmonic. Thus the 3rd harmonic (repeating every 120 degrees) had a meaning different from the 4th harmonic (repeating every 90 degrees). Unlike most ideas in astrology, harmonics was based on decades of painstaking research by Addey and his many helpers, so it seemed sounder than most. However, later computer simulations showed that the results were due to small sample sizes, sampling errors (the sampling

requirements in harmonics are unusually stringent), the use of moving averages (which can generate spurious waves), and incorrect statistics (Dean 1997).

Mayo-Eysenck zodiac zig-zag

An apparent correlation between sun signs and extraversion (Mayo, White and Eysenck 1978; Smithers and Cooper 1978) disappeared when the subjects had no prior knowledge of astrology, which showed that prior knowledge can nudge a person's self-image in the direction of astrology (Eysenck and Nias 1982:50-60, Dean 1983c, van Rooij 1999). Ask Sagittarians (who are supposedly sociable and outgoing) whether they like going to parties, and their answer might be tipped by astrology in favour of yes rather than no. The bias may be unconscious and very slight but in large samples it can become surprisingly consistent. Of course it has nothing to do with sun signs as normally conceived.

Gauquelin's planetary effects

Finally Gauquelin's planetary effects, which almost every astrology book cites as the best-known support for astrology while simultaneously ignoring Gauquelin's negative findings for signs, aspects, and transits (Gauquelin 1960, 1983), see also *The Gauquelin work 1* on this website under Gauquelin. The effects were consistent with parents faking birth data (easily done without detection in those days) to suit the prevailing pop astrology, see *The Gauquelin work 2*. Unless planetary effects emerge when artifacts are absent, as when parents are excluded from the birth reporting process, they can no longer be seen as supporting astrology. Similarly, if planetary effects do not emerge, there is no need for theories to explain them such as those based on the pineal gland (Frank McGillion), reincarnation (Peter Roberts), and magnetospheric resonance (Percy Seymour).

Conclusions

First, it can take a long time for artifacts to be found. To quote examples from other areas, the Cottingley fairies stood for over 60 years before they crumbled. It took 40 years for the Fox sisters to admit their spirit communications were a schoolgirl prank that got out of hand. It took 40 years for Soal's "watertight evidence" for psi to be revealed as fraudulent. It took nearly 60 years to learn that the Loch Ness Monster in the famous 1934 photo was really a fake. It has taken more than 60 years to discover that the sheep-goat and decline effects usually seen as support for ESP in card guessing are due to the effect of personality variables on sequential guessing behaviour that either tends to match (sheep) or not match (goats) the limited probabilistic runs possible in a deck of 25 Zener cards (Brugger & Taylor 2003). Even more orthodox areas such as direction finding in pigeons, or the link between smoking and cancer, have taken decades to study and unravel. So we need to be cautious about any new astrological "proof".

Second, the existence of artifacts does not deny genuine effects. But unless research can confirm such effects when artifacts are controlled (which in astrology is so far not the case), we have good reason to suspend belief. Of course we should not confuse levels. We can never be sure whether effect sizes of 0.01 (equivalent to a hit rate of 50.5%) are genuine, just as we can never be sure whether surfing in Hawaii affects the waves in Australia, but we can be sure about failing to find effect sizes commensurate with astrological claims, say 0.5, just as we can be sure about failing to find a cat in a shoebox.

Third, the above artifacts in data have effect sizes around 0.04 to 0.10, equivalent to hit rates of around 52% to 55%, so even if they were genuine astrology and not artifacts, they would still be too small to support the claims of astrologers.

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Artifacts in reasoning

Hidden persuaders make astrology work

Geoffrey Dean and Ivan W Kelly

Abstract -- Unaided human reasoning is subject to artifacts due to systematic errors (we call them hidden persuaders) that can fully explain why an astrology based on experience seems to work. Astrologers proudly and repeatedly claim that astrology is unassailable because it is based on experience, but they are mistaken -- what they see as its strength is actually its weakness. Here more than 30 hidden persuaders such as the Barnum effect are explained. Each will convince clients that astrology works, and all are in common use in astrology books and consulting rooms. They vary in effectiveness depending on situation, but all lead to client satisfaction, and none require that astrology be true. But if clients are going to be satisfied, astrologers can hardly fail to believe in astrology. In this way a vicious circle of reinforcement is established whereby astrologers and their clients become more and more convinced astrology works. Examples from palmistry and phrenology are cited to show how hidden persuaders are not unique to astrology.

Unaided human reasoning is subject to artifacts due to systematic errors (we call them hidden persuaders) that can explain why an astrology based on experience should seem to work even if it were totally invalid. For example hidden persuaders explain why tens of thousands of Western tropical astrologers can say that in their experience Scorpios really are intense, while hundreds of thousands of Eastern sidereal astrologers can look at the same piece of sky, which they call Libra, and agree that in their experience it is not intense but relaxed. The same applies to all the others factors that astrologers disagree about, which is most of them. In technical terms hidden persuaders can be described as "statistical artifacts and inferential biases."

As shown in the companion article *Artifacts in data* on this website under Doing Scientific Research, artifacts in data tend to be small and resistant to detection, and some became famous in their day as the best claimed evidence for astrology. In contrast, artifacts in reasoning tend to be large and have literally become the foundation on which the practice of astrology rests.

Caution. You will be led seriously astray if you learn about astrology without first learning about hidden persuaders. Unless you can be sure that hidden persuaders have been ruled out, don't believe what you read in astrology books. In particular the claim that astrologers proudly and repeatedly make, that astrology is unassailable because it is based on experience, is (as we shall see) simply mistaken -- what they see as its strength is actually its weakness.

How not to test a reading

If the above statement sounds preposterous, consider the following quote from psychologist Ray Hyman, How not to test mediums, *Skeptical Inquirer* 27(1), 20-30,

January-February 2003. Hyman has devoted more than half a century to the study of psychic and other readings, especially to why such readings can seem so compelling.

"As a way to earn extra income, I began reading palms when I was in my teens. At first, I was skeptical. I thought that people believed in palmistry and other divination procedures because they could easily fit very general statements to their particular situation. To establish credibility with my clients, I read books on palmistry and gave readings according to the accepted interpretations for the lines, shape of the fingers, mounds, and other indicators. I was astonished by the reactions of my clients.

"My clients consistently praised me for my accuracy even when I told them very specific things about problems with their health and other personal matters. I even would get phone calls from clients telling me that a prediction that I had made for them had come true. Within months of my entry into palm reading, I became a staunch believer in its validity. My conviction was so strong that I convinced my skeptical high school English teacher by giving him readings and arguing with him. I later also convinced the head of the psychology department where I was an undergraduate." (page 22)

Doing what every astrologer should do but never does

Thus far it could be any astrologer talking about astrology. They read charts and they become staunch believers in astrology's validity. As in Hyman's case, their experience seems totally compelling. But this is not the way to test a reading. Hyman then did something every astrologer should do but never does:

"When I was a sophomore, majoring in journalism, a well-known mentalist and trusted friend persuaded me to try an experiment in which I would deliberately read a client's hand opposite to what the signs in her hand indicated. I was shocked to discover that this client insisted that this was the most accurate reading she had ever experienced. As a result, I carried out more experiments with the same outcome. It dawned on me that something important was going on. Whatever it was, it had nothing to do with the lines in the hand. I changed my major from journalism to psychology so that I could learn why not only other people, but also I, could be so badly led astray." (page 22)

Hidden persuaders

The answer to Hyman's puzzle is *hidden persuaders*, factors that can make a vague reading seem so uncannily accurate that it becomes almost impossible not to believe in the system's validity. There are many hidden persuaders, of which thirty-four are listed below. All are an active component of experience and all are in routine use in astrology consulting rooms. For convenience we have grouped them under seven descriptive strategies:

1. Select initial hurdles

Preach to the converted (client predisposition)
Ignore everything on this website (ignorance is bliss)
The best things in life are not free (charging a fee)

2. Stifle chances of being wrong

Appeal to birth chart complexity (nonfalsifiability)
Avoid conflict, see what you believe (cognitive dissonance)
Believe what you cannot prove (unavailable data)
Remember the hits, forget the misses (selective memory)
Ask only confirming questions (stack deck)
Ignore disconfirming evidence (confirmation bias)
Deny that astrology can be tested (testability veto)

3. Use cues

Let context give the game away (vital statistics)
Let body language be your guide (cold reading)

4. Make astrology look good

The importance of first impressions (halo effect)
If it looks right then it is right (face validity)
Style is more important than content (Dr Fox effect)
Underestimate chance effects (chance baseline shift)
More is better (Aunt Fanny effect)

5. Make clients feel good

Use a kind heart to entice belief (tea and sympathy)
The power of positive thinking (Pollyanna principle)
It does us good if we think it does (placebo effect)
Having control makes us feel better (misattribution)
Just naming the unknown is enough (Rumpelstiltskin effect)
Closeness is its own reward (rapport)

6. Make the chart fit

Find meaning where none exists (faces in clouds)
Read specifics into generalities (Barnum effect)
See only what you want to see (illusory correlation)
Accentuate the positive (social desirability)
Be seduced by resemblance (magical thinking)
Afterwards we knew it all along (hindsight bias)
Sound arguments yes, sound data no (stereotypes)

7. Make the client fit

Find something, anything, to match the chart (repertoire)
Let client role-play their chart (self-fulfilling prophecy)
Force client to fit their chart (Procrustean effect)
Winter does not last forever (regression to mean)

None require that astrology be true

Each hidden persuader reflects the systematic error in human reasoning shown in parentheses, for which we have used the accepted name if there is one, or a provisional name if not. In the early days it was usual for critics to explain why clients were satisfied with astrology readings only in terms of the Barnum effect, the reading of specifics into generalities such as "you have problems with money", where sense appears to come from the reading when in fact it comes from our ability to make sense out of vagueness. Today, as shown above, many more hidden persuaders are known. They vary in effectiveness, and in a given situation some may be irrelevant, but all lead to client satisfaction and none require that astrology be true.

But if clients are going to be satisfied, astrologers can hardly fail to believe in astrology. In this way a vicious circle of reinforcement is established whereby astrologers and their clients become more and more convinced that astrology works. Note that there are no hidden persuaders to convince us that astrology does not work other than the informed critical mind, which of course is not an error as such but rather a defence against errors. An astrologer typically makes no effort to become informed about research or to acquire critical thinking skills, preferring instead to spend years learning to read charts, during which time they have ample chance to respond to the above reinforcement. And of course to build up a huge vested interest in continuing their ill-founded beliefs. If this still seems preposterous, consider the salutary case of phrenology:

The salutary case of phrenology

The same hidden persuaders explain how phrenology (head reading), once more popular and far more influential than astrology is today, could be accepted as totally valid even

though it is now known to be totally invalid. As noted in 1985 by Dean and Mather (*Astrological Journal* 28(1), 23-30, Winter 1985):

"Astrologers are like phrenologists: their systems cover the same ground, they apply them to the same kinds of people, they turn the same blind eye to the same lack of experimental evidence, and they are convinced for precisely the same reasons that everything works. But the phrenologists were wrong. So why shouldn't critics conclude for precisely the same reasons that astrologers are wrong?" (page 25)

That was 20 years ago, but no reply from astrologers has been forthcoming other than to dismiss phrenology as irrelevant. But perhaps no reply is required. After all, it could be argued that the existence of mutually incompatible systems throughout astrology (for example tropical and sidereal zodiacs), all of which are nevertheless seen as completely valid by their users, has already put this question to the test and given us convincing answers.

Indeed, hidden persuaders are at their most glaringly obvious when a chart that fits is later found to be wrong, a not uncommon experience. For example one British astrologer in Phillipson's *Year Zero* notes how it has "happened to a lot of astrologers. Some of the best readings have been with wrong charts" (p.118). Even worse, Dean (1992) found that readings which were the opposite of what the chart indicated were as acceptable to clients as authentic readings, just as Hyman had found for palmistry, and just as hidden persuaders might predict. But if wrong charts work as well as authentic charts then what price astrology?

Astrology outside the consulting room

Thanks to hidden persuaders, the bottom line could hardly be simpler -- astrology in the consulting room does not need to be true. So in principle any chart might do. But what about astrology outside the consulting room, for example in astrology books and journals where charts are compared with their owners to convince readers that astrology works. Here there are no clients to interact with the astrologer, so most of the above 34 hidden persuaders would seem to no longer apply. But one of them remains rampant, namely the one labelled above as "ask only confirming questions".

This hidden persuader could also be called "consider only confirming cases" or "heads I win and tails is irrelevant". It appears again and again in every astrology book and journal, making nonsense of the associated claims. Astrologers see that a chart fits the person or event, thus making a confirming case, and conclude that astrology works. What could be more straightforward? In fact it does not follow at all. The problem is that astrological symbolism is so flexible that almost any chart will fit almost any person or event (thus making a confirming heads-I-win case), giving the wrong impression that astrology works. To see how it works, look at how one big-name astrologer tested the claim of another using the consider-only-confirming-cases persuader. First the claim:

Elwell's claim

British astrologer Dennis Elwell claims that certain events and planetary conditions tend to occur together because at a higher level they belong together. He calls the effect *multicongruence*, and claims it can be seen by comparing the chart with newspapers for the same day. If the chart contains X-type indications then the newspapers will report X-type happenings. It is as simple as that.

Heath's test of Elwell's claim

British astrologer Robin Heath tested this claim in his article "Time-slice testing Elwell's multicongruence" in *Astrological Journal* Nov-Dec 2000 pages 12-15. For his test Heath chose the chart for 7-15 August 2000 because two rather nasty aspects were then exact within five degrees, namely Sun opposition Uranus (disruption, discovery, leadership, high-tech industries, aviation) and Mars opposition Neptune (weakness, scandal, war, machinery, sea, media). He then searched through four British dailies for matching stories over the same period.

Results

He found a dozen major stories that matched -- Concorde crash explained, disruptive solar flares, sex scandal, persecution by vigilantes, NASA to visit Mars, car repairs unsafe, submarine sinks, army overstretched, police kill armed man, sailor rescued, satellites launched, and bomb kills eight in Moscow. Lesser stories also matched -- fatal aircraft crash, army officers shot, police chief killed, fatal glider crash, hints of government betrayal, protesters upset grouse shooting, spies caught, fatal coach crash, massive forest fires, wasps attack family, and photographer sues vodka maker for misusing best photo.

Heath finds the matches to be totally convincing. He concludes that Elwell's multicongruence is a fact, and that it "invites us to explore an awesome property of nature little known and even less understood." He notes that his study is not scientific, but this "reflects more badly on the limited axioms of the scientific method than on my limited grasp of astrological truths."

Now for the problems

Ironically Heath is shooting himself in the foot. Disruption, scandal and death are what sell newspapers. Throughout the world they occur many times every day, so a national daily will seldom be without them. So Heath could hardly fail to find matches, like people in a rainstorm can hardly fail to get wet. This is the consider-only-confirming-cases persuader at work, or heads I win and tails is irrelevant. The real issue is whether 7-15 August 2000 matches Sun-Uranus-Mars-Neptune better than other periods, but Heath does not tell us. (Here "other periods" is the control that Dennis Elwell flatly rejects as unnecessary, see *Astrologer attacks researchers* on this website under Objections to Scientific Research.)

Adding to the confusion

Two more artifacts add to the confusion. First, Heath is testing factors in isolation, which according to astrologers is not acceptable because only the whole chart can be meaningful. For example if Mars were making close harmonious aspects to other planets, as it does in this case, the difficulty of Mars-Neptune might no longer exist. Here you can see how astrologers want it both ways -- breaking the rules is acceptable if it produces positive results, but not if it produces negative results.

Second, astrological symbolism can be made to fit almost anything. For example Heath says car repairs (Mars, metal) were unsafe (Mars-Neptune, weakness). But if we consider the rest of the chart we could just as easily say car repairs (Moon, change) were unsafe (Moon-Pluto, too much change), or car repairs (Venus, care) were unsafe (Venus-Saturn, inhibition), or car repairs (Mercury, instruction manuals) were unsafe (Mercury-Jupiter, vague), or even car repairs (Mars, metal) were not unsafe but safe (Mars-Neptune, idealistic ends), just as we can easily reverse the others by putting Pluto = powerful, Saturn = directed, and Jupiter = comprehensive. Indeed, who says the

repair has to involve metal? It could just as easily involve only fabric, glass, ceramic, plastic, or rubber.

Ironically articles drawing attention to this hidden persuader appeared in *Correlation* in 1997-1999 and would have been seen by Heath, who was then editor of the *Astrological Journal* and later a consulting editor of *Correlation*. This illustrates how astrologers are not interested in avoiding artifacts even when prompted, preferring instead to see their faulty reasoning as revealing "an awesome property of nature" or "the limited axioms of the scientific method". More examples of this potent hidden persuader at work will be found on this website in *Truth of Astrology* and *Projection*, both under Doing Scientific Research.

Conclusion

Hidden persuaders are artifacts arising from our normal reasoning processes that generate the illusion that astrology works when in fact nothing special is happening. Hidden persuaders are raging out of control everywhere in astrology, misleading astrologers and their clients just as they previously misled phrenologists and their clients. They are an active component of experience, which is why appeals to experience are meaningless unless hidden persuaders can be ruled out (which in astrology has never been the case). Astrologers interested in avoiding hidden persuaders in astrology will find much useful information in Gambrill (1990).

Further reading

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Gambrill E (1990). *Critical Thinking in Clinical Practice: Improving the Accuracy of Judgements and Decisions about Clients*. Jossey-Bass, San Francisco. 432 pages, 660 references. How to reduce reasoning errors in psychology, medicine and the helping professions. Well organised, packed with information, many examples, a few references to astrology (but only to illustrate reasoning errors), each chapter has a summary. Equally applicable to astrology. Should be read by every astrologer.

Astro sleuthing contests

Research for the working astrologer

T Patrick Davis (1927-2001)

This article originally appeared in *Correlation* 16(2), 3-9, 1997

Abstract -- Astro Sleuthing Contests are aimed at reaching consensus on what works and doesn't work in astrology, ranging from individual factors to entire techniques. Each contest is based on a case similar to those commonly encountered by working astrologers but with two important differences: each case has a clear-cut outcome, and the data are of the highest quality. The required chart judgements are therefore both realistic and assessable. Astrologers are invited to send in their judgements together with details of their methods. A pilot study using six contests during 1992-94 produced much interest and some encouraging results but had to be discontinued due to lack of participants. The general indications were alarming. They confirmed what has long been known, namely that astrological methods are afflicted by total confusion, and that astrologers are generally unwilling to reduce this confusion by putting their methods to the test. Furthermore, astrologers whose methods clearly failed continued to use them as though nothing had happened, while methods showing superiority were ignored. This is no way to run a "profession". The problem will need to be addressed by astrologers as a whole when co-operation for the common good becomes a priority. Until then the professional astrologer will remain a contradiction in terms.

Introduction

There are two primary goals for doing astrological research, both of which have their place in the total scheme of things. *Goal One* is to find information that will help astrologers to understand and interpret birth charts. *Goal Two* is to convince academia that astrology can be a source of reliable knowledge; this in turn will open new doors for astrology. Unfortunately those working to achieve *Goal One* tend to be run off by those who can conceive of no goal other than *Goal Two*, whereas a recognition by both sides of their dependency on one another, with a need for co-operation, would be beneficial to both.

I was interested in *Goal One*, to find information directly useful to working astrologers. Early on I came to the conclusion that using large samples and counting particular factors tended to distort rather than clarify the astrological picture. Gauquelin's Mars effect, for example, despite years of study, provides no useful information whatsoever to the working astrologer. Consequently I saw the need to be innovative, so that the complexities of astrology could be handled. What follows is an account of my approach and its results.

The need for consensus

Those of us involved for decades in research and tests of astrology, needing to evaluate the overall picture, cannot escape observing the high degree of confusion on basics within the community. Contradictory information and the proliferation of methods have now reached the point where they boggle the mind. Yet the situation continues to worsen.

Much of the problem arises because no record can be found of the astrological community convening for the express purpose of finding consensus on any matter, or of organizing any effort to separate the wheat from the chaff. Other than in rare refereed journals like *Correlation*, there is no peer review of new methods or theories by an impartial group before publication. Until recently there has been a general lack of recognition of the vital importance of complete and sourced data to the entire field. This lack of a professional approach has had enormous ramifications, none desirable.

What is needed is consensus. We need first to sift and sort astrology's body of knowledge and its many methods to find out what actually works. We then need to banish the unproductive, misleading factors afflicting our studies and retarding progress.

Astro Sleuthing Contests

In effect what is needed is a test of astrology that gives special consideration to astrologers' complaints about earlier tests such as those of Vernon Clark, which were seen as being too rigid and too removed from the everyday practice of astrology. Such a

test should be realistic, unhurried, representative of what astrologers actually do, and of course sympathetic to their cause.

Thus was born the idea of Astro Sleuthing Contests, which drew on my decades of experience as an astrologer, teacher, author, researcher, and concerned observer of the astrological scene intent on seeking progress. Each contest was based on a case similar to those commonly encountered by working astrologers but with two important differences: each case had a clear-cut outcome and the data were of the highest quality. Thus the required chart judgements would be both realistic and assessable. Each contest invited astrologers to send in their judgements together with details of their methods.

In this way the contests could look at everything from the basic interpretation of individual factors to entire techniques. The idea was that a careful analysis of the results would indicate which approaches worked, and which were unproductive or misleading or were otherwise retarding progress. We would at last be on the road towards consensus.

Obtaining participants

My approach depended on having responses from the largest possible pool of astrologers. So I contacted the two largest US organizations at that time but they showed no interest. Fortunately Aquarius Workshops Inc, a non-profit astrological organisation in Encino CA, agreed to run my contests in their quarterly magazine *Aspects*. The magazine was founded in 1975, is aimed at both beginners and experts, is nicely produced, and has a circulation of over a thousand. Contributors include well-known astrologers such as Marion March, Joan McEvers (who is the current editor), and Lois Rodden. All subscribers must sign a code of ethics similar to that of the Faculty. It seemed to me that publication of the contests in *Aspects* would be a fair test of their viability.

Selecting cases

Using the pages of *Aspects* during 1992-94, I presented a series of ordinary problems, common to human life and astrological practice, and of a nature that astrologers claim can be read from a birth chart. Each involved cases taken from my private files. Previously unpublished data of the highest quality, complete and sourced, always timed to the minute, often independently confirmed as accurate by the parents, was provided for solving each problem through astrological methods. I identified the data as being that of a male or female, and occasionally provided a minimal clue to spur interest. No rectified or speculative data was employed.

The longitude and latitude were provided from a source known to be accurate. Time standards were carefully checked. The editors were happy to allow double-checking of the typesetting to avoid typographical errors. Selection and checking of data was extremely time-consuming, but data are of course the basis on which all astrological judgements are made, so they must be treated as vitally important. This painstaking approach to data assured participants that they would not be wasting their time on poor data, and that poor data could not be used as an excuse for incorrect judgements.

In selecting cases for study, preference was given to females because they provide the majority of clients for astrologers, and also because their data was less likely to be known to any other astrologer. Selecting cases required much care in order to highlight certain areas of inquiry, as well as to avoid embarrassing or identifying anyone. For example this could mean selecting cases from those born in large cities rather than in

small towns. I knew something about each of the people selected in case this might be useful in any subsequent discussion.

Rules and procedures

The nature of the contests and goal required that each problem be non-subjective, because of a need for a clear and unambiguous answer. There were no broadly encompassing questions such as "What happened?" Some problems had more than one part. All problems were designed to elicit clarification on interpretations, on methods, and various practices. Entrants could use any astrological method or procedure, but they had to show their work, provide evidence of the astro reasoning followed, and list the methods used, thereby eliminating psychic answers or guesswork.

The contests were open to all astrologers desirous of testing their methods in this forum and of contributing to astrology. Those correct in their deductions were named; those who were incorrect were guaranteed anonymity. There was no desire to embarrass anyone. Aquarius Workshops provided winners with a Certificate of Recognition and prize they could select from products sold by Aquarius. I was responsible for setting up and running the contests.

Because of publishing schedules each contest had a deadline for the receipt of responses, which were sent directly to me. I analyzed each response for methods or interpretations leading either to correct or incorrect answers. For example I always recorded the zodiac and house system used, geocentric or heliocentric, the use of aspects and orbs, various systems or techniques, and so on. The results were published in the next issue of *Aspects* together with a new contest. The editor considered the contests to be an important learning experience, in keeping with Aquarius Workshops' aims of education and research, and gave me a free hand. Winners were notified and complimented. Everyone was thanked for their contribution.

Details of contests

Below are brief details of the seven contests presented in *Aspects* during 1992-94, one of which did not require answers, so in effect there were six contests. In the earlier contests the focus was on basics.

(1) Three young women born in successive years. Which one achieved a Doctor of Medicine degree on the given date, and a quite dramatic change in life style? The full text of this contest as it first appeared in *Aspects* is given in the Appendix.

(2) Four persons (two male, two female), each with the date of death of a parent, and the circumstances described either as "expected" or "sudden and unexpected". Was the parent the mother or father? Here the aim was to identify parents from the birth chart.

(3) Two young girls born in adjacent states just 1d 3h 27m apart. They had met and became friends. In a terrible auto accident one was killed instantly; the other survived but was paralyzed in the lower part of her body. The time (from one girl's crushed watch) and exact location were given. Which girl survived? Here, as in most of the contests, multiple principles of astrology were brought into focus.

(4) The contest by Charles Carter which appeared in *Astrologer's Quarterly*, Volume 1(3), Summer 1927. What happened to a girl born 20 March 1916 at 5:40 am in London: (a) shortly after birth, and (b) on the 16 August 1926? My repeat was

accompanied by the answers, so no entries were required. Interestingly there was a typographical error in the original contest, which Carter subsequently commented on because it had ruined his contest and wasted the efforts of respondents. It had the effect of warning the *Aspects* editor and me to double check our data before publication, and happily we found no mistakes.

(5) Three mature women. The first had never married although she had dated men. The second married at age 14, and again less than eight months after being widowed at age 28. The third had recently divorced her ninth husband. Which was which?

(6) Four women. Although born at widely varying years and places, all had chosen the same unique profession while in their teen years. What was the profession?

(7) A boy aged 11 had a mysterious paralytic-type illness come and go, leaving everyone confused as to the cause. Eventually the cause became known and was quite specific. Can astrology indicate the cause? I had hoped this would encourage horary answers, but none came in.

Responses were few but effective

I found that although astrologers were using the contests to test themselves at home, only a few were confident enough to submit a response, which rather defeated the purpose. Nevertheless the contests proved to be far more effective than expected in bringing forth useful information. Contest (6) on vocation had the largest response and the most correct answers. Contest (2) on identifying parents had the smallest response, probably because the astrological literature gives contradictory rules for judging this factor, for example the 10th house is variously seen as the mother, or the father, or the dominant parent, thereby providing a situation where nothing can be settled. I had hoped to find someone with clear workable rules, but in vain. (My own opinion, based on experience, is that the 10th house is the mother.)

In general, astrologers tended to enter only if great confidence was felt, and not to re-enter if their first entry proved to be incorrect. Given this tendency it is unsurprising that in six contests most astrologers achieved only one correct entry, with only one astrologer achieving two correct and one other astrologer three correct. No correct answers were received from Great Britain, and I was not overwhelmed with correct answers from the USA. Because of the high turnover I made no attempt to record the total number of respondents, but at least one correct answer was received in each contest.

Results

Entries varied from simple tradition based on hand calculations to elaborate multiple techniques requiring extensive computer calculations. Unfortunately the number of responses was insufficient to give clear-cut results. But for what it is worth, aspects between planets and lights were the most consistently reliable signifiers, tropical won over sidereal when signs were crucial, using planets beyond Saturn was better than not using them, and midpoints (with tight orbs) and house position were both used successfully. For timing, everyone used transits, with the progressed Moon in second place. For further details see my summary in *Aspects*, Spring 1994, 19(1), 44-45, and in *Astrological Journal*, May-June 1994, 36(3), 180-184.

(The last included a repeat of contest (1), which attracted five responses, one to me and four to the editor, none of them correct, see *Astrological Journal*, November-December

1994, 36(6), 345-347. This is more worrying than it seems because the editor inadvertently published the charts with the contest. One chart showed the contacts that gave the game away, yet neither the editor nor the participants noticed! Afterwards there was no evidence that consistently getting the wrong answer had led to any sense of alarm demanding remedial action. Indeed, the editor suggested it shows how astrology belongs to a different order of knowledge, "which means it eludes being neatly captured by the concrete estimative faculty", whatever that means.)

Provocative findings

Some findings were provocative. For example many methods that I expected to be used never appeared, and different methods could be successful in the same contest. The last means that nobody can claim that only one successful method exists. Similarly, because many methods failed, nobody can claim that all methods are equally valid. Those using Hindu methods mounted a spirited response, with conference calls around the USA seeking consensus on an answer. Certain Hindu methods did lead to correct answers, but when answers depended on the zodiac and its rulers, those using the sidereal zodiac were led astray.

The best organized correct response came from a woman medical doctor with her own clinic. She used the tropical zodiac and known planets with Koch houses. For events she used day-for-a-year progressions on both planets and angles, plus transits. She succinctly described her astro reasoning. Only two respondents used a combination of geocentric and heliocentric, but both provided correct answers.

Contests had potential value

Although the responses were rather few, they nevertheless showed that the contests had great potential for sorting the wheat from the chaff. They also showed the overwhelming need for such a sorting. For example they showed how using the sidereal zodiac, or the Uranian system, had led even experienced astrologers away from the correct answers. The failure of many methods was compatible with the results of research generally, including the results of Vernon Clark experiments. A tolerance of failed methods is of course incompatible with progress.

Each contest could have only one correct answer. Although each answer had to be supported by proper astrological reasoning, there was still the possibility that a correct answer could have arisen by the wrong reasoning (thus an otherwise invalid significator might by a fluke just happen to fit) or by a calculation error (this did occur). Nevertheless, given enough contests and enough responses, such anomalies can in principle be identified and overcome. Of course I could have run a few random controls to cover this point, but I am opposed to such controls because there is no way of guaranteeing that they do not apply to a person as gifted or as directed as the test case. Controls need to be actual people, and they need to be selected as carefully as the test cases, which would have made my series prohibitively time-consuming. In any case my series was merely a pilot study to see if the concept was viable, so it was expedient to ignore such matters for the time being.

Aim was knowledge

In each contest the aim was knowledge, not support for any particular technique, therefore open minds were a requirement. Because methods and reasoning had to be explained, many problems were avoided that can upset tests not having these requirements. Therefore the potential for contests to address any area of concern seems

unlimited, subject only to the availability of quality data and one's imagination or creativity.

One vital component is having an experienced impartial judge to evaluate responses, especially when respondents don't know what they use, as when it just came with their computer program. One of my biggest challenges was to convince participants that the aim was to improve astrology rather than to provide a diverting competition. Thus many participants (mostly males) needed a follow-up call to discover their methods and reasoning. It was clear that the idea of applying discrimination to reach consensus was an unfamiliar one, as was the idea that methods existed other than those they knew about.

Discussion and Conclusion

I was distressed to find that, when methods had clearly failed, astrologers continued to use them as though nothing had happened, while methods showing superiority were ignored. Indeed, only in contests like these can one clearly appreciate the anarchy and total confusion that afflicts astrology today. Truth is no longer a concern. Instead the Prima Donna syndrome has been allowed to run wild, making the ego fatally inseparable from the procedures. But this is no way to run a "profession". The problem will need to be addressed by the astrological community as a whole at such time as co-operation for the common good becomes a priority. Until then the professional astrologer will remain a contradiction in terms, astrology will justifiably be dismissed by its critics as "for entertainment only", and *Goals One* and *Two* will remain a pious hope.

In conclusion it seems clear that this approach holds great potential for establishing astrology on a more solid foundation. Ironically the approach itself is straightforward. The real challenge is to convince astrological organisations that no discipline which so clearly fosters confusion can ever become respectable. It is a challenge because the problem has been evident for centuries, yet these organisations have done nothing about it, at least not in a rational manner, and the problem is beyond the ability of individuals no matter how dedicated. Nevertheless I still have hopes that astrologers will decide to treat astrology on a responsible basis.

Despite having given over two years of my time to these contests, the poor response persuaded me to close the series. For me, the contests were a labor of love, and the satisfaction of intellectual curiosity was my reward.

Postscript 2000

During the six years following the last of the astro sleuthing contests, astrologers showed no interest in reviving them or in addressing the problems discussed above. In 2000 the author made the following comment to Dean & Mather, see *Response to above invitation* on this website under Sun Signs: "After many decades of work it is clear to me that astrologers have no intention of putting their house in order. They have no interest in research unless it confirms what they already accept and use, or unless it requires no additional effort or supplies, or unless it emanates from a time period when the Earth was assumed to be flat and the center of the universe."

Acknowledgements

Thanks are due to Aquarius Workshops and *Aspects* magazine for making the contests possible, and of course to all the participants for their support. My thanks also to Dr Geoffrey Dean for help in reworking my various writings into the format required by Correlation.

Appendix: the first Astro Sleuthing Contest

Reprinted with permission from *Aspects*, 17(1), Spring 1992, page 18.
It begins with a brief biography by the editor:

T. Patrick Davis has been teaching astrology for more than 30 years. Terminating her astrological consulting practice and bookstore in August 1974, Pat spent the next 18 years on applied astrological research. Her projects have included explorations of retrograde and stationary planets, sexual assaults, missing children, inventors, victims, criminals, financial markets, politics, degree areas, and astrological techniques. She is best known for her pioneering work on Heliocentric Astrology and her extensively published research findings. In 1991, she received the AW [Aquarius Workshops] Robert Carl Jansky Award for research and leadership.

Introduction: The need is great for astrologers to sift through our body of knowledge and its many techniques to find what works best and most consistently. It is hoped that this approach will nudge the astrological community to co-operate in a candid assessment of what we do and do not know and what we can and cannot do with our beloved science/art.

It is true that there are subjective situations which do not easily lend themselves to this type of testing, but much remains that is suitable. Those strongly advocating particular methods should find participating in this forum a splendid opportunity to demonstrate the worth of these methods. The wide-ranging advantages of knowing which techniques perform best should be obvious. If there is an enthusiastic response to this forum, it will be continued and many other challenges can be presented.

The Case of the New MD

Girl one: Born 18 September 1953 at 9:49 am CST in Kansas City, Kansas (39N07, 94W37:30). Data from birth certificate.

Girl two: Born 16 September 1954 at 9:50 am CST in Kansas City, Kansas (39N07, 94W37:30). Data from birth certificate.

Girl three: Born 26 October 1955 at 7:56 am CST in Kansas City, Missouri (39N06, 94W34:42). Data from birth certificate.

(General accuracy of all data was confirmed by the mothers.)

Event: One of the young ladies, represented by the data above, graduated with high honors as a Doctor of Medicine on the afternoon of 11 May 1991 in the Midwest. At a special dinner the night before, she was singled out and praised for her achievements. Before beginning private practice, she must fulfill a two-year residency, but there is a salary. Her residency work began within a couple of months of graduation.

Additional information: These three lovely young ladies have certain similarities between their charts and remarkably similar backgrounds and environmental conditioning. Indeed, two are cousins. Each one had disillusioning experiences in the first marriage, but has coped well. They are constructive, productive citizens, all holding responsible career positions.

Clues: The father of the new MD played a key role in assuring her advancement in status by supplying whatever funds were essential to continue her extended schooling over and above the grants received from alternative sources. The other two girls, for various reasons, received the standard assistance supplied in middle-class families up to the time of marriage. Thereafter, they were on their own.

Questions: Which young lady achieved this enormous jump in status and income potential? How did you arrive at your conclusion? What methods did you use?

Answers: The correct answer will be in the next issue of *Aspects* along with an assessment of the methods used that were most successful.

Contest: Are you a good astro-sleuth? If so, you'll probably come up with the correct answer to this issue's question. All entrants with the correct answer will receive a certificate of recognition; the entrant whose correct submission has the earliest postmark will also receive a \$10 gift certificate to apply toward either his or her AW renewal fee or a purchase from the AW product list. To be valid, each submission *must include* information on what methods were used to reach its conclusion (in other words, show your work). *All submissions are to be sent directly to:* T Patrick Davis, 6096 Masters Blvd, Orlando FL 32819.

Editor's Note: There are many ways to skin a cat and no doubt many methods for making correct astrological predictions. We're interested in discovering what works for you. Let us know if you use sidereal, tropical, geo, helio, Hindu, Mayan, horary, usual planets, Chiron, Transpluto, Uranian, asteroids, comets, fixed stars, degree area, secondary progressions, solar arc directions, tertiary/solar/lunar returns, eclipses, cosmobiology, midpoints, declinations, transits, interface points, nodes, aphelion, perihelion, galactic points, eastpoints, vertex, Arabic Parts, house systems *or whatever* you use to get the correct answer.

Competitions in astrology

Results including the superprize

Geoffrey Dean and Arthur Mather

Most of this article originally appeared as the following four articles by us in 1980-1987: £500 prize -- for you? (letter) *Astrological Journal* 1980, 22, 19-20. Did anyone win the world's biggest astrology prize? *Astrological Journal* 1981, 23, 162-166. Did anyone win the world's biggest astrology prize No 2? The results and a new bigger superprize *Astrological Journal* 1983, 25, 203-210. Superprize results *Astrological Journal* 1986, 28, 23-30, 92-96, 274-275; 1987, 29, 86-90, 143-147 (and also in *FAA Journal* 1985, 15(3-4), 19-32, and 1986, 16(1), 65-72). To improve on-screen readability, additional sub-headings have been inserted in bold italics, and repetitions (as when an article summarises an earlier article) have been deleted. Occasionally later material has been added in [] where this could be helpful.

Abstract -- The most common competitions in astrology are those inviting the reading of an anonymous birth chart, but they have little research value because they rarely have controls. More useful are competitions aimed at specific targets such as the Astrological Association's 1970-1980 £25 prizes for contributions to astrology, the £500 and £1000 prizes offered by *Recent Advances* in 1980-1981 for proof of signs, the \$US5000 superprize 1984-1987 offered by an astrological consortium for evidence that the accuracy of chart interpretations cannot be explained by non-astrological factors, the 5000 Dutch guilders (about \$3000) Astrotest of astrologers 1996, and the £200 Truth of Astrology competition 1997. Prizes for testing astrology have also been offered by US astronomers in *The Gemini Syndrome* 1979 (all fees and expenses would be paid for every success in mutually-agreed tests of astrological claims), and by the *Centre Belge pour l'Etude Scientifique des Influences Astrales* 1982 (a Grand Prix Astrologique of 100,000 Belgian francs, about \$1700, for convincing evidence of a cause-and-effect relationship between heavens and terrestrial destiny). This long article describes in detail a total of nearly 70 entries (many representing a major research project)

from a total of 15 prize competitions, of which perhaps the most notable and useful was the superprize. It was (and still is) the largest prize offered specifically in astrology, it was the only prize to focus on non-astrological factors, it attracted a good response from a total of 14 countries, and its panel of eight judges was easily the most expert panel ever assembled. The topics addressed by the entries were roughly equally divided between personality, events, and other areas such as discrimination, synastry and horary. Only one entry was successful but this was a fake entry designed to test allegations that the prize was unwinnable because appropriate tests could not be designed and the panel of eight judges was not impartial. This article brings together four articles by the authors originally published during 1980-1987. Although the competitions described are now more than twenty years old, they are unlikely to be repeated, and their results are as pertinent today as they were then. With 50 references.

The most common competitions in astrology are those inviting delineation of an anonymous birth chart. Examples from the 1980s and 1990s are T Patrick Davis's *Astro sleuthing contests* described on this website under Doing Scientific Research, Suzi Lilley-Harvey's "Who's Who" series in the *Astrological Journal*, and Charles Hannan's "Challenge" series in the *NCGR Journal*. Earlier examples include *Alan Leo's tests of astrology* 1906-1914 described on this website under Historical, and a 1927 competition in the USA described below.

Unfortunately such competitions have little research value because (1) there are no controls that allow non-astrological factors to be addressed, (2) even if entries were generated at random before ranking, something has to come top, and (3) entries usually show much disagreement, as in the 1927 competition. Here thousands of US astrologers attempted to win \$US1000 (then roughly the average annual wage) by correctly describing three people from their birth data. But "they not only contradicted themselves, they were unanimously unsuccessful in describing the three people" (Miller R, Hugo Gernsback Skeptical Crusader, *Skeptical Inquirer* 26, 35-39, 2002).

Competitions relevant to research

More valuable are competitions aimed at specific targets such as the Astrological Association's 1970-1980 £25 (then \$US60) prizes for contributions to astrology, the £500 and £1000 prizes offered by *Recent Advances* for proof of signs 1980-1981, the \$5000 superprize 1984-1987, the 5000 Dutch guilders (about \$3000) Astrotest 1996 (see *Research results*), and the £200 Truth of astrology competition 1997 (see *Truth of astrology*), both under Doing Scientific Research. Prizes for testing astrology have also been offered by US astronomers in *The Gemini Syndrome* 1979 (all fees and expenses would be paid for every success in mutually-agreed tests of astrological claims), and by the *Centre Belge pour l'Etude Scientifique des Influences Astrales* 1982 (a Grand Prix Astrologique of 100,000 Belgian francs, about \$1700, for convincing evidence of a cause-and-effect relationship between heavens and terrestrial destiny). All of the above and their results are described later.

When the prize is fabulous

Various skeptic groups around the world offer fabulous prizes for any demonstration of authentic paranormal phenomena, for example *Quebec Skeptics* (\$Can100,000), *Australian Skeptics* (\$A100,000), *Indian Skeptics* (Rs100,000), and *James Randi Educational Foundation* (originally \$10,000, then \$100,000, now \$1,000,000). Initially applicants have to say what they can do, under what circumstances, and what they would accept as failure. But the majority of applicants cannot even do that. The rest have to take a mutually-agreed preliminary test, which if successful is followed by the formal test. To date nobody has passed the preliminary test. Most of the applicants have been dowzers and very few have been astrologers. One astrologer who applied when the Randi prize was still \$100,000 claimed he could tell a person's sun sign with perfect accuracy just by talking to them. But when tested on national TV with twelve different signs he scored just one hit, no different from chance.

In 1992 the Quebec Skeptics tested an astrologer of 25 years experience who claimed that her chart readings would be rated at least 75% accurate by their owners. Under an agreed procedure she prepared 3-page readings for each of seven anonymous subjects, who then rated all seven readings for accuracy on a scale of 0-100%. The mean accuracy rating of the authentic readings was 33%, more than the mean rating of 29% but less than the mean highest rating of 45% and well below the claimed 75%. Only one subject gave an accuracy rating of more than 75% but this was not for the authentic reading, which was rated at 28%. In response the astrologer said the poor result was probably due to the shortness of the 3-page readings, since her readings were normally of 20 pages. She added that she does not use clairvoyance or intuition, and that "if my work had not given positive results I would have left astrology long ago".

An earlier attempt on the Randi \$10,000 prize was made in 1983 by US astrologer John McCall who, in an ad in the *Washington Post* in late 1982, took issue with claims that the Gauquelins had faked their data, announcing that "I also can demonstrate astrology in a scientific way". He challenged scientists to test his discovery and thus "prove once and for all that there is a scientific basis to astrology". McCall proposed the following test: "Let a person write down the date and place of his birth, plus four times of day. One of those times is to be his actual time of birth. By studying the face and build of that person and consulting astrological tables, I can pick out the true time of birth." His claimed hit rate was above 80% provided the births were not induced or Caesarean and the subjects were not non-Caucasian or senile. Randi provided under double-blind conditions a trial sample of five subjects that McCall agreed met all his requirements. But McCall scored only one hit, the result expected by chance (5/4), which he attributed to the small number of subjects. So a second test was arranged, this time with 28 subjects. McCall was completely satisfied with the test conditions, but he scored only 7 hits, again the result expected by chance (28/4).

Gilbert D et al, Une fois de plus, l'astrologie echoue a un test [Once more astrology fails a test], *Quebec Sceptique* 23, 1-6, September 1992.

Randi J. A small-scale test of an astrological claim. *Skeptical Inquirer* 7(4), 6-8, Summer 1983.

Ianna PA and Tolbert CR. A retest of astrologer John McCall. *Skeptical Inquirer* 9(2), 167-170, Winter 1984-85

For insights into the baffling strangeness of some claims on these fabulous prizes see Randi J, Fakers and innocents: The one million dollar challenge and those who try for it, *Skeptical Inquirer* 29(4), 45-50, July-August 2005, available online as "Million Dollar Prize" at www.undeceivingourselves.com. Such challenges are not new, for example Joseph Dunninger (1892-1975), the famous mentalist and one-time chairman of the *Scientific American* Committee for the Investigation of Psychic Phenomena, offered \$10,000 to any medium who could perform a feat he could not duplicate.

Another example occurred in 1870 when Christian flat-earthier John Hampden offered a £500 wager (then seven times the average yearly income) to anyone who could prove the Earth was not flat. The wager was taken up by Alfred Russel Wallace, co-founder with Charles Darwin of the theory of evolution, with an experiment that involved looking along a straight ten-kilometre stretch of canal with a telescope. Points along the stretch dropped away as predicted by a curved surface, but Hampden insisted they dropped away in a straight line, so there was no curvature. In due course Wallace won, only to suffer a decade of threats and public abuse from Hampden that eventually put Hampden in jail. Ironically Wallace also lost standing among fellow scientists, who thought it unseemly to wager over an obvious fact because it made the obvious fact seem debatable. Today many scientists view the testing of astrology in the same light.

Details of the wager are from Garwood C. *Flat Earth: The History of an Infamous Idea*, MacMillan 2007.

Targeting non-astrological factors?

However, from a research point of view, perhaps the most useful competition to date has been the \$5000 superprize because it was offered not for direct proof of astrology but for evidence that astrological effects could not be explained by non-astrological factors. That is, it was offered for disconfirmation of the idea that astrology has an ordinary explanation. Disconfirmation could of course be achieved by any study in which non-astrological factors are controlled, and even in 1984 there were many such studies. Today there are many more, but none have produced a convincing disconfirmation. In other words the superprize could be seen as a last-ditch stand against the only explanation of astrology that has resisted repeated attempts at disconfirmation.

The superprize has been briefly mentioned in several articles on this website, most substantially in *Theories of Astrology* under Applied Astrology. What follows is a detailed look at its entries and results, including those of the other prize competitions previously mentioned. The superprize began with the following letter from Dean and Mather in *Astrological Journal* 1980, 22, 39-40.

£500 Prize -- For You? [Letter]

In his earlier letter in the *Autumn Journal* 1978, Dennis Elwell claims that signs are valid. In the *Spring Journal* 1979 we pointed out that if signs are valid then they can be shown to be valid. Hence we challenged him to present facts which prove that what he believes in is true. As an incentive we offered a prize of £500 if his evidence met specified criteria. In the *Summer Journal* 1979 [21, 146-147] he declined on the very reasonable grounds that the research required would take too much time and effort. [He estimated it would take two years. However] If the confidence with which signs are promoted is any guide, their validation should be easy. Hence in the interests of truth *Recent Advances* now offers the £500 (\$US1000) prize to anybody anywhere who can demonstrate the validity of signs objectively. The demonstration must validate signs as traditionally conceived and applied (ie that Aries is assertive or whatever, that Taurus is practical or whatever, and so on), must be capable of replication, must meet the standards of objective investigation, must be the investigator's own work, and must be submitted before the end of 1980. Entries should be sent to the editor of this *Journal*. If more than one entry qualifies for the prize, the earliest entry wins. Good luck.

The results are described by Dean and Mather in *Astrological Journal* 1981, 23, 162-166, as follows:

Did Anyone Win the World's Biggest Astrology Prize? [Article]

The world's [then] biggest astrology prize of £500/\$1000 was offered by us in 1980 to anybody who could demonstrate the validity of signs. Details were circulated to over 10,000 students of serious astrology by an article in the following astrological journals: *Astrological Journal* (UK) April 1980, *Macoy Digest* (USA) August 1980, *FAA* and *AAC Journals* (Australia) June 1980, *Journal of the Seasons* (NZ) June 1980. When our offer closed at the end of 1980 six entries had been received, none of them successful. A consolation prize of \$25 for the best entry was won by T Patrick Davis of Florida, USA.

Background

Signs are astrology's most popular and universal concept. They fill the pages of serious

textbooks and popular magazines alike. And for over 2000 years astrologers have been largely in agreement about what each sign means. It follows that signs are widely seen to be valid. But if they are valid they can be shown to be valid. And if the popularity of signs is any guide, their validation should be easy. Furthermore if signs are empirically based, as is often claimed, they automatically lend themselves to empirical testing. In other words, it should be easy to demonstrate that signs actually work in the way they are said to work.

During our literature searches for *Recent Advances* and *Recent Advances Two* [still in preparation] we were therefore confident of finding such a demonstration. But although we had searched well over a thousand books and many hundreds of journals, and had written to hundreds of astrologers around the world, we had not found anybody who had demonstrated the validity of signs -- and many had tried. Accordingly, in the interest of filling the gap, we offered a £500/\$1000 prize to anybody who could demonstrate the validity of signs. To ensure that the results were beyond doubt we specified that the demonstration must validate signs as traditionally conceived and applied (ie that Aries is assertive or whatever, and so on), must be capable of replication, must be supported by unambiguous evidence, and must be the entrant's own work.

Comments Received

Comments by editors, entrants and others, with our reply, are as follows:

This kind of reality for signs cannot be proven. The answer is why not? The astrological hypothesis is that each sign is of a different nature and that people born with a sign prominent in their chart will be of the corresponding nature. We can determine planetary positions in charts to high accuracy, and we can in principle measure personality and behaviour, hence a comparison can be made to see if the results support astrological claims. If the reality of signs cannot be proven, their effect cannot be detected. And if no effect can be detected, what is the point of using them? Or to put it another way, if they are non-falsifiable are they worth having? Which is not to say they cannot be legitimately used like a trait word to describe personality. What is not legitimate in the absence of proof is to claim that the hypothesis is true.

A sign is only one of numerous factors which in any particular chart can mask or even negate its effect. This kind of argument can be applied to virtually any variable in any discipline and if it were true we could never know anything about anything. The answer is either to use as test cases only those without such complications or to use a sample large enough for the complications to cancel out.

There was not enough time for evidence to be collected. The answer is that it is not unreasonable to suppose that the practising astrologer who uses signs will have already collected appropriate evidence (otherwise why do they use signs?). And among thousands of astrologers there should be some whose evidence already meets our requirements. Thus the time allowed is almost irrelevant.

Surely you were always sure that your money was safe? It would be safe only if a test of signs was not feasible or if we could cheat. But we have just shown that such a test is perfectly feasible [a point supported by the entries to our later invitation to devise tests of signs, see *Response to an invitation* on this website under Sun Signs], and we had an arbiter of fair play (see below). So safety is hardly a relevant feeling. In any case any truly rigorous validation of signs would be well worth the money.

How the Entries were Judged

Zach Matthews, editor of the *Astrological Journal*, received all the entries, sent them on to us, and received copies of all subsequent correspondence. If the entrant was unhappy with our judgement we sent the entry to an independent referee selected for expertise in astrology, psychology and statistics, and for not necessarily agreeing with our views. Any entrant who suspected us of cheating would no doubt be quick to complain to Mr Matthews, so he is the arbiter of fair play. He has kindly provided the following statement: "*Description and judgement of entries are fair and in line with the rules laid down in the offer.*"

Results

The entries (in order of receipt) and verdicts are briefly as follows:

Doreen Turnbull, Harrogate UK. A documentary on the harvest festival of a Mexican (?) forest tribe was seen on BBC TV about two years ago. The festival consisted of a series of rituals which Mrs. Turnbull linked with the signs of the zodiac. Thus the festival began with music and dancing (proclamation = Aries), masks were made (building = Taurus), masks were put on (communication = Gemini), and so on. Verdict: the entry fails because it does not demonstrate what is required, namely that people with signs prominent are of the corresponding nature. Furthermore, it does not meet the standards of proof specified by us, for example, the above sequence is not unambiguous because other attributions are just as convincing, such as free expression = Sagittarius, achievement = Capricorn, and secrecy = Scorpio, respectively. Mrs Turnbull subsequently added three more points to her entry: (1) The sign cycle applies not only to harvest festivals but to group activity in general. This point fails for the same reason as before. (2) Sign characteristics can be readily observed in individual character and behaviour. This point fails because no evidence was given that persons who are characteristic of sign X really do have the emphasis on sign X that astrology predicts. (3) She linked the zodiac to Teilhard de Chardin's idea of a psychic belt around the Earth which represents the collective thoughts and memories of mankind. This point fails because his idea is a hypothesis and not a fact. Also such a belt would necessarily be tied to the Earth (otherwise the Earth's motion would leave it behind) and hence would rotate with it, in which case it cannot be related to signs.

Rochelle Gordon, New York USA. Signs are valid but cannot be validated. Signs are symbols, i.e. they are words in the language of the universe. You cannot validate words, yet everybody agrees with their meanings and usage. Words work. Signs work. Verdict: the entry fails because if signs cannot be validated the prize cannot be won. The entry defeats itself.

Emma Drifon, Louisiana USA. I believe in signs. I read in *Horoscope* that the Sun conjunct Jupiter brings luck and money. At a horse race the No 5 horse won. Jupiter is No 5 sign (sic). No one picked horse No 5. Verdict: the entry fails because it does not meet the standards of proof required.

Dandon Campbell, Idaho USA. Changes in the Earth's angular momentum, as seen from the galactic centre, are divided by Mr Campbell into twelve categories which he then links with the signs of the zodiac. Verdict: the entry fails because it is a hypothesis, not a proof. Furthermore the Earth's angular momentum is constant, hence the changes on which the hypothesis is based do not exist. Mr Campbell subsequently related the signs to differences in travel direction between the Earth and Sun as seen from the galactic centre. This point fails for the same reason as before. Furthermore, when viewed from

the galactic centre, the Earth and Sun always travel in the same direction, hence the differences on which the hypothesis is based do not exist.

Albert M Sterling, California USA. The entry consisted of two 45-minute tapes averaging one word every few seconds. Mr Sterling advised that it was against his rules to write (hence the tapes) but he has received the gift of knowledge and is fighting for the future of mankind. Astrology is a wonderful science and if we care to drop by he would provide some answers to our \$1000 gimmick. Verdict: the entry fails because it does not meet the standards of proof required.

T Patrick Davis, Florida USA. This was easily the clearest, best-written and best-presented of all the entries and totalled 78 pages. Interpretations were given for 30 progressed charts, namely Queen Elizabeth II (seven events spanning 48 years), Winston Churchill (17 events spanning 90 years), and six others (one event each, usually death). The chart factors used were geo planets, helio planets (in the same geo chart), tropical signs, Koch houses, and eight major and eight minor progressed aspects of orb one degree. The interpretation was essentially traditional and was based mostly on the planet activated by the progressed aspect, the sign it was in and the corresponding house (ie the nth house for the nth sign), the sign ruled by it and the corresponding house, the house it was in, and the house on the cusp of the sign ruled by it. Traditional rulerships were used. Keywords were confined to a list of about 20 for each sign and house. In each case Mrs Davis showed that the chart matched the event and claimed that this was therefore proof of signs. Verdict: the entry fails because the interpretation was not shown to uniquely match the event in question. Thus in her approach any given planet will on average be related to five or six different houses and hence to about half of the situations covered by the 12 houses. Because there is no situation not covered by houses, any given planet will on average be related to about half of all possible situations. Since each chart averages 18 progressed aspects, each fitting about half of all possible situations, the chance of not matching any given situation is $(1/2)^{18}$ or less than 0.001%. Hence such matching proves nothing. Of course it may be that a standardised system of interpretation that permitted no arbitrary after-the-event selection would in fact demonstrate the validity of signs, but Mrs Davis did not use such a system. Because of the excellence of her presentation she wins the consolation prize of \$25 for best entry.

A New Bigger Prize for 1981-82

To promote the validation of signs, and to accommodate those who previously wanted more time, or more money, or less of a race, we now offer an even bigger £1000/\$2000 prize, with revised rules, to anyone anywhere who can demonstrate the validity of signs. The rules are as follows:

1. The entry must demonstrate that the tropical sign hypothesis is true. The hypothesis in the words of Margaret Hone in her *Modern Textbook of Astrology* page 37 is as follows: "The astrological hypothesis is that each sign is of a different nature. People born with one or other of these signs prominent in their charts will be very much of the nature of these signs." In other words, the entry must demonstrate that each tropical sign is of a different nature, and that people with prominent signs, for example, those containing a preponderance of planets, are also above average in the corresponding nature. It is not enough to show, for example, that soldiers tend to be born under Sun sign X, or that lettuce grows best when planted under Moon sign Y.

2. The nature to be demonstrated may be taken from any standard textbook such as Hone, Mayo, Parker and Parker, or Tyl, or as summarised in *Recent Advances* page 122 [see below].

Page 122 listed the keywords, needs, and traits (three positive, three negative) obtained from leading authorities (mainly Carter, Hone, Mayo, Davison), and selected as being the most representative and best at distinguishing one sign from another, as follows:

AR=Leadership needs moderation: Bold energetic assertive, selfish insensitive aggressive
TA=Security needs enterprise: Practical conservative possessive, obstinate grasping fixed ways
GE=Relationships needs unity: Lively versatile restless, superficial erratic two-faced
CN=Emotional growth needs logic: Emotional protective sensitive, moody touchy unreasonable
LE=Self-expression needs humility: Proud magnanimous generous, domineering conceited shows off
VI=Perfection needs breadth: Analytical logical industrious, fussy interfering unemotional
LI=Harmony needs decisiveness: Pleasant harmonious tactful, indecisive untidy stubborn
SC=Power needs forgiveness: Intense passionate secretive, resentful vindictive obstinate
SG=Wisdom needs restraint: Active adventurous likes freedom, extravagant careless tactless
CP=Integrity needs sociability: Cautious practical persevering, selfish exacting narrow mind
AQ=Knowledge needs warmth: Detached original humanitarian, perverse eccentric low integrity
PI=Understanding needs drive: Sympathetic spiritual impressionable, confused impractical temperamental

3. The demonstration must be capable of replication, that is, others should be able to do the same thing and get the same result. Results which do not replicate do not demonstrate what they are supposed to demonstrate and hence do not qualify.

4. The entry must be supported by facts whose interpretation is unambiguous. For example, it is a fact that most people agree with descriptions of their Sun signs, but the interpretation of this fact is not unambiguous (most people also agree with descriptions of Sun signs not their own), and it certainly does not validate signs (it shows only that most people agree with descriptions that are true of most people). Similarly a simple matching of charts to people is not unambiguous for the reasons given earlier. Entries accompanied by appropriate personality tests, statistical analyses and a replication are the ones most likely to succeed.

5. The entry must be the entrant's own work and must be submitted by the end of 1982 to Mr Zach Matthews BSc DFAstroIS (who continues as the independent third party to ensure fair play) at Oakfield, Goose Rye Road, Worplesdon, Surrey GU3 3RJ, England. However your intention to submit, plus a brief outline of your approach, must be sent to Mr Matthews by the end of 1981. [Zach Matthews, always a kind but critical supporter of our efforts, died in 2002.]

6. There is no race and all entries will be considered. If more than one entry qualifies then the prize of £1000/\$2000 will be shared. If no entry qualifies then a consolation prize will be awarded to the best entry. Our cheque/check is ready and waiting. Good luck.

The results of this new prize (Prize No 2), together with a brief summary of the previous prize (Prize No 1), were given by Dean and Mather in *Astrological Journal* 1983, 25, 203-210, as follows:

Did anyone win the world's biggest astrology prize No 2?

[Article]

Prize No 1

In 1980, the world's then biggest astrology prize of £500 (about \$1000) was offered by us to anybody who could demonstrate the validity of signs. Details were circulated via

journal articles to over 10,000 astrologers and students in the UK, USA, Australia and NZ. Six entries were received, none of them successful. We gave a full report of the results in an article which appeared in 1981 in the following journals: UK *Astrological Journal*, Summer, 1981; USA *Mercury Hour*, 9th extra edition, July, 1981; Australia *FAA Journal*, June, 1981 and AA *Journal*, Autumn, 1981; New Zealand *Journal of the Seasons*, Winter, 1981. In the same article, to accommodate those who wanted more time or more money or less of a race, we offered a bigger £1000 (about \$US2000) prize, with revised rules for the same thing. The new prize was also mentioned in other journals such as *Wetenschap & Astrologie* (Netherlands), Winter, 1981-82.

Prize No 2

The new prize was for a demonstration that the tropical sign hypothesis is true. To avoid the accusation that the hypothesis was rigged, we adopted the hypothesis as given by Margaret Hone in her *Modern Textbook of Astrology*, page 37. This has been the basic text for the Faculty of Astrological Studies for 30 years, and is rated by many as still the best single textbook on astrology, hence we considered her description to be authoritative. The sign hypothesis to be demonstrated was as follows: "The astrological hypothesis is that each sign is of a different nature. People born with one or other of these signs prominent in their charts will be very much of the nature of these signs."

The rules required that the demonstration be capable of replication, be unambiguous, be the entrant's own work, and be submitted by the end of 1982. Notice of intention to enter was required by the end of 1981. As in the previous prize, Zach Matthews, editor of the *Astrological Journal*, was the independent third party to ensure fair play. For this report, he has kindly provided the following statement: "*The description of the letters of intention received, and of the entries received and not received, is correct.*"

Comments Received

The comments received about Prize No 1, and our responses, appear in the previous article cited above. In brief they were (1) signs cannot be proven, (2) other factors will mask sign effects, (3) there was not enough time for evidence to be collected, and (4) surely we knew our money was safe. In effect our response to all of these was: what then is the point of using signs? Or, to put it another way, are signs worth having if they are non-falsifiable? Comments received subsequently about both prizes are as follows:

A few people felt that the words "prominent" and "nature" were vague and undefined. However, other textbooks were even more vague in defining what signs are, for example, *The Only Way to Learn Astrology*, page 10, says, "Each sign is a field of action in which the planetary forces operate". Other books, for example *Basic Astrology: A Guide for Teachers and Students*, and the *Larousse Encyclopedia of Astrology*, have no definition at all which could form the basis of a hypothesis. No doubt if we had attempted to impose definitions on Hone's wording we would have incurred the very accusation that we sought to avoid, namely of loading the dice. In any event, the entrants obviously did not feel this to be a problem.

T Patrick Davis of Florida, winner of the consolation prize for Prize No 1, gives in *Mercury Hour* (October 1981 pages 7-8) the reasons why she should have won. To her, the root problem was "the apparent lack of long-term experience in actual horoscope work by those judging the contest". Fortunately this will not be a problem to anybody else, since the judges included Charles Harvey, President of the Astrological Association and one of the UK's most experienced professional astrologers.

Her overall conclusion was that "the judges are not ready yet to conduct a truly meaningful and realistic contest to validate sign influences" and that "a prejudice in favour of a statistical approach ... will be a major hurdle to overcome". This misses the point. Her entry showed that charts match events, and in her eyes this should have been sufficient to win the prize. However, what she should have done, but didn't, was to check whether the matching could be explained by chance [which, as explained in our previous article, applies here]. Hence she did not win the prize. Of course, it may be that her approach could be shown to perform better than chance using methods other than the statistical approach which she eschews. In which case why didn't she do so? After all, those who feel that a particular scientific approach is inadequate are quite at liberty to devise something better.

Dr Mark Melton, a colleague of Pat Davis, argues in a two-part article in *Mercury Hour* (October 1981 pages 8-10, and January 1982 pages 49-51) that "the rules of these contests are slanted towards something which is not astrology", ie scientific demonstration, "and therefore the contests are rigged". In other words True Believers unite. Help stamp out Awkward Questions. He then invokes philosophical and terminological legerdemain to prove in effect that the prizes are impossible to win. A similar view is adopted by Ralph Holden of South Australia (*Astrologers' Forum* No 15 October 1982 page 4). However, there already exist studies which meet all the conditions laid down and which, if their results had been positive, would have won the prize (an example is the entry by Dwyer and Grange, see below). Melton also points out that the "astrological hypothesis is not a hypothesis at all but a generalisation of observable facts", yet "the astrological hypothesis is still not subject to proof by scientific method". In other words he is saying that observations cannot be observed. A curious view.

Results for Prize No 2

Details of the new prize probably reached as many astrologers and students as before, namely about 10,000. Nine notices of intention to enter were received from a total of seven countries, namely Australia, England, Germany, Netherlands, New Zealand, Scotland, and the USA. Of these, five intending entries were disallowed for the following reasons: One entrant wanted to change the rules. One wanted to test only three signs. One wanted to submit tests unrelated to sign meanings. One planned a test which had already been done by Gauquelin with negative results. And one applied five months after the deadline.

Of the remaining four intending entries, one by Ron Gaunt and Ira Smith of Queensland was not received and therefore fails. Their method involved selecting subjects with a preponderance of planets in particular signs, and then administering standard psychological tests. If the subjects exhibited the relevant traits significantly more than control subjects, if this was not due to self-attribution, and if the results could be replicated, this would be evidence for the reality of signs and the prize would have been won. That no entry was received suggests that such evidence was not obtained. The remaining three entries were received and were as follows:

Entry 1

The first entry was by Mrs RN Synnott of Napier NZ and consisted of two typed pages. Her proof of the validity of signs was to simply assert that they are valid, and that astrologers behave as if they are valid. The following excerpts illustrate her points: "Time has surely shown the validity of the signs. Astrology is sound, it's (sic) principals (sic) work. Thus the validity of the signs is empirical and must stand as fact, even if it

can not be proven." This entry was accompanied by a note saying that it was hoped that we "in due course will forward a cheque in approval of my brief discourse". The entry subsequently appeared with some trivial errors and omissions in the *NZ Journal of the Seasons* Winter 1982 pages 17-19. Verdict: the entry fails because it does not meet the standards of proof required.

Entry 2

The second entry was by Terence Dwyer and Colin Grange of the UK and consisted of three typed pages. They compared the acceptance by 34 art students of authentic and control chart interpretations in a double-blind study disguised as a test of graphology. Each interpretation was a synthesis of the meanings (taken from standard textbooks) of the sign positions of the Ascendant, MC, Vertex, Sun, Moon, and planets excluding those beyond Saturn. A computer was used to calculate the charts, perform the synthesis, and print the interpretations. Each subject received three interpretations which they had to rate for accuracy, namely one authentic, one chosen at random from the others, and one for a birth 10 years and 5 months before theirs (this gives a chart as different as possible from the authentic chart).

For Dwyer's method see Dwyer T. A new approach to natal interpretation. *Astrological Journal* 25(2), 98-105, Spring 1983 and 25(3), 190-198, Summer 1983.

The number of authentic charts that were rated more accurate than the controls was 16 vs random and 21 vs 10-year; 22 random controls were rated more accurate than the 10 year controls. If signs have no effect, the expected number in each case is 17. By chi-squared test none of the results are significant at the $p=0.1$ level. Hence the subjects were unable to identify the authentic interpretations at better than chance level. If they had, if this was not due to self-attribution, and if the results could be replicated, this would be evidence for the reality of signs and the prize would have been won. But the authors rightly conclude that their results fail to validate the sign hypothesis. Verdict: the same, hence the entry fails.

Entry 3

The third entry was by John Greig of Edinburgh and consisted of 45 typed pages. He examines the great Hollywood stars who had screen roles between 1930 and 1950. At this time the star system was at its peak and produced stars who consistently portrayed the same image. He suggests that the screen image had to reflect the total personality for it to be convincing and that it therefore provides a test of sun signs. Accordingly, from a total of 1060 stars described in a total of eight biographical dictionaries of film stars, Greig selected 121 truly great stars known for their image and nothing else. He found that the Sun sign clearly matched the image given in their biographies in 56 cases, matched the image derived from all available information in 27 cases, and did not match in the remaining 38 cases. If the selection of stars is unbiased then the number of matches expected by chance is 10. Hence Greig concluded that the results support the reality of signs. He did not apply a significance test but by chi-squared test they are significant at the $p=10^{-130}$ level, which is very highly significant indeed. To support his claims, he gives excerpts from each star's biography (average 20 words) which best illustrate their image.

Greig does not explain why image or persona should be shown by the Sun sign, when most astrologers relate it to the Ascendant, or why other planets are not important, but in view of the apparently positive results such objections are irrelevant. The real problem is that the matching was not performed blind. Numerous studies have shown that

matching is strongly biased by knowing the answer in advance. Hence we cannot tell whether Greig's results are due to astrology or due to bias (which may be quite unconscious). In other words, before we can accept Greig's conclusion we need to know whether the same results would be obtained under blind conditions. Since Greig doesn't tell us, we asked 20 astrologers to match his excerpts to Sun sign. The excerpts were in random order and excluded 13 excerpts which were too short to be meaningful, eg "masculine leading man". Responses were received from five astrologers, at least two of whom were full-time professionals.

According to Greig, up to 73 of the 108 excerpts should be correctly matched. In fact on average the astrologers matched only 14, range 11-17, thus supporting our suspicion that his results are due to bias rather than astrology. The average is still more than the nine expected by chance, but the difference can be explained by bias in the choice of star, bias in the choice of excerpt, and by direct recognition of the star from the excerpt (one astrologer correctly identified eight stars in this way). Of course, it may be that blind ratings of full biographies selected objectively would, as Greig claims, produce evidence of signs. But we can only judge Greig's entry as he presents it, not as he might have presented it. Verdict: the entry fails because the results are not unambiguous and therefore do not meet the conditions laid down.

The £20 consolation prize is divided two ways, half to Dwyer and Grange for the excellence of their experimental design, and half to John Greig for sheer hard work.

A new, even bigger superprize for 1983-84

The RA prizes are not the only recent prizes for proof of astrological claims. In late 1979, Profs Culver and Ianna, in their book, *The Gemini Syndrome*, outlined ten tests matched to specific astrological claims such as identifying personality, occupation, cause of death, competition winners, natural disasters, criminals, and relationships. The details of each test were to be mutually agreed upon in advance, and for every test that the astrologer passed, they would pay his total fees. Thus, in effect the astrologer could name his own prize for a test whose rules he had helped to formulate. However, for every test that was failed, the astrologer would pay 10% of this fee as a contribution towards the very considerable cost of data collection and testing. In this way, the astrologer stands to profit greatly from his successes, but Culver and Ianna do not stand to profit in any way from his failures. Prof Culver informs us that so far only one astrologer has made an enquiry, and none have taken up the challenge of even a single test.

These tests have attracted the same allegations as have the RA prizes, such as being rigged, irrelevant, and offering too little incentive for the effort required. Our response to all this is to devise a new astrology prize to accommodate these allegations. The details are as follows:

Prize Money

5000 US dollars (roughly £3000) provided jointly by the following sponsors. *Australia*: Astrosearch Computer Services, Recent Advances. *Canada*: Phenomena Publications. *UK*: British Astrology. *USA*: Astro Computing Services, Astro-Graphics Services, Marguerite dar Boggia, International Society for Astrological Research, Marion March, Matrix Software, Polakoff Foundation, Lcdr David Williams. The prize money is the highest ever offered for the advancement of astrology. It compares more than favourably with the prize money (typically \$1000) of the several hundred cash awards and prizes for outstanding achievement (other than winning contests) in various disciplines made each year around the world at national and international level.

The superprize is not a race and all entries will be considered. If more than one entry qualifies the superprize will be shared. If no entry qualifies a consolation prize of 100 dollars will be awarded for best entry. If there are several best entries the consolation prize will be shared.

Aim of the superprize

Nowhere in the entire astrological and related scientific literature is there a single convincing demonstration that the most fundamental astrological products of all, namely chart interpretations, are true for the right reasons. Without such a demonstration (1) astrology will never gain professional recognition, and (2) the entire ethic of astrological practice is open to question. The superprize is an attempt to rectify the situation.

Topic

The superprize will be awarded for convincing evidence that the accuracy of chart interpretations cannot be explained by non-astrological factors. For the present purpose, "convincing evidence" is that which is convincing to the judges. The non-astrological factors which could apply are surprisingly numerous and in principle are sufficient to explain why astrology seems to work. Examples are universal validity, gullibility, belief, and statistical artifacts. There are many others. The aim of each entrant will be to demonstrate that non-astrological factors are in fact not sufficient, and that the only genuine explanation of why astrology works is the reality of astrological effects.

Rules

1. All entries must be received by 31 December 1984. Notice of your intention to enter must be received by 31 December 1983.
2. Entries must be typewritten, single-spaced in English, French, German, or Spanish, must contain a detailed summary in English like those under *Results for Prize No.2*, and must be the entrant's own work. Four copies are required.
3. The charts must be of ordinary people typical of those who visit astrologers.

There are no other rules. The interpretations can be of any kind such as character or life events, using any method whether recognised or not. Entries may be made by individuals or groups from any country. There are no restrictions on style, format or approach. In principle entrants can do whatever they like in whatever way they like.

Judges

Entries will be judged by the following panel of judges chosen for their interest in astrology (nearly all have written extensively on astrology) and for their expertise in relevant disciplines. This is easily the most expert panel ever assembled for the purpose of assessing astrological claims.

Prof Roger Culver, Colorado State University (astronomy)

Prof Hans Eysenck, University of London (psychology)

Dr David Nias, University of London (psychology)

Prof Ivan Kelly, University of Saskatchewan (educational psychol.)

Prof Marcello Truzzi, East Michigan University (sociology)

Michel Gauquelin, LERRCP Paris (cosmic influences)

Charles Harvey, President AA London (astrology)

Dr Henry Krips, University of Melbourne (philosophy of science)

[Dr Krips subsequently moved overseas and was unable to participate.

Prof Ulrich Mees, University of Oldenburg (psychology) kindly filled the vacancy]

A copy of each entry is sent to the three most relevant judges. If the entry passes two out of three, it will then be sent to another three judges for confirmation. The final

outcome will be decided by consensus. The entrant will receive the judges' comments in full.

How to Enter

1. Send a letter indicating your intention to enter, plus a brief outline of your intended approach (which will be kept confidential), to Dr Geoffrey Dean, Astrology Superprize, PO Box 466, Subiaco 6008, Western Australia, to arrive before 31 December, 1983. A copy should also be sent to Mr Zach Matthews, BSc, DFAstroIS, Oakfield, Goose Rye Road, Worplesdon, Surrey GU3 3RJ, England.
2. When your entry is ready, send a copy to Geoffrey Dean to arrive before 31 December 1984. A copy of the summary should also be sent to Zach Matthews. You will then be sent the addresses of the three judges to whom the other three copies of your entry should be sent.
3. Queries should be sent to Geoffrey Dean.

Guidance for Entrants

Because astrologers object to restrictions being made on their astrology, this superprize (unlike previous RA prizes) doesn't have any. To win the superprize all you have to do is convince the judges that you deserve it. How you do this is strictly up to you. However, please note that the failures of previous RA prize entries (other than those due to negative results) have all resulted from faulty experimental design. Entrants not familiar with the requirements of technical investigation and reporting should therefore seek independent help to ensure that their entries are of acceptable standard. Those who feel that the required conditions cannot be met should note that studies already exist which do exactly that. If astrological effects are real then the superprize should be easy to win.

Outcome

Notice of the superprize is appearing in astrology journals around the world. Full details of the outcome will appear in the same places.

The outcome was described by Dean and Mather in *Astrological Journal* 1986, 28, 23-30, and in *FAA Journal* 1985, 15(3-4), 19-32, as follows:

Superprize Results Part 1

The superprize has successfully stimulated research into everyday astrological practice and has attracted a better response than any previous astrology prize. Part 1 gives the reasons for the superprize, a summary of problems and their resolution, the names of the winners, details of the other prizes, and news of a new prize to challenge the critics. Part 2 (in the next issue) gives the details of the winning entries.

Introduction

The aim of the superprize is to obtain "convincing evidence that the accuracy of chart interpretations cannot be explained by non-astrological factors". The superprize rules were established by progressive recycling among a handful of interested persons and were approved by the sponsors before publication. The prize money of \$US5000 is the highest ever offered in astrology and is provided jointly by 12 sponsors as follows.

Australia: Astrosearch Computer Services, Recent Advances. *UK:* The Astrological Association. *Canada:* Phenomena Publications. *USA:* Astro Computing Services, Astro-Graphic Services, Marguerite dar Boggia, International Society for Astrological Research, Marion March, Matrix Software, Polakoff Foundation, LCdr David Williams. Unfortunately Phenomena Publications recently reneged on their written pledge of \$US1000 (copies of

the relevant letters are available on request), thus reducing the prize money to \$US4000.

Full details and background information can be found in our superprize article published in astrological journals in England **1**, Australia **2** and Germany **3**, and in editorially abridged form in France **4**, Holland **5**, New Zealand **6**, Canada **7** and the USA **8,9,10,11**. Altogether news of the superprize probably reached 250,000 readers in the USA and over 5000 elsewhere.

1. Dean G and Mather A (1983). Did anyone win the world's biggest astrology prize no 2? The results and a new bigger superprize. *Astrological Journal* 25(3), 203-210, Summer 1983.
2. Ditto. *FAA Journal* 13(2), 32-38, June 1983.
3. Dean G, Mather A and Niehenke P (trans) (1983). 5000-Dollar-preis fur den Nachweis der Gultigkeit astrologischer Deutungen. *Meridian* 3, 13-16.
4. *Astro-Psychological Problems* 1(4), 10-13, September 1983.
5. *Wetenschap & Astrologie* 6(1-2), 63, Winter 1982-83.
6. *Journal of the Seasons* 32, 17-20, Winter 1983.
7. *Fraternity News* 5(3), 33-34, Summer 1983.
8. *American Astrology* 21 & 53, July 1983.
9. *NCGR Newsletter* 4-6, Spring 1983.
10. *Kosmos* 12(3), 50-52, Summer 1983.
11. *Aspects* Summer 1983 under "What's Happening".

Over 60 intentions to enter were received from a total of 14 countries (USA 23, Germany 17, UK 9, rest of Europe 7, other 5). Of these 34 subsequently sent in entries. The combined entries totalled over 1500 pages or a pile 20 cm high. Organising the superprize required a total of three man-months of full-time work and \$US350 for postage, stationery, printing and photocopying.

There were eight judges each chosen for their interest in astrology and expertise in related disciplines such as psychology. They were Charles Harvey, Michel Gauquelin, Dr David Nias, Profs Roger Culver, Hans Eysenck, Ivan Kelly, Ulrich Mees and Marcello Truzzi. This is easily the most expert panel ever assembled for the purpose of assessing astrological claims. Each entry was judged by the three most relevant judges. Thus a study involving signs would go to the judges most familiar with sign studies, and a study in German would go to judges who could read German.

Reason for the superprize

To convince someone of the validity of astrology, we can do two things. First, we can show them 100,00 chart interpretations that have been published in Western languages since 1900, all of which show a perfect match between subject and chart. Second, we can send them to a competent astrologer for a reading, which (according to common experience) should almost certainly convince them of its validity. What more could we want?

The answer is: a great deal. First, some of those interpretations turned out to be based on wrong charts, so the 100,00 perfect matches may only reflect astrology's ability to describe anything in retrospect. Second, there are many reasons why we should perceive validity in a reading even when none exists. For example the chart has so many indications it can't be wrong, we are so variable we would fit anything, the astrologer is so nice it has to be true, we project meaning where none exists like faces in clouds, we remember the hits and not the misses, the astrologer is recycling what we revealed 10 minutes ago, and we are both unaware that these things are happening. Third, to get around these problems there have to date been 7 blind trials of chart interpretations involving a total of nearly 200 subjects, and 20 blind trials of astrologers involving a

total of over 400 astrologers and over 450 charts or pairs of charts, but not one has produced convincing evidence that authentic charts can be distinguished from controls [the numbers have since greatly increased but the outcome is the same, see *Case for and against astrology* on this website under Adroit Utilities, or *Meta-analyses* under Doing Scientific Research]. This is a lot of tests, and most of them were conducted not by hostile sceptics but by astrologers seeking to demonstrate the validity of their beliefs. Yet the results are precisely what we would expect if astrological factors do not work. In other words we can certainly examine books and visit astrologers, and thereby conclude that astrology works, but we cannot conclude that it works for the reasons claimed by astrologers, ie that it is factually valid. Which of course is potentially disastrous for the credibility and professional standing of astrology (is nobody the least bit worried?). The aim of the superprize was to change all this.

There but for the grace of God goes astrology

Readers who, for whatever reason, are not the least bit worried by the foregoing should heed the warning provided by phrenology, the science of mind with philosophic overtones. Phrenology involves the reading of moral, intellectual and sensual dispositions from brain development as shown by the size and shape of the head. For example destructiveness is shown by the area just above the ears, amativeness by the area around the nape of the neck, and various intellectual abilities by the forehead. Phrenology is now defunct but it once enjoyed a far greater worldwide following than astrology does today. In the UK it was at its peak in the 1830s, when there were over 30 phrenological societies with a combined membership exceeding 1000, and the *Phrenological Journal* (one of several) averaged over 400 pages a year for 10 years. In the 1890s the British Phrenological Association (which survived until 1967) had an office and large library in central London; it organised lectures, classes, and diploma examinations, and included among its aims the exposure of "any charlatanism or quackery that may come under its notice". At that time there were over 150 practitioners in the UK alone, some of whom claimed to have read over 100,000 heads, or 10 a day for 30 years. Overall British phrenology reached heights that British astrology has so far only dreamed about.

For a concise illustrated survey of UK phrenology and its philosophy (but with hardly any hint of its invalidity) see H & P Cooper, *Heads or the Art of Phrenology*, London Phrenology Company 1983, distributed by Thorsons. For a scholarly review of US phrenology see JD Davies, *Phrenology Fad and Science: a Nineteenth Century American Crusade*, New Haven 1955. Quote is from *The British Phrenological Year Book* 1896, British Phrenological Association, London, p 64 and final pp.

Phrenology provides a warning because it is so similar to astrology. Like astrology, it is concerned with individual potential and the philosophy of existence. That is, it encourages you to (1) think about yourself in phrenological terms, (2) assess yourself via phrenological principles, and (3) act on the findings to achieve a physical, mental and spiritual whole and thus harmony with the world. So astrology and phrenology cover the same ground. Like astrology, phrenology attracted people of intelligence and standing, and achieved even greater popularity, for example a reading was often a prerequisite for getting a job. As in astrology, theories were expressed in tones of complete authority despite a complete absence of experimental evidence (the workings of the brain were then largely unknown, as were experimental techniques for testing phrenological claims). As in astrology, learned arguments raged in the *Phrenological Journal* on topics that ought to have precluded argument, for example some held that head size indicated intelligence while others disagreed, and every criticism of phrenological ideas was furiously attacked. As in astrology, famous people were quoted in its support. For example, phrenology is "as much better than all other systems as the electric light is

better than the tallow dip" (Gladstone), and it has "an accuracy that the most intimate friends cannot approach" (Alfred Wallace FRS). But the most important point is this: like astrology, phrenology persisted because day after day its practitioners and clients could see that it worked. It was "so plainly demonstrated that the non-acceptance of phrenology is next to impossible". So no matter what the critics said, they knew. Altogether a perfect parallel to astrology.

Quotes are from Severn JM. *Popular Phrenology*, Rider, London 1913, p 6.

But the fundamental postulates of phrenology were wrong. Dispositions are not indicated by size and shape because the brain does not work like that. Nor do they exist as the fundamental entities required by phrenological theory. So a bulge here or a depression there cannot mean what it is supposed to mean, even though the underlying philosophy of "know thyself" has undeniable appeal. As a result, phrenology remains "the most popular of all the doctrines ... (in the history of psychology), and at the same time the most erroneous. It affords a striking example of the danger of erecting a vast superstructure on inadequate observation and inexact methods".

Quote is from Flugel JC. *A Hundred Years of Psychology*, 3rd edition, Duckworth, London 1964, pp 31-38. A wonderfully sympathetic but devastating critique of phrenology that applies equally to astrology. All astrologers should read it. More details of the evidence against phrenology are given by EG Boring, *A History of Experimental Psychology*, 2nd edition, Appleton Century Crofts, New York 1950, pp 50-79. [Subsequently a thorough review of phrenology vs astrology became available, see Dean G. Meaningful coincidences: Parallels between phrenology and astrology *Correlation* 1998, 17(1), 9-40.]

Clearly, phrenology did not need to be true in order to work. To put it another way, phrenology was like an uplifting discussion in which only white lies were exchanged. Critics saw only the lies while practitioners only saw the uplift. Both were right -- but since lies are unethical, phrenology inevitably failed to survive. Astrologers will of course recognise this as a fitting end to a system whose breakdown of human experience (into commonly 42 divisions spread across 8 categories) is at such variance with their own 12-fold system.

But astrology is in the same boat. As in phrenology, it is evident that astrology does not need to be true in order to work -- if invalid factors worked for phrenology then they will work for astrology. The same confusion exists between lies and uplift. And the arguments currently made in support of astrology apply equally to phrenology. Which brings us to the bottom line. *Astrologers are like phrenologists: their systems cover the same ground, they apply them to the same kinds of people, they turn the same blind eye to the same lack of experimental evidence, and they are convinced for precisely the same reasons that everything works. But the phrenologists were wrong. So why shouldn't critics conclude for precisely the same reasons that astrologers are wrong?* Read this section again, think about it, and let us know! [There was no response.]

What entrants had to do

Each entrant had to demonstrate that the accuracy of the chart interpretations could not be explained by non-astrological factors. The interpretation could be of any kind, for example it could cover personality, health, vocation, compatibility or events, but the subjects had to be typical of those who visit astrologers. In this way the results would be of maximum relevance to everyday practice. The important thing is that it is not sufficient to demonstrate a match between chart and subject; after all, 100,000 such demonstrations already exist. What is required is a demonstration that the match cannot be explained by non-astrological factors. Unfortunately many entrants did not do this and thus immediately denied themselves the chance of winning.

If an entry was clearly deficient in design or reporting, Dean advised the entrants of each deficiency (even though under the rules there was no obligation to do so) and suggested that to improve their chances they might like to amend the entry before submitting it to the judges. About half the entrants were grateful and acted accordingly (some subsequently won the prize), the rest angrily denied there was anything that could be improved (none subsequently won a prize). Overall, as we shall see, the entries provide a fascinating array of research ideas and pitfalls for the unwary, and give us perhaps our best view yet of how astrologers tackle astrological research.

Comments and criticisms

Many kind comments were received from entrants. For example "Eminently fair and remarkably flexible" (USA), "I cannot tell you how delighted I was ...I do not like rules, regulations or restrictions" (USA), "A very great idea for stimulating people to write" (France), "May this superprize bring forth many new scientific proofs for astrology" (Germany).

On the other hand we have many critics. For example Dennis Elwell **12** argues that the prize is unwinable because it is difficult to design an appropriate test, and because some judges may have too much at stake to be impartial. Barbara Koval **13** argues that science is not able to determine the validity of astrology because "Science deals with averages and groups. Astrology deals with individual experience." Jeff Jawer **14** argues that the superprize offers a "stacked deck" because he doubts the ability of some judges to be impartial. Mark Melton **15** argues that experiments cannot be designed that would win the superprize, hence it is rigged and unwinable. Al Morrison **16** took a full-page ad in *Mercury Hour* to ridicule the superprize and to claim that it had been boycotted. In a libellous update **17** he claims that the superprize is moot because the sponsors "guaranteeing payment of the prize ... could not pay out such sums".

12. Superprize debate between Dennis Elwell and Geoffrey Dean, Astrological Association Conference, York 1983. Available from the Astrological Association as Sagicassette Y14.

13. Koval B. Letter to the Editor. *American Astrology* pp 18-19 September 1983. See subsequent issue for Dean's reply

14. Jawer J. Comments of the superprize. *Fraternity News* 5(4), 51, Fall 1983.

Dean's reply appeared in 6(3), 39-42, Summer 1984

15. Melton M. *Mercury Hour* 17-18, April 1984 and 1-2, Extra Edition April 1985.

Dean's replies appeared in *Mercury Hour* 41-42 October 1984 and 1985 in press [October]

16. Morrison AH. The alternative Geoffrey Dean PhD space age bonanza super-duper prize(s). *Mercury Hour* 19, January 1984.

17. Ditto. *CAO Times* 5(4), 43-44, 1984

These criticisms boil down to two points: (1) Appropriate tests cannot be designed. (2) The judges are not impartial. The first point is completely disproved by the entries.

The second point was put to the test by sending a 17-page control entry to all judges. The control entry was disguised as a genuine entry and was purportedly a study of transits that showed a strong and highly significant positive correlation ($r=0.5$) with life events. To avoid clues about its real origin it was prepared and mailed with the help of Astrosearch in Sydney NSW; copies are available on request. [See appendix for an abstract of this fake entry. No requests for copies were received.] It included all the things that a good entry should have, such as a literature review, adequate sample size, controls, statistical analysis, and a replication. It was in fact based on a genuine study, the only difference being a gross inflation of the sample size and the substitution of strikingly positive results for genuine negative ones. It was not entirely flawless (too good a result might have aroused suspicion) but it was certainly good enough to merit

approval from an impartial judge. According to the critics our judges should have found some excuse to condemn it. This is what the judges actually said:

Culver: Satisfies the requirements for clarity and chart interpretation.

Eysenck: Cannot fault the study presented. The results would certainly qualify for the superprize.

Gauquelin: Interesting entry. The best I have read. Deserves encouragement.

Harvey: (No comments despite a 6-month wait.)

Kelly: A promising study...the authors are aware of confounding variables that are a problem in this area.

Mees: Very impressive...the only work that...has been fully convincing...I hope it succeeds in the astrology superprize.

Nias: The best study so far, with replication and documentation of life events as bonuses.

Truzzi: An impressive...quality study... demanding independent replication.

You can see that the control entry easily achieved the minimum of two assenting judges required to qualify for the superprize, so in principle it could have won. Some judges provided a page or more of constructive comments. One even offered to help with a replication. Such actions and the above comments should reassure any critic inclined to doubt the judges' impartiality. Ironically the only judge to remain silent was the astrologer.

The entries

For convenience we have divided the entries into four groups, namely (1) entries intended but for some reason not submitted, (2) entries submitted but not judged because they failed to address the required topic, (3) entries withdrawn or with negative results, and (4) entries submitted and judged. Irrespective of their classification, the entries contain much interesting material, whether ideas or data or findings in need of replication, for example in (1) Dwyer, Heop and Naiman, in (2) Milsten and Patching, in (3) Swick, and in (4) most of them. Some entrants have already published their material. We hope that others will do the same where appropriate.

Entries not submitted (25 cases)

In 15 cases (marked *) we enquired why. Seven replies were received and are included below.

Bevan Norway.* A test of Kundig's rectification method using subjects with accurate birth times with or without a Void-of-Course Moon. If the method works then so does astrology. In which case if the method fails for subjects with a Void-of-Course Moon, then Void-of-Course Moon and signs work. Postponed due to pressure of other work. Will be finished and published in due course.

Dwyer UK.* Can subjects pick authentic interpretations from controls? A test of *Starword* computerised chart interpretations based on signs and aspects; these factors were used because tests had shown them to be the most reliable. See Dwyer T. A new approach to natal interpretation. *Astrological Journal* 25(2), 98-105, Spring 1983 and 25(3), 190-198, Summer 1983.

The control interpretation was calculated for a birth time 5 years and 6 months before the authentic time, except that the sun sign was kept the same to avoid giving clues to subjects familiar with their sun sign meaning. *Starword* synthesised all chart factors via their traditional meanings and took 45 minutes to produce each pair of interpretations. Each interpretation was divided into 7 sections (eg mentality, career, relationships etc) which the subject rated for accuracy. Work was abandoned after a pilot study of 30 subjects showed that 15 picked the authentic interpretation as the more accurate, and 15 picked the control, which is the result expected if astrological factors do not work.

This is an example of a simple test that meets all requirements. Thus all non-astrological factors are automatically controlled in one hit; and the possibility of positive results being due to ESP rather than astrology is easily controlled by leaving the interpretations blank. Yet according to many critics such tests are impossible to devise. If this pilot study had produced the positive results expected, a larger follow-up study would have been conducted. If this had also produced positive results, the superprize would have been won.

Forneret USA. A test of charts vs life events.

Freemantle Swaziland. Can astrologers identify homosexuality? A Vernon Clark test with at least 10 pairs of charts and at least two astrologers. Test was abandoned due to lack of interest from homosexuals and astrologers.

Groeger Germany.* A statistical test of rectified charts vs life events for 200 subjects.

Hawley UK.* A statistical test of progressed composite charts of Cruft champion dogs and their owners at time of first success.

Heop UK.* A test of 50 students who are changing their life direction via a residential course. Do they have more contacts (eg Uranus transits) than a control group no changing direction?

Hoen and Hepp Netherlands.* A demonstration that subjects sharing a common condition, eg occupation or illness, have the same astrological signature in their charts. The signature consists of a multiple-of-22.5° aspects between the AS or M C and relevant planets, their midpoints or antiscions. Unfortunately the work could not be completed in time. The occupation chosen was astrology. The subjects were 100 astrologers whose birth data had been published in *Zenit* in the 1930s. The main finding was that 99 of the astrologers had a close hard aspect between AS, or MC, or their antiscion, and the midpoint of Uranus and the 4th/10th ruler, whereas it was present in only 30-35% of a control group of unspecified size. This, of course, may merely be an artifact of the large number of factors tested. Results will be published when ready.

Kern Germany. A demonstration that his chart works for character and events.

Kroncke Germany.* A demonstration that subjects sharing a common condition, eg occupation, personality or accidents, have the same astrological signature in their charts. The signature consists of specific Uranian planetary pictures.

Kuhnert Germany. Not clear but seemingly a test of charts vs events.

Landeau USA. Are differences between the geo and helio positions of Mercury, Venus and Mars related to personality?

Lavastre France. A demonstration that her chart works for character, health and events.

Methorst et al Netherlands.* No details but possibly involving signs.

Naiman USA.* A demonstration that charts indicate illness. The basic idea is that illness is caused by stress, and stress is visible in the chart. The work was already complete

when the superprize was announced and is available as a 7-volume monograph on medical astrology. It was not submitted due to a mistake in the rules made by the editor of the journal concerned.

Plooyer USA.* A statistical analysis of aspects between married people.

Pritchett UK.* Can astrology identify personality? A Vernon Clark matching test using 5 astrologers and 30 pairs of subjects greatly differing in personality. Interrupted by the addition of twins to the family. It is hoped to continue after a year or so. [No report has been subsequently published.]

Rieber-Mohn Norway. Not clear but involving the analysis of charts classified by sub sign and by time period.

Rivers USA. A one-case study showing that astrology can distinguish between murder and suicide.

Rudolph Germany. A demonstration that astrology can solve questions of disputed paternity if the birth data of the possible fathers is known.

Schure USA.* A demonstration that charts indicate events for 10-30 subjects each with certified birth times. Abandoned due to work problems caused by the US recession.

Sprayer Italy. Solar chart interpretations for subjects undergoing knee surgery.

Staley et al Canada.* (1) An analysis of chart factors at the time of psychiatric hospitalisation for patients and controls. (2) The correlation between chart factors and 16PF scores for a large sample of nurses.

Swain et al USA.* Can astrologers predict marriage and the birth of children? Vollmann Germany. Not clear, no details.

Entries submitted but not judged (16 cases)

In each case judging was pointless because the entry did not address the required topic.

Christina USA. One page claiming a correlation between Moon phase and hair growth after a haircut. To stimulate growth, cut at New Moon or when Moon is increasing during First Quarter.

Cohen USA. 17 pages on numbers and their significance in astrology. Proposes that the degree and minute of chart placements indicate the age at significant events. For example her MC is at 11 Cancer 28.9, when she was aged 11 years and 5 months her sister was born, and at age 28.9 her sister came to live with her.

Darлак USA. 10 pages on why astrology is important in 1984. Mostly assertions and anecdotes plus homely advice.

Dunham NZ. 10 pages describing six case studies that confirmed astrological predictions.

Dwyer NZ. 154 pages on how to survive the next Aquarian Age. Mostly transcribed lecture notes based on Cayce and the Kabala and frequently impossible to follow. Example: "Pluto in traditional astrology up until a few years ago seemed to be ignored except to say it was generation influence but then are not all individuals part of generation was accepted they said that Pluto is the force of re-generation"(sic). Included 9-1/2 hours of cassette tapes. Contained nothing obviously addressed to the required topic.

Eaton USA. Eleven pages summarising the factors and techniques found to be reliable in 14 years of experience. Included biorythms, palmistry and acrophonology [using symbols to represent sounds].

Julian USA. Eight pages of chart interpretation for a client plus 11 pages on astrological symbolism

Milsten USA. Five pages of speculation that astrological charts can be interpreted in electronic terms. Thus Sun generator, Moon battery, Mercury frequency tuner, Venus AC, Mars DC, Jupiter amplifier, Saturn resistor, Uranus flow of electricity, Neptune static electricity, Pluto magnitude, and Earth magnet. Each planetary influence increases progressively from Aries through Pisces on a scale of 1 through 12. A typical brief interpretation is: "Small reserves of energy but can generate needed energy to meet challenges. More inclined to flight (AC) than fight (DC). Fights by inertia rather than action."

Nielson USA. Three pages of interpretation for two charts. The aim of the interpretations was to convince the judges of the validity of astrology.

Oster Germany. 264 pages consisting of (1) Chart interpretations for 17 great composers, seven great physicists, Napoleon, a murderer and his 22 victims. (2) Essays on heredity, the law of existence, and the conception chart. (3) A report on blind judgements made by the author on two charts in 1946; an independent panel found him to be correct, however, the charts and details have been lost.

Patching Australia. 15 pages and 24 charts on why psychic astrology works, plus 60 mimeographed pages on the signs and zodiacal ages. The author was converted to the psychic zodiac of 13 signs after reading James Vogh's *Arachne Rising*, and has reached the conclusion that traditional astrology "as practised today is irrelevant or wrong". Her ideas came in a burst of psychic revelation.

Powell USA. Five pages and one horary chart for the question "where is my lost jewellery". Author implies that the jewellery was found but does not specifically say so.

Richards UK. 32 pages describing appropriate astrological indications for 40 events in his life. Beautifully drawn and presented.

Scholtz Germany. 85 pages describing 22 case studies (mostly events) using 10 planets, Transpluto, Koch houses and midpoints. Often esoteric. Beautifully drawn charts.

Sege USA. Five pages describing two chart predictions of accidents that came true. Both predictions involved progressed contacts using orbs of 2 degrees. No controls, statistical checks or awareness of non-astrological factors. In a subsequent letter the entrant says

that if the judges "fail my entry for any reason, there is either something wrong with their ability to recognise bona fide astrologically-caused events, or with their own interpretational methods". Unfortunately he inadvertently misfiled his letter and retrieved it too late (mid 1985) for this point to be put to the test.

Titworth USA. 19 pages describing 12 case studies that confirmed Church of Light rules for events.

Entries withdrawn or with negative results (5 cases)

Berg USA. Proposed a test using 20 charts to see if astrologers, psychics and controls can predict personality, relationships, career and health. After one year the required charts and astrologers had not been obtained, so the entry was withdrawn.

Hegeler Germany. Not clear but involved the I Ching. After one year "Mein Plan war fehlerhaft", her plan came to nothing.

Lopez Mexico. 167 pages. Hypothesis: MMPI scores indicate the presence of certain factors in a chart. For 191 normal subject aged 17-55 in Mexico City a multiple discriminant analysis was performed between each of the 13 MMPI scores and the presence or absence of each of 100 chart factors. The factors were sign-related positions such as sign, element and decanate for 10 planets and Ascendant, and multiple-of-300 aspects (orb 15 degrees) for all planetary pairs except Neptune-Pluto. Of $13 \times 100 = 1300$ tests, 54 were significant at the 0.05 level vs $0.05 \times 1300 = 65$ expected by chance. The difference is not significant ($p=0.3$ by 2×2 chi-squared test) and is in the wrong direction.

Lutz Germany. Five pages. Hypothesis: given the dates of 6-10 important life events, the author's semi-Kundig method can determine the birth time within 1/2 hour. For 10 examples supplied by us, the author's calculated time differed from the known time by an average of 9 hours, the distribution of differences being almost exactly at chance level. Only one result was within one hour, which is no better than the result expected by guesswork.

Swick USA. Seven pages. Hypothesis: there are significantly more quincunxes at death for authentic charts than for control charts. Quincunxes were counted between nine transiting factors and 12 natal factors, orb 4 degrees, for 100 accidental deaths obtained from Las Vegas newspapers 1983-84 and 100 control charts on three dates chosen at random. Expected mean = 4.80. Observed means = 4.74 for the deaths and 4.57, 5.52 and 4.62 for the controls. The hypothesis was therefore not confirmed.

Consolation prizes

Unfortunately what was to have been a straightforward judging process has been upset by a number of unforeseen circumstances such as the publication of incomplete superprize rules by some journals (which has disadvantaged some entrants), the large proportion of German entries (which would ultimately require more German judges or translation into English), and the failure of one judge to send in any judgements on 7 entries during the 6-14 months following receipt despite several reminders (which effectively stalls the original design; an alternative judge could not be found for these 7 entries, which totalled over 200 pages, most of them in German). Accordingly, to be fair to the entrants and to avoid any further delay, the sponsors were asked if the terms of the award be changed. All sponsors except the Astrological Association said yes; they agreed that \$US200 consolation prizes be awarded to all entrants whose entry, in the

opinion of the judges, deserves recognition for the excellence of its design or sheer hard work, irrespective of whether the results reach the level of evidence required by the original rules.

To assist judgement each judge received the opinions of all the judges, and no consensus was required -- the recommendation of a single judge was sufficient to award a consolation prize. In fact four of the six winners were chosen by more than one judge. The winners of the \$US200 consolation prizes are Ferguson, Klein, Niehenke & Boer, Schneider-Gauquelin, Sohnius, and Urban-Lurain, all of whom have been sent their prize money. This leaves a balance of \$US2300, plus further pledges from ISAR, Marguerite dar Boggia and Matrix totalling over \$US400, which the sponsors have agreed to apply to a new prize as described below. Thus although the sponsors could have simply declared a stalemate and paid out the minimum (2%) provided under the original rules, they have actually paid out 35% and have committed the rest to furthering astrology. This should reassure critics like Al Morrison who claimed the sponsors were not bona fide. All entrants have been sent the judges' original comments on their entries.

The Astrological Association have preferred to stay with the original rules. Accordingly the superprize will continue under the original rules, using their portion of the prize money, and the results will be announced in due course. At the time of writing a winner according to the original rules is still possible. One of us (Mather) would have preferred more sponsors to have stayed with the original rules, but under the circumstances recognises their right to resolve the immediate dilemma while providing a constructive approach to future prizes. [There was no response to the AA's continuation of their portion of the superprize.]

Other astrology prizes

In the two years since the last update, the Culver-Ianna prize for a demonstration of specific astrological claims has attracted two enquiries but no action **18**. Total entries to date is therefore nil.

The Grand Prix Astrologique of BF100,000 (about \$US1700), announced in the Belgian astrological journal *Demain* in 1982, was to be awarded for convincing evidence of a cause-and-effect relationship between heavens and terrestrial destiny -- a topic that makes the superprize look like child's play. Not surprisingly the response was too poor to justify awarding the prize. However BF25,000 has been made available to assist future research by one entrant (Nick Kollerstrom) provided that it follows the judges' recommendations. It is hoped to re-run the prize in due course **19**. [No re-run has been announced.]

In 1970 the Astrological Association announced that it will award annually a prize of £25 (then about \$US60) for the most valuable contribution to the study of astrology. A second prize of £10 may also be awarded in special circumstances **20**.

18. Culver RB. Personal communication August 1985.

19. Brahy GL. Personal communication August 1985. See also *Correlation* 3(2), 2, November 1983 and 5(1), 2, May 1985.

20. For rules see The Astrology Prize, *Astrological Journal* 12(1), 12-13, Winter 1969-70.

Details of each entry for the 1970 prize are given in The Astrology prize 1970, *Astrological Journal* 12(4), 5-7, Autumn 1970.

Details of later prizes usually appear in Autumn or Winter issues, or very infrequently in *Transit*.

All entries had to be typewritten, anybody could enter, and the entrance fee was £1. The 1970 prize attracted nine entries, but the three judges (astrologers Davison, Firebrace and Mayo) reported that their general standard was a little disappointing in that very few made a positive contribution to the study of astrological -- only two had any real claim to originality. Unfortunately, in neither of these cases was the presentation really persuasive, nor were practical examples appended in support of the theories advanced.

The winner was Harold Wigglesworth for the astrology of towns and cities, and a special award was made to the entrant who submitted a labour-saving MC-and-Ascendant finder. In 1971 there were 6 proposed entries but only two were submitted. According to the judges (astrologers Lind, Matthews and Russell), the first entry on planetary numbers lacked relevance to astrological study, and the second entry on historical cycles lacked background and supporting evidence. Neither won a prize. In 1972 there were two entries, both of which were later withdrawn. In 1973 the prize was won by Stephen Arroyo for his MA Thesis on Astrology vs Psychology [subsequently published as part of *Astrology, Psychology, and the Four Elements*, CRCS 1975]. The announcement occupies only four lines and gives no further details or even the number of entries, so presumably the response was poor.

Nothing further happened until 1979, when there were three entries. The first prize was won by Michael Mayer for a holistic perspective on meaning and identity [later expanded to *The Mystery of Personal Identity*, ACS 1984, see *Using astrology as a counselling tool* on this website under Applied Astrology], and the second prize was won by Michael Startup for an empirical study of Jupiter vs Saturn in the diurnal circle (the results were at chance level). In 1980 the prizes and entrance fee were doubled, but the response was so poor that no first prize was awarded and plans for future prizes were cancelled. For comparison the 1980 (\$US1000) and 1981 (\$US2000) RA prizes for the validation of the signs attracted 6 and 4 entries respectively, but no winners. The response to the superprize has therefore exceeded the response to all the above prizes combined.

Interestingly the response to astrology prizes today seems to be on a par with the response to phrenology prizes nearly 150 years ago. Thus in 1838, when interest in phrenology was at its peak and £1 was worth the equivalent of £10 today [1986], three 5-guinea prizes [£5 5s] offered in Glasgow for the best essay on phrenology attracted a total of 11 entries, all "very able productions". And in 1839 a £20 prize offered by the *Phrenological Journal* for the best essay on choosing members of parliament by phrenology attracted 9 entries totalling 200 pages, some of them having "passages of considerable merit".

From *Phrenological Journal* 1838, 11, 90 and 1839, 12, 415. No other UK prizes are mentioned during the period 1828-1847

[Here the test of astrologer John McCall has been omitted because it was described earlier.]

A new prize to challenge the critics

Nobody, least of all ourselves, pretends that prizes are the only way to advance astrological knowledge. But they are a most useful adjunct to existing research, especially as they allow us to focus on areas that might otherwise be neglected. No matter what you may think of the superprize it has resulted in many useful studies that we would not otherwise have, for example those of Dwyer (UK), Swick (USA), and Klein (one of the consolation prize-winners, see Part 2 in next issue).

Nevertheless at the 1983 superprize debate between Elwell and Dean **12**, critics claimed that the superprize had got it all wrong and that it ought to have been done differently. (Interestingly the worst hostility came from those opposed to any idea of testing their astrological beliefs, which seemed to raise doubts about their confidence in those beliefs). Accordingly the sponsors have agreed to make the remaining money available for a prize to be devised and administered by the interested critics, so the latter now have a chance to put their ideas into action. In other words the sponsors provide over \$US2700 in prize money, the critics do the rest. What could be fairer? The only provisos are that the new prize be addressed to validating everyday practice, that it has the approval of the sponsors, that entry details be published in this journal before the end of 1986 and that the results be published in the same detail as here. Otherwise the offer lapses. Of course some critics may feel that the provisos are too restrictive and that a completely fresh approach is justified, for example perhaps the prize should be offered for any proof of astrology, or perhaps there should be more sponsors to increase the incentive, or perhaps smaller prizes should be offered for proposals for a definitive test of astrology, in which case their ideas are most welcome.

Interested critics should immediately circulate their proposals to the sponsors direct. Addresses may be obtained from: Geoffrey Dean, Box 466, Subiaco, 6008, Western Australia. We await the results with interest. [There was no response, so the offer lapsed.]

Acknowledgements

Many people helped to make the superprize possible. Thanks are due to Peter Niehenke for translating the superprize article into German, Dr David Nias for helpful comments, Jane De Rome for a summary of the Dean-Elwell debate and for researching past AA prizes, Austin Levy for helping with the control entry, the sponsors for putting up the money, the judges for their careful and frequently time-consuming assessments, and of course the entrants for such an interesting and diverse assortment of entries.

The rest of the article appeared in *Astrological Journal* 1986, 28, 92-96, 274-275; 1987, 29, 86-90, 143-147, and in *FAA Journal* 1986, 16(1), 65-72, as follows:

Superprize Results Part 2: Details of each entry

Entries judged (15 cases)

At least 6 entries were based on studies made before the superprize was announced. The judges rated each entry on the following points:

1. Is it clear what was done?
2. Does entry address chart interpretations?
3. Does entry address non-astrological factors?
4. Are subjects typical of those who visit astrologers?
5. Is the evidence convincing?

For point 5. the judges needed to know how the observed results compared with those expected by chance, or how the results for authentic charts compared with those for control (ie non-authentic) charts. This allows the astrological contribution to be assessed while keeping everything else constant, which is what the superprize is all about; to do otherwise is like expecting a prize for discovering that all males have Mars in their charts. Obviously if the entrant gives no expected frequencies or uses no controls (and most of them did not) then no judgement is possible. To show you what the judges had to cope with, and, hence the pitfalls facing any researcher, we have summarised the main problem areas for each entry. The verdict given for each entry indicates the points

(if any) on which the judges were unanimous that the entry had failed, and includes a verbatim selection of judges' comments. This section has been checked by the judges, and then by the entrants, and any comments have been incorporated.

Barclay UK. 3 pages. A description of 2 horary charts that successfully predicted a satellite landing in the Indian Ocean 4 days in advance, and the location of a cat lost for 10 days. Problems: sample too small, no indication that sample is unbiased. Verdict: fails 3, 4 and 5, coincidence must be shown to be unlikely as an explanation, satellite is not identified, further satellite predictions made weeks or months in advance would make this sort of evidence far more believable.

Beyse Germany. 40 pages. Description of parent-child contacts for 11 families. Contacts were 0, 45, 60, 90, 120, 135 and 180 aspects, orb 5, between Sun, Moon, Venus, Mars, Moon's Node, Ascendant and M C in one chart and those in the other. Inspection of the author's data showed that the average number of reported contacts was 7.4 (range 1-20) for 58 pairs of related charts vs 16 expected by chance, the difference being due to contacts present but not reported, hence the reported contacts can be entirely explained by chance. The author claims her results show (1) that astrology is true, (2) that each ecliptic degree has a typical physical property, and (3) that form should be recognised as a dimension. Because astrological factors have many correspondences with nature, for example the elements represent combinations of heat and moisture, astrological symbols are a mental reality. Problems: no summary of observed frequencies (so the reader has to do all the work), no expected frequencies (which can of course be overcome by controls involving parallel studies of unrelated charts, but there are no controls either), so the entry is impossible to judge. Verdict: fails 3 and 5, interesting study but lacks statistical evidence.

Brummund Germany. 9 pages. Comparisons of 50 famous artists born 1890-1954 with 34 mongoloids born 1966-1974 using the Uranian system of 10 planets, 8 hypothetical planets, Ascendant, MC, Moon's node, and 0° Aries. The author counted the number of contacts between A and B using multiple of 22.5-degree aspects and 10 orbs, where A = a significant point such as the Sun, 0° Aries, or the Hades/Admetos midpoint, and B = the remaining points, all midpoints, and antiscions of these points and midpoints. The hypothesis was that artists would have more contacts than mongoloids. In fact they had less, the mean per chart per significant point being 44 for artists and 47 for mongoloids vs 45 expected by chance. The contacts showing the biggest difference between artists and mongoloids for the three significant points for which the author gives results are as follows:

A = Sun			A = Moon			A = Hades/Admetos		
B	Art	Mong	B	Art	Mong	B	Art	Mong
CU	1.7	2.3	ME	1.8	3.0	AR	2.4	1.2
0*	1.7	2.3	AD	1.6	2.3	AD	2.7	3.9
SA	1.9	2.4	MO	3.4	3.9	NE	1.8	2.9
SO	3.4	3.9	CU	1.6	2.1	CU	2.4	1.4
JU	2.0	2.4	SA	1.7	2.2	PL	2.3	1.6
**	2.1	2.2	**	2.0	2.2	**	2.1	2.0
0* = 0° Aries.			** = Mean of all 22 Uranian points.					

The above figures are the mean number of contacts per chart. The author claims that only the hypothetical planets differentiate between artists and mongoloids, but this is not evident from the above results, where hypothetical planets are not noticeably more involved than authentic ones. Furthermore it is not clear whether any differences are

real or merely due to chance (aggravated by the large number of factors tested) and to differences in the span of birth years. Verdict: fails 4 and 5, samples too small, no replication, results negative.

Ferguson UK. Two entries. (1) Can astrologers predict the chart factors that relate to outstanding success in dancing? Entry consisted of the first chapter from a 250-page book *Stars of Dance*, plus notes specially prepared for the superprize, analysing the birth charts of 1043 ballet dancers and 510 non-dancers, all with birth times. Data were obtained by the immense labour of writing to 6000 dancers direct. Twelve famous dancers or dance directors each nominated 6 traits required for outstanding success in dancing. The results condensed to 20 traits clustered around determination and artistic sense. The chart factors corresponding to these traits were then nominated by each of three professional astrologers to give a total of 60 factors. Computer analysis of several thousand factors for dancers vs non-dancers confirmed 6 of these factors (Moon-Neptune, Mercury-Saturn and Mars-Jupiter aspects, Venus and Jupiter in Scorpio, Saturn seldom on IC) and 5 other factors not selected by the astrologers (Mercury-Uranus and Venus-Saturn aspects, Sun and Mars on IC, Uranus on MC). Problem: no indication of the match expected by chance, so the results are impossible to judge. (2) Does the birth chart show sex differences? Entry consisted of the *Stars of Dance* results for 147 male non-dancers and 313 female non-dancers that showed astrological differences between males and females. Problem: similar studies have found no evidence of sex differences, the most convincing differences were said to lie in the distribution of ascending signs but by chi-squared test the differences are exactly at chance level ($p=.5$ $df=11$). Verdict: (1) fails 3 and 5, (2) fails 5, one of the better entries, no statistical tests for the entire data set, the reported differences are not convincing. This entry won a consolation prize.

Glutz Germany. 15 pages and 2 charts. The claim that the charts of successful, talented people show a harmonious pattern (ie an above average number of contacts between Jupiter and the Sun, Moon, Mercury or Venus), whereas those of aggressive, uncontrolled people, such as murderers, show a tense overall pattern (ie discordant aspects between Pluto and the Sun or Mars, between Saturn and Mars or Uranus, and no Grand Trine). Problems: no observed frequencies, no expected frequencies, no controls, no details of how the sample was selected, so it is impossible to judge. Verdict: fails 3 and 5, sample size is woefully inadequate, no account is taken of non-astrological factors, no indication that samples are unbiased, study must involve blind assessment, examples no matter how good are not enough.

Two of Glutz's statements are worth quoting because they probably represent the feelings of most astrologers. (1) "The horoscope tells us about such features as stamina, intelligence, courage, personal dominance, adaptability, single-mindedness, as well as the way in which a person expresses himself, and specific talents, such as artistic and manual skills, eloquence, critical judgement, to name but a few. It also reveals the threats to which a person is exposed and the times at which these threats will present themselves." In other words almost everything can be explained by astrology. (2) "Studying astrology is an exciting adventure which never ceases to be interesting. Time and again it leads to surprising insights and astounding results. For astrology no evidence needs to be furnished. Astrology furnishes this itself day after day to all those interested who approach this science without bias." But phrenologists said the same about phrenology.

Hill USA. 19 pages. Mostly devoted to a statistical sun-sign study of 913 jazz musicians broken down by instrument into groups of 80-180, and 1153+1134 football players

broken down by position into groups of 80-330. Author points out that previous studies have involved topics too broad to give reliable effects, hence her study involves narrow topics. Many apparently significant distributions were obtained. Problems: no demographic corrections and no allowance for the many pitfalls of sun-sign studies (eg the virtual impossibility of calculating expected frequencies due to unavailability of data), so it is difficult to judge what is happening. Verdict: fails 3, 4 and 5, many of the sample sizes are too small, author lacks understanding of inferential statistics and of the difficulties involved in sun sign studies. Apart from this the entry was a model of diligent industry, and showed the kind of spirited effort that more astrologers should be putting into their research. If only the topic and design had been better the entry would have won a prize.

Klein UK. 10 pages. Can partners in a relationship pick the authentic synastry description from control descriptions? 50 volunteer couples were recruited via an announcement at a TA psychologists' conference in Switzerland attended by 750 delegates. [TA = transactional analysis based on child, adult and parent states that are assumed to exist in all of us.] Each partner received one authentic synastry interpretation plus four others, and ranked them according to accuracy. Each interpretation was based on major aspects between charts of orb 3 degrees, and house placements of the other's planets, and averaged 60 statements of 10-20 words each. 36 responses were received, all but 4 being from couples where both birth times were known. The authentic interpretation was ranked 1, 2, 3, 4, 5 in 12, 5, 13, 4, 2 cases respectively, which is significantly in favour of the authentic interpretation being chosen. Problem: other than excluding all references to natal sign and house position, knowledge of astrology was not controlled. Among so many delegates it is likely that some would know their synastry, and their inclusion would have been favoured by the selection process and by the subsequent ranking task (which subjects found difficult). Such subjects would obviously tend to pick the authentic interpretation. So it is impossible to tell if the results mean anything. Verdict: fails 5, follow-up studies should be conducted. This entry won a consolation prize and is an excellent example of the kind of basic research that more astrologers should be doing.

Niehenke and Boer, Germany. 15 pages. Can astrology pick people who are accident prone? Studies have shown that people who cause serious accidents, eg traffic accidents tend, to be of low intelligence, childlike, egocentric, aggressive, antisocial and irresponsible. The authors point out that these traits correspond to the negative side of Mars and Uranus and therefore should be predicted by the chart. An independent institution provided birth data, accident data and personality data for 6 persons who had caused accidents, each with 1-4 controls of the same sex, the same age within 4 years, without social problems and without an accident record. The authors scored 5 hits vs just under 2 expected by chance, which is significant at the $p=0.03$ level. Problems: the sample is too small to guard against coincidence. The chart factors are not described so their expectancy in the general population (and hence whether they are realistic or not) cannot be determined. Verdict: fails 3 and 5, sample too small, interesting but statistically not convincing. This entry won a consolation prize for its design.

Pauk Germany. 27 pages. Can transits (Uranian system) predict events? For a female subject born in 1924 with a birth time recorded to half hour, 20 predictions were made in advance for 1982 and 22 for 1983. At the end of the year the subject (who knew what the predictions were) described what actually happened. Typical predictions were: (1) educational questions, intellectual conflict with females; (2) furtherance of hopes and wishes; (3) compulsion to achieve; (4) possible accidents; (5) accomplishments and

satisfying work in business; (6) new beginnings, relief work, great changes. Author claims the accuracy was 93% in each case. Problems: predictions were generally vague and were known by the subject in advance (the ideal self-fulfilling prophecy), no objective methods of scoring, no controls, probability of agreement is impossible to determine. Verdict: fails 3 and 5, blind judgements by neutral observers are necessary.

Platz Germany. 80 pages. Can astrology predict accidents? From an examination of 500 accidents taken from newspaper accounts giving time, date and place, the author concludes that certain transiting and directed contacts must exist for an accident to happen. His system involves 14 natal points including Transpluto, their midpoints, 4 galactic points, multiple of 7 aspects of orb 20', and 12 different rates of direction applied simultaneously. Problems: no expected frequencies, no controls and no statistical overview (essential when so many factors are involved), so it is impossible to judge. Verdict: fails 3 and 5, very interesting hypothesis but no convincing statistical confirmation.

Rupert USA. 11 pages. Can astrology predict 16PF scores? From the charts of 21 subjects aged 18-49 the author predicted their scores on the 16 scales of the 16PF personality inventory. The predictions were then compared with the actual scores obtained independently by a psychologist. Significant correlations were obtained for 8 traits, namely warmth, intelligence, rebelliousness, compulsivity, and self-sufficiency, for which $p=0.01$ corresponding to $r=0.55$ for $df=19$ (no actual correlations were reported), and boldness, suspiciousness, and shrewdness, for which $p=.05$ corresponding to $r=.43$. Non-significant results ($r<0.30$) were obtained for conformity, emotional sensitivity, anxiety, ego strength, dominance, impulsivity, imagination, and guilt proneness. Predicted and actual scores were given for one subject, said to be typical, for which the correlation was a remarkably high 0.80 ($df=14$, $p=0.0002$). The study was made in 1980. Problems: low validity of 16PF scales (hence the correlations appear to be higher than they should be even if astrology were perfect), no controls, no allowance for self-attribution, insufficient description of procedure and results (adequate reporting is especially important here because later better-controlled studies have consistently failed to confirm such findings). Despite these problems the entry is the kind of study that more astrologers should be doing. Verdict: fails 3 and 5, self-attribution could readily explain the results.

Schneider-Gauquelin France. 25 pages plus 70 pages of reference material. Do the Gauquelin findings re key sectors improve the accuracy of astrological interpretations? The point here is that key sectors, ie. cadent houses, are traditionally regarded as weak and therefore, tend not to be used, whereas according to the Gauquelin findings for eminent professional people the opposite should apply. So if the Gauquelin findings can be found (albeit in disguise) in traditional descriptions matching chart to personality, which implies that the Gauquelin findings have to be used to make the chart fit, and if the Gauquelin findings apply to ordinary people, then the accuracy of chart interpretations is indirectly supported. The author cites studies suggesting that the Gauquelin findings do apply to ordinary people. For example Steffert and Shanks found that happily married people tend to have the Moon in key sectors whereas unhappily married or divorced people tend to have Jupiter in key sectors. And Bollen found that in 5 generations of her Dutch family the son who inherited the farm was not the oldest (as was customary) but the one with Jupiter in key sectors. The author then selects the charts of ordinary people (10 cases) from Lois Rodden's *Profiles of Women*, a book of charts and personality descriptions published in 1979, and shows that when one of the five Gauquelin planets is mentioned in the interpretation (meaning that it is seen to be

relevant) it tends to be in a key sector. For 28 mentions the observed frequency in key sectors was 17 vs 5 expected, which is significant at the $p=0.002$ level. Interestingly, the author shows that Rodden overcomes the problem of weakness due to cadent house placement by finding other reasons (eg close aspects) to mention the planet. Problems: small sample size, Rodden's descriptions may have been influenced by knowledge of the Gauquelin findings, the applicability of the Gauquelin findings to ordinary people is uncertain (negative studies are currently as common as positive studies). Verdict: fails 5, a lot of interesting material but is any of it really convincing? This entry won a consolation prize for its presentation and organisation of reference material.

Sohnius Germany. 11 pages. Does colour preference predict sun sign? The relation between sun sign and scores on the Pfister colour pyramid test was determined using 350 subjects aged 18 and over. The Pfister test involves arranging 24 coloured squares inside a triangle to give the most pleasing effect. A further 56 subjects divided into two equal groups were then given the Pfister test, and for each subject the 12 signs were ranked blind in order of best fit with the previous results.

The correct sign ranked 1-3, 4-6, 7-9, 10-12 in 10, 6, 4, 4 cases (first group) and 14, 5, 6, 3 cases (second group), showing a distinct trend in favour of the correct sign. After eliminating subjects who had ambiguous colour scores (ie over-emphasis on either colour or form) or who were born near a cusp (18th-25th of each month), the corresponding results were 10, 4, 0, 0 and 13, 2, 1, 0 respectively, showing a highly significant trend in favour of the correct sign (for the combined results $p=10^{-9}$). Problems: No check on whether the preferred colours are those traditionally associated with each sign, in which case the results could be explained by self-attribution. An independent replication with 193 subjects made after the entry was submitted gave negative results. The poor validity of colour tests is of no consequence here because no interpretation is involved, but if the test has poor validity do the results mean anything? Verdict: striking findings, procedure not clear, deserves a follow-up. This entry won a consolation prize.

Starr USA. 50 pages. A description of a sign study of 193 cancer victims and 193 people who died from causes other than cancer. The planets Sun through Saturn and the Moon's North Node were tested. One cancer distribution (Mars, peaking in Cancer and Pisces) and one non-cancer distribution (Node, peaking in Gemini and Virgo-Libra) were significant at the $p=0.05$ level, total 2 vs $0.05 \times 8 \times 2 = 0.8$ expected. Problems: no demographic corrections, expected frequencies are dubious eg those for Venus in each sign were taken incorrectly as 1/12. Verdict: fails 3 and 5, does a nice job of explaining what was done but has virtually no discussion of non-astrological factors, does not satisfy the requirements of a proper scientific study.

Urban-Lurain USA. 77-page MA thesis and book *Astrology as Science -- A Statistical Approach* (AFA 1984). Can astrology distinguish alcoholics from the general population? A multiple discriminant analysis was performed on 53 AA (Alcoholics Anonymous) members and 217 members of the general population matched to the same birth year range (1921-49) and sex ratio (60% male) as the AA sample. The chart factors were angular separations between planets, Moon's Node, angles (ie Ascendant and MC) and Part of Fortune excluding those between the outermost planets, total 96 pairs (exactly how the angular separations were used is not stated, discrete aspects and orbs were not used), plus the house position of planets, Node, Vertex and 8 parts, total 20 (house system was not stated). The six factors that best discriminated between alcoholics and controls, in descending order of importance, were angular separation Moon-Ascendant,

house position of Venus, and the angular separations Pluto-Part of Fortune, Mars-Neptune, Sun-Venus and Sun-Saturn. When the discriminant function was used to classify the data from which it was obtained, it correctly classified 81% of the alcoholics and 81% of the controls (which is a typical result for this kind of analysis even if the data be random numbers). However it also correctly classified 72% of a second matched set of 230 controls, which is significant at the $p=10^{-10}$ level and therefore suggestive that a genuine effect exists. Problems: (1) Of the 116 factors tested, 70 involve angles, parts or house position and are therefore sensitive to birth time errors. Yet half the alcoholics have birth times given only to the hour or half hour. So do the results mean anything? (2) The standard procedure in a multiple discriminant analysis is to divide the test cases and controls into two groups to see if the results replicate. But only the controls were divided, leaving any artifacts in the test cases. Without proper replication no conclusion is possible. (3) The statistical tests assume that the variables are independent. However, although 96 angular separations between 15 points were analysed, only 14 separations are needed to completely define the others. Similarly a part is completely defined by its components. So such variables are not independent. Since the statistical assumptions [of independence] are not met, do the results mean anything? (4) In the USA alcoholism and heavy drinking in 1980 were about 5 times more prevalent in men than in women. Unless we pretend that charts also indicate sex, this means that even if charts are 100% accurate for men they can be only 20% accurate for women, and vice versa. On average the maximum possible accuracy is therefore $(100+20)/2$ or 60%. On this basis the observed accuracy of 81% and 72% is too good to be true. (5) The results conflict with those of the handful of other studies which found no evidence that the chart relates to alcoholism (See Dean G. Alcoholism revisited. *Astrological Journal* 27(3), 179-182, Summer 1985).

Verdict: the judges found the entry overloaded with jargon and difficult to follow. They agreed that it was a nicely conducted study but due to the above problems were unable to decide what the results indicated. A recent independent review by Francoise Schneider-Gauquelin, *NCGR Research Journal* 3(3), 45, September 1985, reached the same conclusion: "We miss in this work a clear view of what exactly has been evaluated. A mathematical model of this complexity, applied to a sample of only 53 data (which emphasizes the role of chance fluctuations), can produce results for various reasons. They may be astrological, but they may also be due to demographic, astronomical, etc, particularities of the target sample." This entry won a consolation prize.

A moral for research astrologers

In the original superprize article we pointed out that "the failures of previous RA prize entries (other than those due to negative results) have all resulted from faulty experimental design. Entrants not familiar with the requirements of technical investigation and reporting should therefore seek independent help to ensure that their entries are of acceptable standard." Unfortunately this seems to have largely fallen on deaf ears. As we have seen, all of the problems encountered by the judges (other than those due to unclear writing) arose from faulty experimental design, and all of them could have been avoided by proper design. Ironically the only entrants who clearly avoided faulty design (Dwyer and Swick) obtained negative results.

In our opinion there was no excuse for faulty design because: (1) In most cases proper design would have involved no more effort than did the actual design, for example dividing a sample into two replicate groups is as easy as not dividing it. (2) Ample guidance exists via *Recent Advances*, via *Correlation*, and via almost any textbook of

experimental psychology. (3) The standard required is no more than that expected of any contribution to *Correlation*.

The moral for astrologers interested in research is: make sure your design is right, otherwise your results will be worthless. We have often been asked how good research should be done, as if there was some magic formula that would make you an expert researcher overnight. Sadly, there is no such formula, anymore than there is a formula that would make you an expert astrologer overnight. For those who wish to do good research there is really no alternative but to become seriously interested in the subject, to read up the literature on experimental design, and to exchange ideas with those already doing good research.

Browse through the selection in your local library and pick the one you fancy. If this produces nothing, try: S Miller, *Experimental Design and Statistics*, Methuen, London and New York, 2nd revised edition 1984, paperback, 186 pages, an unusually clear and readable account by a psychologist for absolute beginners. Contains explanations and summaries of how and why of design, step by step instructions, tables for most of the statistical tests likely to be needed, and worked examples, but no astrological topics (for which you will still need *Recent Advances and Correlation*). [Today the examples of research given on this website, especially in *Research Results* under Doing Scientific Research, are the best next thing to hands-on guidance.]

Appendix: The fake superprize entry

As mentioned in the text, the fake entry was designed to appear plausible to scientific judges despite being a complete lie. Results such as those supposedly reported below have never been observed.

A Correlation between Transits and Events

An entry for the Astrology Superprize submitted by Peter Roper MA PhD and Donald Williams BSc, Holme Building, University of Sydney, NSW.
December 1984

Abstract -- The few controlled studies of character interpretations from the astrological birth chart have produced negative results. There have been no controlled studies of event interpretations, and the aim of the present study was to rectify this deficiency. The astrological hypothesis is that planetary positions at the time of an important life event, e.g., marriage or the death of a parent, show a correlation with planetary positions at the time of birth.

The hypothesis was tested using 203 ordinary people typical of those who visit astrologers. For each subject the birth data and the dates of at least ten important life events were accurately known. The analysis involved all aspects that are multiples of 30 degrees, allowing zodiacal positions to be reduced to positions on a 30 degree scale, thus increasing the frequency per degree and consequently the reliability of the test. The orb was one degree. These aspects and orb are used by the majority of astrologers.

The subjects were divided at random into two replicate groups of 101 and 102 subjects respectively. For each subject the planetary positions at birth and at the time of each event were calculated by computer and converted to two frequency distributions across 30 degrees, viz. one for the birth chart and the other for the combined events. The extent of the association between the two distributions was then determined using the product-moment correlation coefficient. Control events were generated for each subject in three different ways, viz. by using the events for another subject, by using random dates for the same event years, and by using random dates and random years.

If events tend to occur at the time an aspect exists between an event planet and a birth planet, then the event planets should tend to cluster around the aspect points to the birth planet, consequently the correlation between the birth distribution and the event distribution should be positive and significant. The average observed correlation for the two replicate-groups was 0.56 ($p = 0.001$, $df = 28$) and 0.51 ($p = 0.004$, $df = 28$) respectively, whereas the correlations using the control events were all at chance level, the six means ranging from -0.01 to 0.20, average 0.11, with no significance level being less than 0.3.

Some of this correlation could be explained by astrological artifacts and by subjects planning certain events, e.g. the date of a marriage, according to astrology, but not by sampling bias, which was not detectable. However, when only those dates over which the subject had no control were used, e.g. the death of a parent, the average observed correlations of the two replicate groups were still significantly positive at 0.45 ($p = 0.006$) and 0.44 ($p = 0.015$) respectively. The effect is inexplicable and is evidence that the accuracy of chart interpretations (in this instance interpretations involving life events) cannot be explained by non-astrological factors.

Effect sizes

How astrology compares with other approaches

Abstract -- An introduction to effect sizes in astrology and how they compare with those in other approaches such as graphology, palmistry, and psychological tests. Here effect sizes are expressed as a correlation, which ranges from +1 (perfect correlation as in feet vs metres) through 0 (no correlation as in two coin tosses) to -1 (perfect inverse correlation as in nightlength vs daylength). The results are also shown in terms of the equivalent hit rates, which for readers unfamiliar with correlations may be easier to understand. Astrology is said to fit reality so well that its effect size must be close to +1, equivalent to a hit rate close to 100%. But examples show how the fit is due to two non-astrological factors, namely (1) the ambiguity of astrological symbolism, so any chart can be made to fit any person after the event, and (2) hidden persuaders such as generalities-that-we-see-as-meaningful (the Barnum effect), so any person can see something that fits them in any reading. These factors make astrology seem to work even when the wrong chart is used. When these factors are controlled, for example by asking astrologers to match charts to owners whose identity is concealed, the observed effect sizes are not usefully different from zero. Accepted approaches such as personality and aptitude tests are better, usually much better. Especially telling is the negligible agreement between astrologers, because astrology seems pointless if astrologers cannot usefully agree on what a given birth chart indicates. Nevertheless astrology offers images of undeniable appeal that can feed the inner person in the same way that music, poetry and art do. There is more to astrology than having a useful effect size.

This article looks at effect sizes in astrology when expressed as a correlation, which indicates the extent to which A is related to B. Effect sizes range from +1 (perfect correlation as in feet vs metres) through 0 (no correlation as in two coin tosses) to -1 (perfect inverse correlation as in nightlength vs daylength). However, some readers may find it easier to see a correlation in terms of its corresponding hit rate, where x% hits means you are right x% of the time vs 50% expected by chance. Examples of the correlations observed in human affairs and their corresponding hit rates are shown below:

- 1.00 **Perfect accuracy** (100% hits)
- 0.95 Arm lengths left vs right (97.5% hits)
- 0.90 Tide height vs moon position (95%)
- 0.70 Adult height vs weight (85%)
- 0.60 Educational attainment of husbands and wives (80%)
- 0.50 Physical attractiveness of husbands and wives (75%)
- 0.40 City size vs incidence of jaywalking (70%)
- 0.30 Height of husbands and wives (65%)
- 0.20 IQ vs appreciation of music (60%)
- 0.05 Earthquakes vs moon position (52.5%)
- 0.00 **Zero accuracy** (50% hits as in tossing a coin)
- 0.20 Job satisfaction vs absenteeism (40% hits)
- 1.00 **Perfect inverse accuracy** (0% hits = 100% misses)

The above conversion from correlation to hit rate is based on Rosenthal R & Rubin DB (1982), A simple general purpose display of magnitude of experimental effect, *Journal of Educational Psychology* 74, 708-712. Here correlation r is equivalent to a hit rate of $(50+50r)\%$ when 50% is the hit rate expected by chance as in tossing a coin.

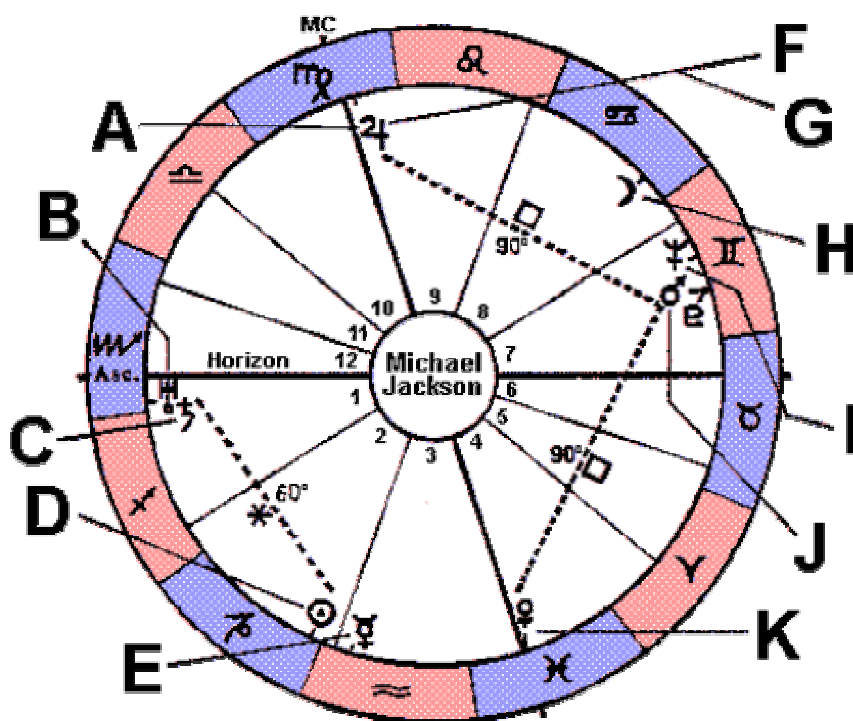
Effect sizes have many advantages. They are easy to understand. They tell us what we want to know (ie how big the effect is). And we can compare them with effect sizes in other areas to see how they stand up. In what follows we do this for astrology.

Implied effect sizes

You will not find *measured* effect sizes in astrology books even though their calculation is straightforward. But you will find plenty of *implied* effect sizes. Thus when astrologers claim that astrology works they are implying that the effect size is usefully more than 0. For example, according to the Faculty of Astrological Studies website, "Astrology provides one of the most powerful and accurate tools for self-knowledge and understanding that we have available", which implies that the effect size is closer to +1 (100% hits, the maximum possible) than to 0 (50% hits, the rate expected by chance). More on this next.

Birth chart of Michael Jackson vs two biographies

To see what the implied effect size might be, let us do what astrologers do -- compare birth charts with their owners. In the figure below we compare the birth chart of Michael Jackson with the superstar himself as described in the biographies of Michael Jackson (MJ) and Jackie Onassis (JO). The better the fit the bigger the implied effect size:



Birth chart of Michael Jackson

A. Jupiter, planet of expansion and success, is close to the MC, indicating career and public image. JO says "He is one of the world's most celebrated entertainers." **B.** Uranus (innovation) is prominent because close to the Ascendant (outward personality and style). JO says "He is a discoverer of new things, and a fantastic songwriter." **C.** Saturn (restriction) in secretive Scorpio and the 1st house of self-expression makes him build a wall around himself. MJ says "I've been accused of being obsessed with protecting my privacy. That is true. I'm a person who wishes to be in control of my own life." So far the birth chart is exactly right! **D.** Sun (inner self) in a benevolent 60-degree angle to Saturn (discipline) makes a person reserved and introverted but also hard-working and ambitious. JO says "For many he seems to be an introverted person." MJ says "To reach the goal I had in mind is beautiful, but to reach more is really beautiful." **E.** Mercury

(communication) is in visionary unconventional Aquarius in the 3rd house of communication. **F.** Jupiter (expansion) is here ruler of 2nd house (possessions) opposite benevolent Venus, ruler of Taurus (possessions). Both planets confer fame, wealth, and success. The birth chart continues to be exactly right! **G.** Jupiter is also in perfectionist Virgo, at a 90-degree angle (difficulties) to Mars (energy and action). JO says "He is a perfectionist who continually fights with himself." **H.** The Moon (sensitivity) is in caring nurturing Cancer. MJ says "Much of my spare time is spent visiting children's hospitals. It brings me great joy to bring joy to those children." Cancer the crab walks sideways. MJ's biography is called *Moon Walker*. A double whammy! **I.** Neptune (music, inspiration) in vocal Gemini and 7th house of love and relationships indicates his songwriting skills and their subject matter exactly. Neptune lacks aspects, indicating unrestrained musical freedom. **J.** Mars with Pluto (intensity, power) are at 90-degree angles (indicating challenges) to Venus (artistic taste) and Jupiter (extravagance). JO says "His way of dancing has a tendency to challenge others." Pluto with Mars (surgery) also rules 12th house (hospitalisation) and its aspects show his plastic surgery and its unhappy consequences. **K.** Now for the clincher. In 2004 and 2005 progressed Sun is at a 90-degree angle to natal Mars and Pluto in 7th house of relationships, and opposite Jupiter in 9th house of law, exactly indicating his traumatic court prosecution and its timing. Progressed Sun is also conjunct Venus, indicating both the nature of the charges and his eventual acquittal. Everywhere we look the chart is amazingly spot on!

In short, we can see how Michael Jackson's chart confirms what the Faculty claims. The fit between chart and owner is powerful, accurate, and near-perfect. Indeed the chart fits so well, and in such unlikely ways, that coincidence would seem to be ruled out. The effect size in this case would certainly seem to be close to +1 (100% hits). However, there is one small problem, see next.

Seeing faces in clouds

The chart is bogus. The chart we said was Michael Jackson's is actually the chart of Dr Marcel Petiot, one of the worst mass murderers in history. So the powerful and accurate fit with Jackson is meaningless.

Petiot was born on 17 January 1897 with Capricorn Sun, Cancer Moon, Scorpio Ascendant, and was executed in May 1946 for murdering 27 people (he claimed 63). Michael Jackson was born nearly sixty years later on 29 August 1958 with Virgo Sun, Pisces Moon, Gemini Ascendant, and only one aspect in common with Petiot (Venus square Mars but with a much wider orb) -- altogether a very different chart from the one given above which fitted Michael Jackson so exactly.

Of course astrologers could always argue that Jackson and Petiot are actually very similar, the one doing to music what the other did to people. But this powerful and accurate fit to a wildly wrong chart is nothing special. For example in April 1968 the famous French researcher Michel Gauquelin placed this ad in the magazine *Ici-Paris* offering free personal chart readings:



Gauquelin's ad in *Ici-Paris* April 1968

To each of over 500 respondents he sent a copy of a 10-page interpretation of Dr Petiot's birth chart pretending it was their own. The interpretation had been generated by an IBM computer programmed by France's leading astrologer Andre Barbault, and said things like "instinctive warmth ... adaptable ... organised ... bathed in a sea of sensitivity ... total devotion to others ... altruistic sacrifices". Gauquelin enclosed an SAE and asked for comments. Of the first 150 replies 94% found the reading to powerfully and accurately fit their character, personal problems, and life events; and 90% found its accuracy to be confirmed by their family and friends. The respondents were generally delighted and impressed by the reading. They said things like "marvellous ... extraordinary ... astonishingly accurate ... certainly me." Remember they all received the same reading.

There are thus two factors that explain why any birth chart will fit any person. (1) The chart's symbolism is so abundant and so ambiguous that we can read into it almost anything after the event, as in the case of Michael Jackson. (2) Interpreting the chart leads to numerous hidden persuaders such as generalities-that-we-see-as-meaningful (the Barnum effect), as in the case of Gauquelin's experiment. Put these two factors together and every chart reading must inevitably persuade astrologers that astrology works. It works because it cannot fail to work even when (as here) the wrong birth chart is used unknown to the participants. In other words the implied effect size has been greatly inflated by factors that have nothing to do with astrology and everything to do with seeing faces in clouds. For more on these factors see *Artifacts in reasoning* on this website under Doing Scientific Research. But before we look at what the real effect size might be, how do astrologers view this inflation?

How astrologers view inflation of implied effect size

Most astrologers are unaware of it. The rest ignore it or misinterpret it. For example in an article entitled "Astrology as Divination" on the Urania Trust website, British astrologer Geoffrey Cornelius confronts this inflation with the following comment about wrong charts:

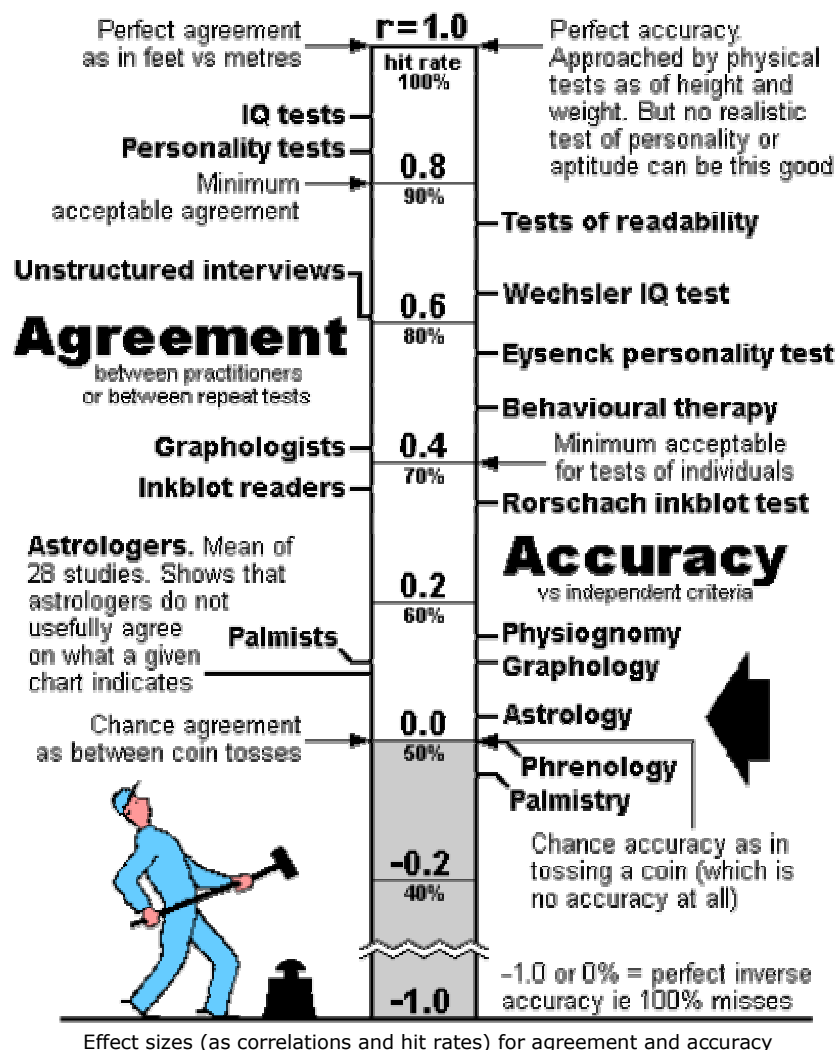
"There are few professional astrologers who cannot tell a rueful tale about having the wrong time or even the totally wrong chart for a client and going on to give an unusually effective interpretation or prediction. We are not talking about generalised character readings, either -- these wrong maps can work with high focus symbolism on exact timing and synastry to angles. I have had this experience -- have you?"

Cornelius's views are echoed by Garry Phillipson in his article "Modern Science, Epistemology and Astrology" in *Correlation* 23(2), 4-23, 2006, where he argues that astrology cannot be understood by science. But as shown above, science allows us to understand astrology (or at least what goes on in consulting rooms) very well. That astrology is not a science does not mean it cannot be understood by science. Phrenology claimed to be a science, but wasn't, and thanks to science we now understand it very well.

Cornelius and Phillipson are suggesting that astrology depends more on some mysterious property of divination than on hidden persuaders. But to psychologists mindful of Occam's Razor ("prefer simple explanations to complex ones") it is the other way round. To them astrology is not a link with the divine but a time-honoured cover for the operation of hidden persuaders. Which leads to the key question: If we control for hidden persuaders, for example by asking astrologers to match charts to owners whose identity is concealed, what is the effect size actually observed? And how does it compare with the effect sizes observed in approaches such as graphology, palmistry, and personality tests?

Observed effect sizes: astrology vs other approaches

The results from hundreds of studies in which hidden persuaders were controlled are summarised in the figure below, which shows the effect sizes actually observed both as correlations and hit rates. On the left are the results for agreement, the extent to which practitioners agree when interpreting the same data. On the right are the results for accuracy, the extent to which the interpretation agrees with reality. Each entry is the mean of all available studies (typically 10-30 studies per mean but can be hundreds per mean). The means can involve correlations calculated in different ways depending on the original study (in technical terms they can be Pearson r 's, Spearman ρ 's, Cohen kappa's, and so on) but for the present purpose the differences are of little consequence. The means can also hide considerable variations between studies but this does not affect the broad indications.



Left. Between practitioners using accepted personality tests and IQ tests, or between repeat tests, the agreement is good. But between astrologers reading the same birth chart there is no useful agreement on what the birth chart indicates. **Right.** Accepted tests are also more accurate than astrology. Even looking at people's faces (physiognomy, now long discredited) is generally more useful than looking at their birth charts. Reading head bumps (phrenology) hits zero, yet in its heyday its users were convinced it was true for the same reason that users are convinced astrology is true -- by trying it without guarding against hidden persuaders. The **Big Arrow** shows the mean of 54 studies where a total of 742 astrologers read a total of 1407 charts for personality, aptitude, or life events, with a mean accuracy of $r = 0.034$, equivalent to a hit rate of 51.7% vs 50% expected by chance.

A plot of the individual results for the last mean above and the test of agreement can be found in *Case for and against astrology* on this website under Adroit Utilities, and in more detail with other astrology-related results in *Meta-analyses* under Doing Scientific Research. Sources for non-astrology results can be found in Dean G. The Bottom Line: Effect Size. In BL and DL Beyerstein (eds) *The Write Stuff: Evaluations of Graphology*. Prometheus, Amherst NY 1992 pages 269-341.

The message of the above survey is very simple. It says that effect sizes in astrology, whether for agreement or accuracy, when controlled for hidden persuaders and other non-astrological effects, are not usefully better than tossing a coin. In other words astrology is neither powerful nor accurate. Accepted approaches are better, usually much better. As with the Emperor's New Clothes, astrology's implied performance has disappeared on critical inspection. Especially telling is the negligible agreement between astrologers (mean $r = 0.098$, equivalent to a hit rate of 54.9% vs 50% expected by chance), which is based on 28 studies and can therefore hardly be dismissed as untypical. It is telling because (1) only agreement is relevant, not accuracy, so the studies cannot be dismissed on the grounds of poor material, and (2) astrology seems pointless if astrologers cannot usefully agree on what a given birth chart means. On the other hand, there is more to astrology than having a useful effect size, see next.



Detail from title page of Robert Fludd's *Utriusque Cosmi ... Historia* 1716

As art, as religion, astrology delivers

Serious astrology offers symbols, metaphors, and images of undeniable appeal, which can feed the inner person in the same way as music, poetry and art do. It provides emotional comfort, spiritual support, and interesting ideas to stimulate self-examination. Good things to have in our dehumanised society.

In this sense the birth chart is also an art form. Its images can help some people to make connections, to link experiences, to understand (or at least seem to understand) cause and effect, and ultimately to understand their place within the whole, all of which is about belonging. Such people respond to astrology probably because it seems to have its priorities right. The same applies to religion, spiritual and new age philosophy, and pop psychology in all their different forms, even though they often disagree and therefore cannot all be right.

In this way astrology, although not usefully accurate, may still for some people be a powerful benefit. The problem of course is that people who derive benefit from astrology are not going to believe evidence for its inaccuracy. To them it feels good therefore the facts are irrelevant. If we are careful to see accuracy and benefit as two separate things, we can avoid making the same mistake. For more on how reverting to a declared art form may be the only valid way ahead for astrology, see *Optimum place for astrology* on this website under Applied Astrology.



Statue of Liberty at the entrance to New York harbour

Postscript

Powerful and accurate fits are normal in astrology even when the subject is inanimate. For example if we compare the Statue of Liberty, the USA's most famous landmark, with the most dominant feature in the chart of the USA (Sun conjunct Uranus), we find an innovative (Uranus) national monument (Sun) resting on granite (ruled by the Sun), lit by electricity (Uranus), 151 feet high (= 1 Leo, ruled by the Sun), 305 feet above ground level (= 5 Aquarius, ruled by Uranus), on an 11-pointed island (Aquarius, the 11th sign), bearing an inspiring (Uranus) poem "The New Colossus" (Sun) with lines such as "sunset gates ... golden door" (Sun) and the self-willed "Keep ancient lands, your storied pomp!" (Uranus). When it was declared a National Monument on 15 October 1924, the Sun was in Venus-ruled Libra (bronze), Uranus was in Neptune-ruled Pisces (New York harbour), and Neptune was at the midpoint of Sun-Uranus. And of course the Statue symbolises to newcomers the freedom (Uranus) and opportunity (Sun) offered by the USA. Once again the fit is exactly right in many amazing ways and could hardly be more impressive. But once again the chart is bogus! There are no Sun-Uranus contacts in the US charts that are generally accepted (Campion N, *The Book of World Horoscopes*, Aquarian, 1988, pages 293-303). Once again we are making matches after the event and seeing faces in clouds.

Four key topics in astrological research

Testability, concepts, theories, reasoning artifacts

A summary of collaborative discourses in *Correlation* 1994-1999 on four key topics in astrological research, with mention of a fifth key topic (future directions for research) that folded due to lack of interest from astrologers.

Abstract -- This article is a summary of four collaborative discourses totalling 120,000 words and 200 references that attempted to reach consensus on topics in astrology that, despite their importance, had seldom been debated or even recognised. The discourses were prepared in 1994-99 by recycling each draft among astrologers and scientists until consensus was reached. Altogether they involved more than 40 collaborators. Each key topic prepares the ground for the next. **(1) Is science relevant to astrology?** Yes, but only to those parts testable by observation. **(2) Some philosophical problems of astrology.** Modern philosophers generally accept astrology as a source of sympathy and support because such astrology does not need to be true (what matters is that we believe it to be true). They reject it as a source of knowledge because such astrology needs to be true (but hundreds of tests have shown it not to be true to the extent claimed by astrologers). **(3) Theories of astrology.** Theories of how astrology can be genuinely true are either untestable or incompatible with existing knowledge. Theories of how astrology can seem to be true (even if it is actually false) are testable and compatible with existing knowledge. **(4) Astrology and human judgement.** Like everyone else, astrologers are subject to unsuspected (because largely invisible) artifacts and biases in their judgements that can make astrology seem to be true even if it is actually false. Because artifacts in reasoning go undetected, astrologers are unlikely to learn from experience. The claim that astrologers proudly and repeatedly make, that astrology is unassailable because it is experience-based, is simply mistaken -- what they see as its strength is actually its weakness. A fifth key topic **(5) Future directions for research** folded due to lack of interest from astrologers. The idea was that research would be more productive if it focussed on improving the benefits obtainable from an actually false astrology, in the same way that we can improve the benefits obtainable from fake psychics. The point is, astrology offers emotional comfort, spiritual support, and interesting ideas to stimulate self-examination. There is more to astrology than being true or false.

During 1994-1999 a series of collaborative discourses appeared in the journal *Correlation* addressed to four key topics in astrological research. The four topics are now covered in various articles on this website, albeit in less detail. Nevertheless readers may be interested to learn more about the original discourses.

Each began as a draft discourse prepared by researchers. The draft was recycled among interested astrologers and scientists for improvement, and recycling was continued until everyone was happy, which collaborative process is rare in astrology. The discourse was

then published in the journal *Correlation* for further comment by others. The topics were as follows:

1. Is science relevant to astrology?
2. Some philosophical problems of astrology.
3. Theories of astrology.
4. Astrology and human judgement.

The discourses total more than 120,000 words and 200 references. An introduction and summaries follow below. A fifth key topic (future directions for research) was planned but folded due to lack of interest from astrologers.

Introduction to Key Topics

By Rudolf Smit (written December 1993)

Up to now the results of research into astrology have been far from spectacularly confirming the claims of astrology and its practitioners, understandably to their deep disappointment (and, often, also resentment). So the debate about whether science can prove astrology or not, or whether science should delve into astrology at all, has been raging on ever since research into astrology began. But as the number of negative and inconclusive results grew, the points of view of proponents and adversaries became more and more irreconcilable, and consequently the debate became louder and more pointless.

The following articles reverse this unproductive situation. They bring together interested astrologers and scientists in an attempt to reach consensus on key topics in astrological research. Even though they are key topics they have seldom been debated or even recognised. Each key topic prepares the ground for the next.

Key Topic 1

Is the Scientific Approach Relevant to Astrology?

By Geoffrey Dean, Arthur Mather, and 33 others consisting of 25 astrologers (out of more than 100 invited) and 8 scientists (out of 10 invited). June 1994.

Summary

(1) Is the scientific approach relevant to astrology? Yes, but only to those parts testable by observation. No distinction between Material and Formal causes is necessary. Thus to test whether a person fits his chart better than a control requires no causal assumptions whatever.

(2) Why are scientists and astrologers in conflict over whether astrology works? Mainly because they tend to look at different things. Scientists are mostly concerned with accuracy (controlled tests) whereas astrologers are mostly concerned with satisfaction (client acceptance). But accuracy is unrelated to satisfaction. So their views can conflict yet both can be right. In particular cases a more important reason on either side may be dishonesty, ignorance and arrogance.

Key Topic 2

Some Philosophical Problems of Astrology

By Geoffrey Dean, Peter Loptson, and 13 others consisting of 4 astrologers and 9 scientists, drawn mainly from the participants in Key Topic 1. February 1996. For a related article see *Concepts of modern astrology* on this website under Applied Astrology.

Summary

Modern philosophers generally accept astrology as a source of sympathy and support, but they reject it as a source of knowledge. This matches the idea, introduced in Key Topic 1, that astrology can be viewed in two ways, one in terms of the purely subjective satisfaction enjoyed by users, and the other in terms of its objective accuracy. The discourse looks at some philosophical (ie conceptual) problems revealed by each viewpoint. Of course the two viewpoints may not be independent but for the present purpose this is of no consequence.

Astrology from the satisfaction viewpoint is generally unproblematic: (1) Satisfaction typically rests on value judgements and subjective feelings, both of which can legitimately differ. So arguments about the extent and type of satisfaction provided by astrology may be pointless. (2) The astrology so viewed need not be true and is therefore uncontroversial. (3) Nevertheless problems can arise if astrologers needlessly embrace assailable arguments. Why undermine uncontroversial claims with assailable arguments? (4) Problems can also arise if satisfaction depends on perceptions that are in fact false. Action based on false perceptions could be harmful.

Astrology from the accuracy viewpoint faces numerous problems: (1) Astrology is defined as precisely not the result of any means we know of. (2) Astrological effects are essentially statistical, are nonidentifiable except after the event, and therefore cannot be an independent source of knowledge. (3) Astrologers have been reluctant to describe what their model predicts, the criteria by which it could be tested, and the evidence they would accept as showing it had failed. (4) No claims to accuracy can be justified unless astrologers make proper experiments *and* distinguish between alternative explanations *and* have independent reasons for thinking that astrological effects exist.

Key Topic 3

Theories of Astrology

By Geoffrey Dean, Peter Loptson, Ivan Kelly, and 7 others consisting of 3 astrologers and 4 scientists. September 1996. For an updated abridgement see *Theories of astrology* on this website under Applied Astrology.

Summary

(1) Astrologers and researchers need a good testable theory of astrology to guide their inquiries, to gain the attention of scientists, and to obviate most of the conceptual problems uncovered in the Key Topic 2.

(2) Existing theories of astrology are theories of accuracy and are dealt with here. Theories of satisfaction are postponed to Key Topic 5. In broad terms a theory of astrology has to explain how astrology can be accurate, or how it is perceived to be accurate.

(3) Spiritual, physical, information and magical theories are unpromising. Psychic theories are ambiguous but deserve testing.

(4) Contrary to popular belief, Jung's theory of synchronicity is in conflict with astrological ideas. That aside, its defects include untestability and incompatibility with existing knowledge. In practical terms it is not a useful theory.

(5) The same defects apply to Jung's theory of time quality, Elwell's cosmic loom theory of formal causation, and Hand's theory of time quality and magical correspondences.

(6) Can a theory of astrology be produced that is testable, compatible with existing knowledge, and useful? John Addey's theory of harmonics is testable but not compatible with existing knowledge. The article gives two examples to show how it might be done, including a non-astrological theory of astrology, and invites readers to improve them.

Key Topic 4

Astrology and Human Judgement

By Geoffrey Dean, Ivan Kelly, Arthur Mather, and 5 others consisting of 4 astrologers (out of 18 invited) and 1 scientist (out of 4 invited). The first key topic looked at the scientific approach and its relevance to astrology. The second looked at some philosophical problems of astrology. The third looked at theories of astrology. In each case the role of human judgement emerged as a crucial but hitherto neglected factor. So this key topic looks at astrology and human judgement. April 1999. For a related article see *Artifacts in reasoning* on this website under Doing Scientific Research.

Summary

Unless we understand the judgement processes that *underly* chart interpretation and its assessment, we cannot hope to understand astrology. In the psychological literature these processes have been studied for more than a quarter of a century, but in the astrological literature they have been almost completely neglected. So this key topic looks in detail at the judgement processes used by astrologers and their clients. The outcome is a mixture of bad news and good news. The bad news is that, from start to finish, astrology involves the kind of judgements that we are not very good at. The good news is that, by a few simple strategies, our ability can be greatly improved.

(1) How does belief in astrology arise? Astrologers and clients believe in astrology because it seems to work. They perceive that people really do fit their birth charts. But such perceptions are suspect due to a large number of errors and biases in human judgement.

(2) What judgement processes underlying chart interpretation? In general, human cognitive skills are quite adequate for everyday living, but they cannot cope unaided with complex situations such as interpreting birth charts. Nor are they sensitive enough to detect the correlations said to exist between chart factors and human behaviour. The way we make clinical judgements tends to ensure that artifacts and errors go undetected, so we are unlikely to learn from experience. It is not clear how astrological correlations could have been derived in the first place except by speculation.

(3) What judgement processes underlying the assessment of chart interpretations? Unaided human judgement is open to pervasive biases, inferential errors and statistical

artifacts, all of which can generate convincing correlations between chart and person where none actually exist (which is not to deny that genuine correlations may exist). Some biases encourage belief in the first place. Others make astrology look good, or make clients feel good, or make the chart fit, or make the client fit, or prevent disconfirmation. As a result, the system of astrological correspondences that generations of astrologers have seen as completely valid could be completely false, in the same way that the system of phrenological correspondences now known to be completely false was seen by generations of phrenologists as completely valid.

(4) In short, there are many non-astrological reasons why astrology should be seen as valid, none of which require that astrology be true (this of course is not a problem peculiar to astrology). There are also ways of avoiding the known ways of fooling ourselves, and ways of dealing with crooked arguments, all described here at some length. However, such matters are almost universally ignored by astrologers and their teaching institutions. Until the situation improves, the education of astrologers will remain fatally deficient. The need for a better education is briefly discussed.

Key Topic 5

Future Directions for Research

Ironically this key topic folded due to lack of interest from astrologers. But the general argument was that research would be more productive if it abandoned accuracy as its target and focussed instead on satisfaction. That is, on how to improve the benefit obtainable from astrology even though astrology is not a source of scientific knowledge. This topic is explored on this website in the *Phillipson interview of researchers* (see questions indexed under "subjective astrology") under Doing Scientific Research, and in *Basic statements about astrology* and *Optimum place for astrology*, both under Applied Astrology.

References

The introduction is in *Correlation* 12(2) 1-4. Key Topic 1 is in 13(1) 11-18 with commentaries and rejoinders 19-52. Key Topic 2 is in 14(2) 32-44 with rejoinders 45-58. Key Topic 3 is in 15(1) 17-52, no rejoinders. Key Topic 4 is in 17(2) 24-71, no rejoinders.

Meta-analyses of nearly 300 empirical studies

Putting astrology and astrologers to the test

Geoffrey Dean

Abstract -- Brings together in graphical form meta-analyses of sun sign self-attribution, matching tests, picking own chart, astrologer agreement, Gauquelin's tests of signs, aspects and planets, and lunar and other effects. Altogether there are a total of nine meta-analyses relevant to astrology, including for convenience the ones mentioned elsewhere on this website. Readers wishing to skip details can simply look at the pictures. Differences in statistical variables such as sample size and measurement reliability are like magic. They produce apparent effects and apparent effect sizes out of nothing, all of them spurious. Meta-analysis allows a set of effect sizes to be corrected for these spurious effects (something not possible with an individual study) to see if there is a real effect. Since the 1970s its ability to deal with spurious effects has revolutionised research wherever effect sizes are reported, and today many thousands of meta-analyses have been made. When applied to nearly 300 empirical astrological studies, many of them by astrologers, meta-analysis reveals zero support for effect sizes of around $r = 0.7$ that are representative of astrological claims. Mean effect size and number of studies are: sun sign self-attribution 0.070 (26) and controls -0.020 (9), matching birth charts to owners 0.034 (54), picking own chart 0.020 (11), agreement between astrologers 0.098 (26), Gauquelin's tests of signs and aspects 0.007 (62) and planets 0.044 (35), lunar effects 0.012 (50), and radio propagation effects 0.010 (10). If you are looking for something where nothing is true and everything is permitted, then astrology seems to be an excellent choice.

Effect sizes, meta-analysis, and plots of results are cited in various articles on this website, most notably in *Case for and against astrology* (looks at accuracy, agreement) under Adroit Utilities, *Artifacts in data* (accuracy, sample size), *Effect sizes* (accuracy), and *Phillipson interview of researchers* (accuracy, agreement, sample size), the last three under Doing Scientific Research. The present article brings together in graphical form a total of nine meta-analyses relevant to astrology, including for convenience the ones mentioned above (so be prepared for some repetition), at a fairly technical level. It starts with a look at meta-analysis and how to do it. Readers wishing to skip details can simply look at the pictures.

When studies disagree

Take personnel psychology for example. By the 1960s personnel psychology had thousands of studies on the validity of aptitude tests, and Figure 1 (left) shows just a few of them. Each plot shows the observed effect size (as a correlation) vs number of studies (as % of the total), and disagreement is the rule. Some studies report a strong positive effect, others report a weak or even negative effect. Because of this disagreement it was held that no conclusion about the validity of a particular test was possible. It all seemed to depend on the particular person, job, and situation.

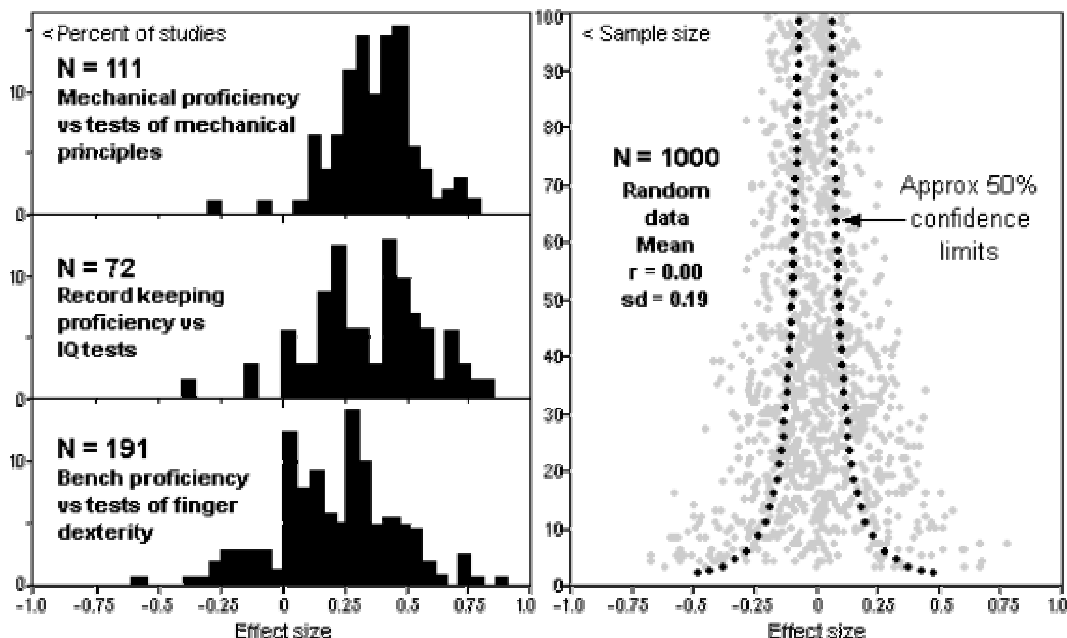


Figure 1. Effect sizes in personnel psychology. **Left** Effect size vs number of studies for three aptitude tests. Sample size in each study is typically around 60. In each plot there is wide disagreement. Some studies report a strong positive effect, others report a weak or even negative effect. From Ghiselli ES, *The Validity of Occupational Aptitude Tests*, Wiley, New York, 1966:29. **Right:** 50% confidence limits for $r = 0.00$ superimposed on 1000 sets of data drawn at random from a population whose true effect size $r = 0.00$. The confidence limits are approximated by $0.6745/\sqrt{N}$ where 0.6745 is half the area under a normal curve and N is the sample size. Due to sampling fluctuations each sample rarely matches the population, just as a hand in cards rarely contains equal numbers of each suite, which means that the observed effect size can be quite different from the true effect size. In this case the observed effect size can exceed ± 0.5 even though the true effect size is zero, especially with small sample sizes, all due to the natural fluctuations inherent in sampling. By plotting effect sizes together with confidence limits, we can see at a glance what is happening.

Then in the 1970s came a revolution in thinking. It was realised that much of the variation between studies was due to differences in statistical variables such as sample size and measurement reliability. For example in Figure 1 (right) the true effect size is zero, yet the observed effect size can exceed ± 0.5 , all due to the natural fluctuations inherent in sampling -- and this is without considering other statistical variables such as measurement reliability. In general terms the fluctuations vary as $1/\sqrt{N}$, where N is the sample size. (N also denotes the number of studies, in which case the distinction will be evident from the context.)

Conversely, the sample size needed to reliably detect effect size r is roughly $10/r^2$. In technical terms to *reliably* detect r means detecting r in 4 out of 5 tests at a two-sided significance level of $p = 0.05$. So if we want to reliably detect an effect size of say 0.10, we will need a sample size of around $10/0.10^2 = 1000$, or very considerably more than the 10 typically used by astrologers in the past. Also, if we use small samples then our observed effect size will seldom be a good indication of the true effect size. Indeed, sampling variations are like magic. They produce something out of nothing that is interesting, exciting, full of promise, and totally spurious. So what is the answer?

Meta-analysis

The answer is meta-analysis. Meta-analysis allows a set of effect sizes to be corrected for these spurious effects (something not possible with an individual study) to see if there is a real effect. It begins by establishing an effect size as a correlation r and sample size N for each study. (Alternatively it can use effect size d , the difference in standard deviations between observation and expectancy, but this variant is not used here.) In the bare bones procedure of JE Hunter & FL Schmidt, *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings*, Sage, Newbury Park CA, 1990:43ff, it then calculates the following:

$$\begin{aligned}\text{Weighted mean } r &= \text{sum of } (N \times r \text{ for that } N) / \text{total } N \\ \text{Total variance} &= \text{sum of } (N \times (r - \text{mean } r)^2) / \text{total } N \\ \text{Sampling error variance} &= (1 - (\text{mean } r)^2)^2 / (\text{mean } N - 1)\end{aligned}$$

The above calculations are straightforward and require only simple arithmetic. As a rule of thumb, if the sampling error variance is more than 75% of the total variance, we conclude that real differences between studies do not exist. That is, we conclude that the apparent differences are due to sampling fluctuations (ie chance) and other artifacts, not to real differences between studies. If real differences do emerge, we examine the data to see what the cause might be, thus tracking down the variables that matter. Either way, weighted mean r is the best estimate of the effect size, which must then be evaluated for significance in the usual way via its standard deviation = $\sqrt{\text{total variance}}$.

Ideally the effect size we want from each study is the correlation between predictor and reality, not reality as measured by imperfect criteria. But imperfect criteria (test scores, ratings, whatever) are all we have. In principle we can correct for these imperfections, in which case the effect size is described as "corrected for artifacts" or "corrected for attenuation", and the subsequent calculations differ from those shown above. But in practice the necessary data are seldom available, although estimates from other studies are often possible.

Meta-analysis was introduced in the late 1970s and became an instant hit. Its ability to deal with sampling variations and imperfect criteria has revolutionised research in many areas including parapsychology, allowing clear conclusions where previously there was only confusion. Today the number of meta-analyses available in PsycINFO alone exceeds 3000. The first meta-analysis in astrology was performed in 1984 by Mike Startup on 13 studies of sun sign vs extraversion scores. The first meta-analysis of tests of astrologers appeared in *Correlation* 1986, 6(2), 7-52.

Procedure

To meta-analyse empirical studies in astrology we must first retrieve all existing studies, published or unpublished, and establish an effect size r and sample size N for each study. Retrieval of studies in astrology is especially difficult because they tend to be published in journals not abstracted by computerised databases such as PsycINFO, which means doing it the hard way, ie by inspecting the relevant literature, which in turn may be available only in specialised astrology collections. The studies meta-analysed here represent more than thirty years of searching and following up leads. In most meta-analyses it is usual to reject low-quality studies, for example studies poorly described or lacking proper controls, but in this case, to avoid charges of bias from astrologers, no studies have been rejected.

Second, we must plot the effect sizes against sample size and 50% confidence limits so we can see everything in one hit. Finally we do a meta-analysis to see what it all means.

Effect sizes and hit rates

Examples of effect sizes are tabulated in *Effect sizes* on this website under Doing Scientific Research. In case you have forgotten, an effect size or correlation ranges from -1 to +1, with zero indicating no correlation. Between 0 and 1 are the huge variety of effect sizes actually observed, of which perhaps the most crucial is 0.4, generally recognised as the lower limit of usefulness for procedures that are applied to individuals (as astrology is). That is, unless its effect size routinely exceeds 0.4, astrology cannot be seen as a useful source of information. If we assume the expectancy of a hit is 50%, as for tossing coins, then an effect size r translates to a hit rate of $50+50r\%$. Thus 0.4 translates to 70%, so you can see why anything less than 0.4, although non-zero, is also non-useful.

Effect sizes claimed by astrologers

We can also convert the other way. For example, when Linda Goodman claims that "An individual's Sun sign will be approximately eighty percent accurate, sometimes up to ninety percent" (*Sun Signs*, Harrap, London, 1968:xvi), this translates to an effect size of about 0.7. My own surveys of astrologers in the UK ($N=40$) and Australia ($N=16$) found that on average they estimated that 22% of people fit their birth chart in every possible respect (so $r = 1.00$), 57% fit their birth chart in most things ($r = 0.7$ say), 18% fit their birth chart in a few things only ($r = 0.3$ say), and 3% fit their birth chart in almost nothing ($r = 0.1$ say), which pro rata gives the average fit between birth charts

and their owners as equivalent to $r = 0.68$, for details see *Correlation* 1986, 6(2), 7-52. The male astrologers were slightly more conservative than the female astrologers, but there was no appreciable variation with experience, which ranged from 1 to 30 years, mean 7 years. There was good agreement between the two groups ($r = 0.93$) and fair agreement between individual astrologers (mean $r = 0.47$). So we can take 0.7 as a reasonable ball-park estimate of the effect size that astrologers claim they are getting in everyday practice.

Note that a tiny effect is not the same as a tiny effect size. The bending of light by gravity is a tiny effect, where the sun deflects the grazing light of a star by 0.000486 degrees, roughly the angle subtended by a human hair at ten metres, but the effect size is 1. That is, if we know the gravity we can exactly predict the bending. So a tiny effect is not the same as a tiny effect size.

Meta-analysis of sun signs

In the 1970s it was found that extraversion scores tended to vary in accordance with sun sign claims, where odd-numbered signs (Aries onwards) are said to be extraverted and even-numbered signs (Taurus onwards) are said to be introverted. The effect replicated and was hailed by astrologers as scientific proof of their claims. But the effect size was tiny. The effect also disappeared when people unfamiliar with sun signs were tested, see Figure 2 below. So it had a simple explanation -- self-attribution due to prior knowledge of astrology. Ask Sagittarians (said to be sociable and outgoing) questions related to extraversion, such as whether they like going to parties, and astrology might tip their answer in favour of yes rather than no. The effect is an artifact. It looks like astrology but has a non-astrological explanation. Nevertheless the power of astrology to shift people's self-image, however slightly, deserves recognition. The effect size of signs is further examined later under Gauquelin.

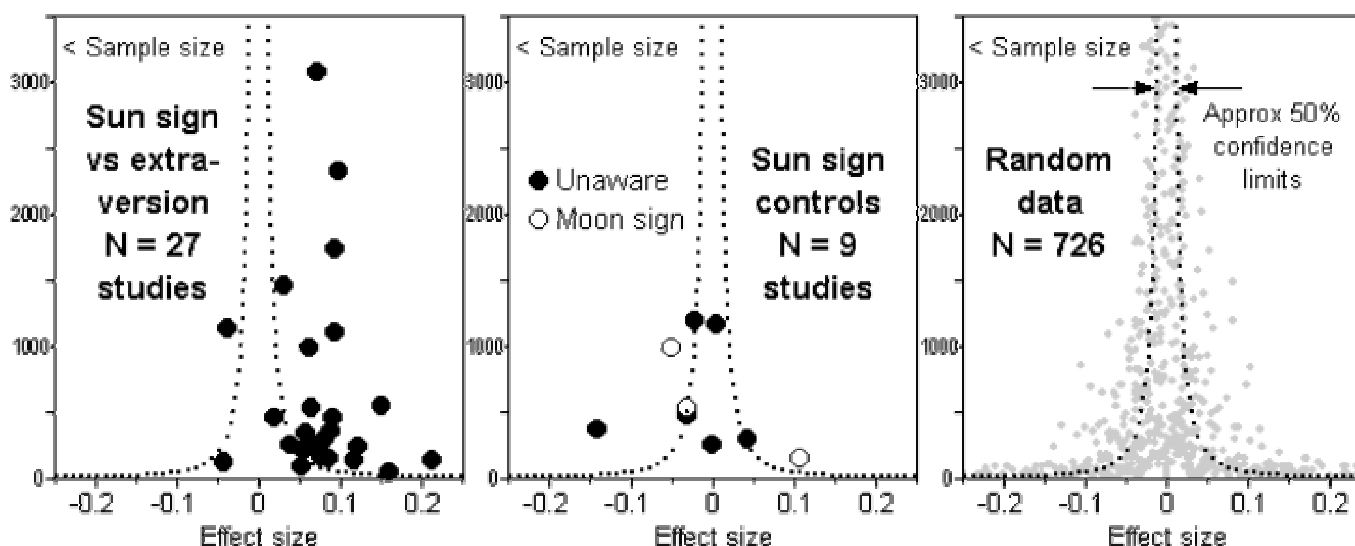


Figure 2. Effect size as a correlation or similar measure for sun sign vs extraversion test scores (usually by EPI or EPQ). **Left:** The 27 studies to date show a clear positive deviation from $r = 0.00$. Meta-analysis by the bare bones procedure of Hunter & Schmidt gives a mean r weighted by sample size of 0.070, sd 0.042, p 0.10. (Values of 0.09 cited elsewhere on this website are from earlier meta-analyses based on fewer studies.) **Centre:** No deviation is observed when subjects are unaware of their Sun sign or when their Moon sign is tested (few people know their Moon sign). Mean r -0.020, sd 0.044, p 0.60. In both cases the sampling variance is 85% or more of the total variance, so there is no real difference between the studies in each plot. **Right:** 50% confidence limits superimposed on 726 sets

of data drawn at random from a population whose true correlation $r = 0.00$. As in Figure 1, if the true r is zero, as it will be for random data, then on average 50% of the observed values will lie within the 50% confidence limits.

Meta-analysis of tests of birth charts

Take sets of birth charts jumbled up with descriptions of their owners. Can astrologers match birth charts to owners? In astrology books they do it all the time with unfailing success. But in the 54 studies to date, which involved a total of 742 astrologers and 1407 birth charts, the average success rate was no better than chance, see Figure 4 (left). For these astrologers, many of them among the world's best, astrology performed no better than tossing a coin. In a further 18 studies involving over 650 clients and 2100 readings, clients were unable to pick their own reading out of several, at least not when cues such as sun sign names or descriptions were absent, see Figure 3 (centre).

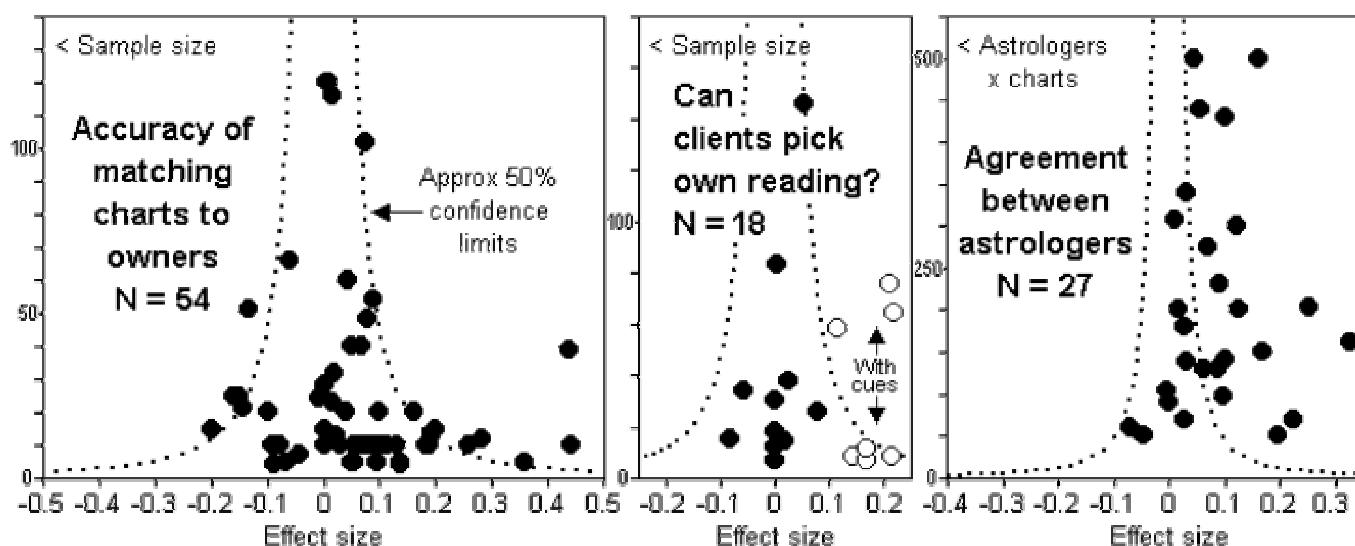


Figure 3. Testing astrologers for their accuracy and agreement. **Left:** Effect size r for astrologers matching birth charts to personality, occupation, case histories, or their own questionnaires. The plot shows all known studies including unpublished ones and poor quality ones. Mean $r = 0.035$, $sd = 0.117$, $p = 0.77$, equivalent to 51.75% hits when 50% is expected by chance. Median sample size is 13. Observed effect sizes showed no relation to confidence or use of intuition. If astrology delivered as claimed by astrologers, r would be around 0.7. Minimum r for tests generally accepted as being useful is around 0.4. Thus r for IQ vs achievement is around 0.6. **Centre:** When cues such as sun sign names or descriptions are absent from astrology readings, clients are unable to pick their own when given several. Mean $r = 0.020$, $sd = 0.040$, $p = 0.61$, $N = 11$. When cues are present the effect sizes show a positive deviation. Mean $r = 0.201$, $sd = 0.125$, $p = 0.11$, $N = 7$. In both plots (left and centre) the sampling variance is more than the total variance, so there is no real difference between the studies in each plot. **Right:** The agreement between astrologers shows a positive deviation. Mean $r = 0.098$, $sd = 0.065$, $p = 0.13$. But none of the observed agreements come anywhere near the agreement of 0.8 generally recognised as being necessary for tests applied to individuals (as astrology is). The sampling variance is about half the total variance, suggesting that real differences exist between studies, no doubt because some chart indications (eg for extraversion) are easier for astrologers to agree on than others (eg for suicide).

Tests of agreement

How well do astrologers agree on what a given birth chart indicates? To date 28 studies have put this to the test using in total more than 550 astrologers and 750 birth charts. Typically each test looked at how well 5 to 30 astrologers agreed on what a given chart indicated about its owner. Their average agreement was dismal, better than tossing a coin but nowhere near the minimum agreement acceptable for tests applied to individuals, see Figure 3 (right). Again, many of these astrologers were among the world's best.

Sampling fluctuations revisited

A further demonstration of the power of sampling fluctuation to produce something out of nothing is shown in Figure 4, repeated from Figures 3 and 4 in *Phillipson interview of researchers*. When exploring a new chart factor (in astrology there are always new chart factors) an astrologer will normally look at a range of charts, and may potentially end up with a range of effect sizes like those shown. If they are careful to report only the larger effect sizes, they can create support for the new factor where none actually exists. Since their sample sizes are likely to be low, the range of effect sizes is likely to be high, making it easy to make amazing (but totally spurious) discoveries.

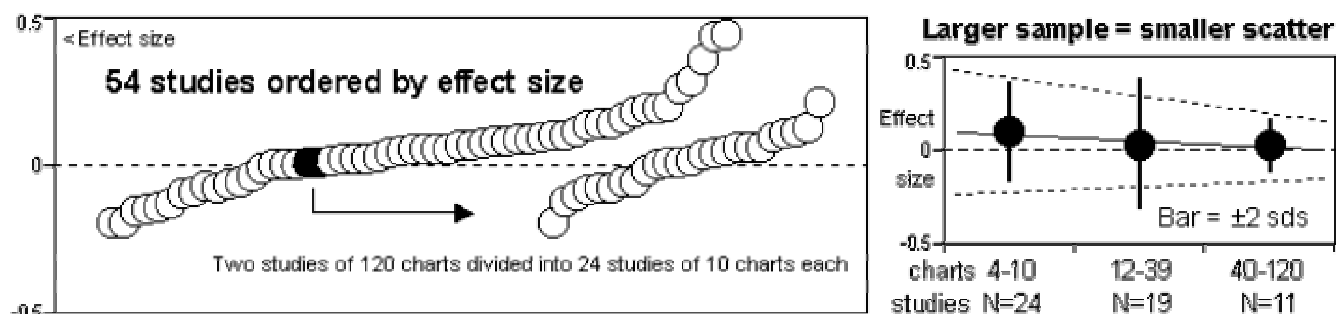


Figure 4. How a small sample size scatters the effect size. **Left:** The 54 studies of Figure 3 arranged in order of effect size. Meta-analysis has shown that their scatter is entirely explained by sampling fluctuations. Similarly, if the two studies using 120 birth charts (black dots) are divided into 24 studies of 10 charts each, the same marked scatter emerges even though the original effect size was close to zero. Further subdivision increases the scatter. **Right:** The same results grouped by sample size. As the sample size increases from left to right, the effect sizes show a general decrease in scatter as shown by the trend in bar lengths. The length of each bar is ± 2 standard deviations, which is the range within which 95% of the results from a large number of repeat studies are expected to fall. In each case the effect size of $r = 0$ (the null hypothesis) falls well within each range, confirming that these astrologers were generally unable to match charts to their owners better than tossing a coin.

Meta-analysis of the Gauquelin findings

Michel Gauquelin (1928-1991) began by testing traditional claims ranging from simple ones such as zodiac signs vs personality to more complex ones such as transits at death and planetary aspects between family members. His findings were uniformly negative. In 1955 he published his results, stressing that they represent "a considerable inquiry in the testing of astrological rules with large and varied samples. It is necessary to stress that the results demolish astrology more than they might appear ... because they attack not the claims of particular authors but the elementary basis of the doctrine itself" (*L'Influence des Astres*, 1955:62).

The situation changed when Gauquelin looked at eminent professional people such as doctors and scientists. He found that they tended to be born with a surplus or deficit of certain planets in the areas just past rise or culmination, but only if the people were eminent and born naturally, and that ordinary people with such features tended to pass them on to their children. Both tendencies were too weak to be of practical use and often required thousands of births for their reliable detection. Figure 5 illustrates the marked difference in effect size between Gauquelin's negative and positive results.

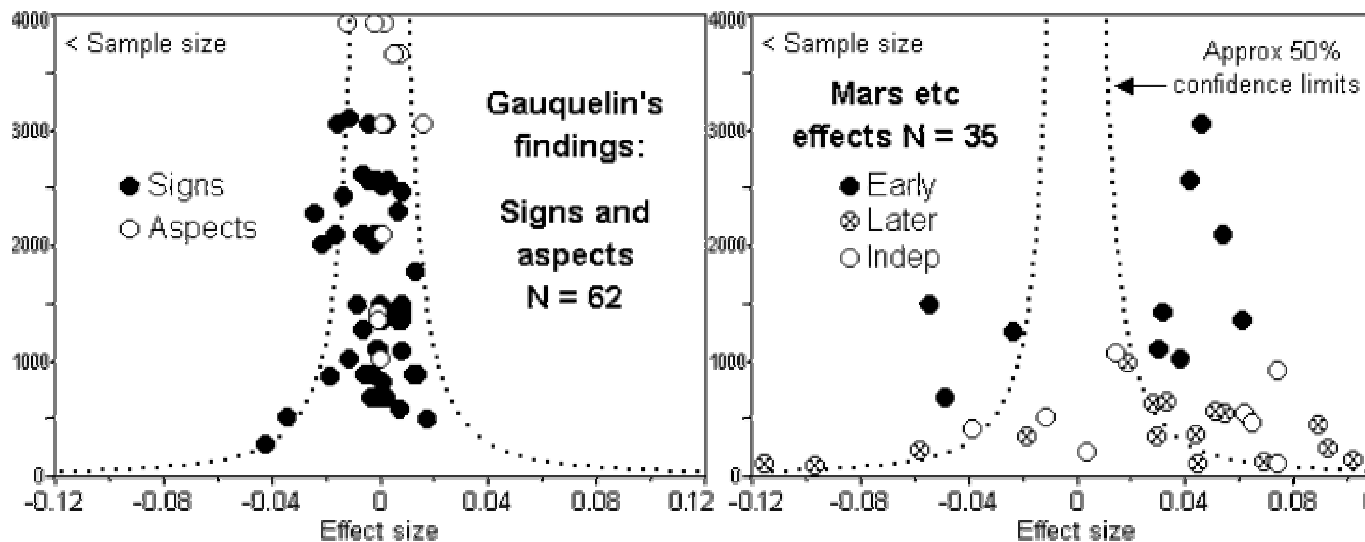


Figure 5. Effect size vs sample size for the Gauquelin findings. **Left:** Gauquelin's 51 tests of signs (Sun, Moon, MC, and Ascending) and 11 tests of aspects vs the occupation or personality of eminent professionals as predicted by astrology. Mean r 0.007, sd 0.006, p 0.29. Note that negative effect sizes (like Earthy farmers avoiding Water signs) cannot be counted as misses as in Figure 2, so what matters is the distribution of results with respect to the 50% confidence limits. Most results are within these limits because they are an average across relevant signs, which has reduced their scatter. **Right:** Effect sizes for planetary effects in Gauquelin's early studies of ten professional groups (often involving the same samples as on left), his 17 later studies, and eight independent studies including those by skeptics. The last two tend to involve smaller sample sizes reflecting the difficulty of finding new data. Mean r 0.044, sd 0.019, p 0.02, equivalent to 52.2% hits when 50% is expected by chance. This time most of the results are beyond the 50% confidence limits, indicating that they are unlikely to have arisen by chance. Not shown are effect sizes for parent-children effects, typically about 0.02 (as phi) for $N = 16,000$.

As shown in *The Gauquelin work 1 and 2* on this website under Gauquelin, the late Michel Gauquelin's negative results are ignored by astrologers, and his positive results are consistent with the presence of social artifacts. But even if positive effects persist when social artifacts are controlled, their effect sizes remain far too small to be commensurate with the $r = 0.7$ that astrologers claim to achieve. In any case, astrologers do not claim that astrology fails to work for half the planets, for signs, for aspects, for character, or (on Gauquelin's figures) for the 99.994 percent of the population who are not eminent.

Meta-analysis of miscellaneous effects

Many people believe that human behaviour is influenced by the Moon. In his book on lunar effects, Arnold Lieber claims his research shows a "lunar influence on violent behaviour, with implications for psychiatry, medicine, and the behavioural sciences" (*The Lunar Effect*, Doubleday, New York 1978:xii). But a later meta-analysis by Rotton & Kelly (*Psychological Bulletin* 1985, 97, 286-306) of 37 lunar-lunacy studies involving homicide, crime, murder, psychiatric admissions, crisis calls or suicide found no significant effects and no replicability. "For every study that has recorded more lunacy when the moon is full, another has recorded less" (p.301). A plot of effect sizes that includes more recent studies is shown in Figure 6 (left), again with no significant effects. Miscellaneous astrological studies are shown in Figure 6 (right), but despite the diversity of topic none show significant results.

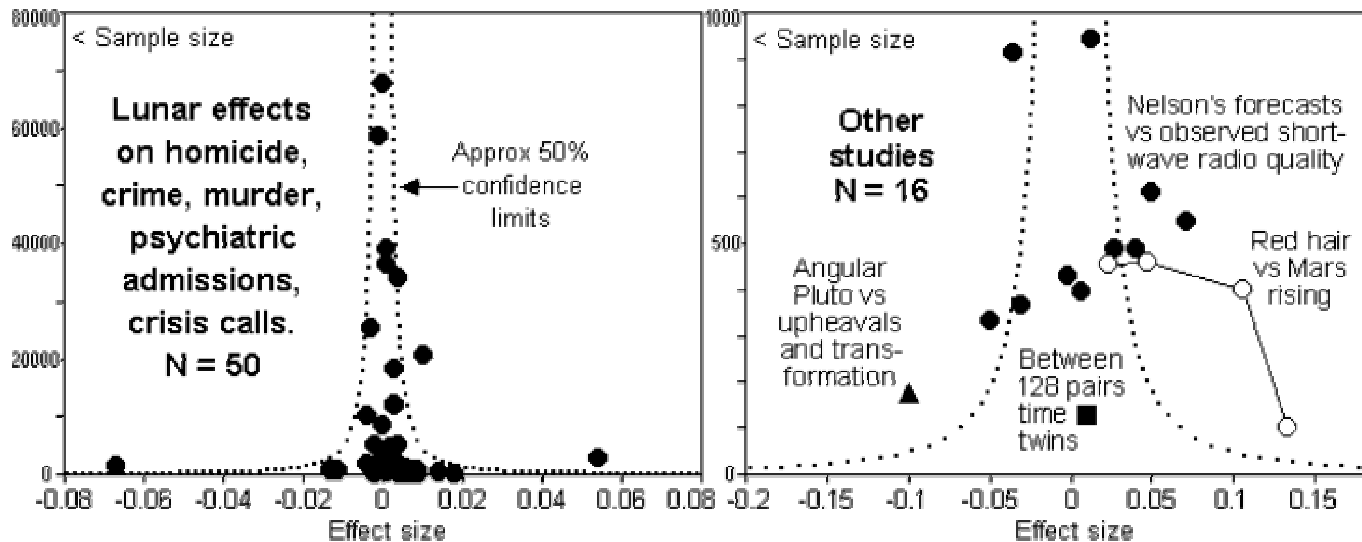


Figure 6. Lunar and other studies. **Left** The mean effect size for 50 lunar studies, some of which have impressively large sample sizes, is 0.012 sd 0.066 p 0.85. The sampling variance is much less than the total variance so there are real differences between studies. **Right** From the top are John Nelson's forecasts of radio quality, whose mean effect size for 5507 forecasts is 0.010, sd 0.036, p 0.61, N 10, see *Correlation* 1983, 3(1),4-37. On the right, the initially promising results for red hair and Mars rising failed to replicate as the sample size increased. On the left, Terry Dwyer's study of Pluto meanings using 175 subjects gave an effect size in the wrong direction, see *Correlation* 1987, 7(2), 9-21. Centre, Peter Robert's study of 128 people born on six dates found no clear parallels in personality scores, appearance, handwriting, names, interests, occupation, or life events. The strong similarities predicted by astrology were simply not there. See Roberts & Greengrass, *The Astrology of Time Twins*, Pentland Press 1994.

The nearly 300 empirical studies meta-analysed in this article are perhaps half of all empirical studies in astrology. The other half is generally only marginally relevant (eg studies of the acceptance of Barnum statements or of seasonal effects on suicide), or is difficult to reduce to an effect size (eg lists of the top aspects in cases of X), or is without controls (eg testing a chart indication on the same group used to derive the indication).

Discussion

To critics, astrology's failure to deliver is unremarkable because its alleged efficacy is explained by the same hidden persuaders (perceptual and cognitive biases) that underlie proven invalid approaches such as phrenology and bloodletting. Today more than thirty hidden persuaders are known, see *Artifacts in reasoning* on this website under Doing Scientific Research. Each hidden persuader creates the illusion that astrology works, all are used routinely in consulting rooms, all lead to client satisfaction -- and none require that astrology be true. But if clients are going to be satisfied, astrologers can hardly fail to believe in astrology. In this way a vicious circle of reinforcement is established whereby astrologers and clients become more and more persuaded that astrology works.

Astrologers predictably reject such views. They say test results are negative because the tests were too difficult or were made by people hostile to astrology (no matter that many were made by astrologers) or were not representative of what happens in their consulting rooms. They say you cannot test astrology by science, which if true would seem to deny their appeals to experience. Or they see bad news as proof of astrology's subtlety, so it is right even when it is wrong. Nevertheless meta-analysis shows that astrologers, even those who are among the world's best, cannot usefully agree on what

a birth chart indicates. So how can they know that astrology works? Indeed, why should anyone bother with astrology in the first place?

Originally astrologers claimed factual links between the heavens and human affairs, and such views continued through the 1950s. Then the rising interest in the inner person, and the rising frequency of disconfirming empirical studies, led to a retreat from factual claims to ones involving meaning. To most astrologers "astrology works" now means "astrology is meaningful." And astrology does indeed excel at being meaningful because it involves seeing faces in clouds of planetary gods. Because the ancient Greek founders of astrology chose gods that mirrored human conditions, the faces we see are our own, for example Mars *warlike*, Jupiter *benevolent*, Saturn *wise*. Astrology then guarantees a match with this celestial identikit by being unrelentingly flexible.

Thus hard aspects can be simultaneously bad because their obstacles lead to failure and good because their challenges lead to success. If an awkward indication cannot be overturned by another factor, standard practice allows it to be explained away as untypical, or as unfulfilled potential, or as repressed, or as an error in the birth time, or as an outcome of the practitioner's fallibility. So it is always possible to fit any birth chart to any person, making it a most efficient focus for therapy by conversation. Once the astrologer and client are talking, the birth chart can mostly be ignored except as a convenient means of changing the subject.

Clearly this kind of astrology does not need to be true, and attacking it on the basis of meta-analytic outcomes would be irrelevant. However, meta-analysis becomes immediately relevant should an astrologer claim that astrology needs to be true, because it denies beyond doubt any useful factual links between birth chart and person. If you are looking for something where nothing is true and everything is permitted, then astrology seems to be an excellent choice.

References

A list of the studies meta-analysed above is in preparation.

Phillipson interview of researchers Dean, Ertel, Kelly, Mather, and Smit

An expanded version of the interview in Chapters 9 and 10 of *Astrology in the Year Zero*. Phillipson G (Ed). Flare, London, September 2000. ISBN 0-9530261-9-1

Abstract -- Garry Phillipson grills a team of five prominent researchers (Geoffrey Dean, Suitbert Ertel, Ivan Kelly, Arthur Mather, Rudolf Smit) with more than 150 questions covering the main issues of scientific research into astrology, to which they reply collectively. It took an entire year to establish the questions (and the questions raised by questions) and to ensure that the answers are concise, readable and complete. Issues normally evaded by astrologers are tackled head on. The five researchers have been investigating astrology for at least twenty years. Two have been full-time practising astrologers, two are university professors, and all have had numerous articles published in the astrological and scientific literature, their collective total in astrology being over 200 articles and several books. **Part 1** (background) covers research methods, tests, what researchers investigate, whether astrology needs to be true, reasoning errors and their disastrous effects, intuition, unconscious processes, ESP. **Part 2** (research results) covers Gauquelin, sun signs, the whole chart, isolated vs multiple factors, time twins, open-mindedness, influence of world views, reactions of astrologers to research outcomes, white crows, prestige, whether the dismal outcomes to date might improve, resources, parallels between astrology and poetry, credibility problems, education, critical thinking skills, whether modern science supports astrology, our inability to cope with complexity, how reasoning errors make mind/reality/etc issues premature, sources of research information, prospects for the researcher, questions to ask oneself. To help retrieval there is a list of topics and an index with over 700 entries. Figures have been updated to December 2005. **Conclusion** The researchers conclude that astrology is neither science nor magic, and is more likely to be a delusion arising from pervasive artifacts. The interview is nontechnical, easy to understand, and cross referenced. Much of the information is not readily available, especially in astrology books. For new readers it is the best available overview of research into astrology on this website. Don't get involved in astrology without reading this interview first.

The book version contains about 90 questions. This expanded version contains a further 65 questions, cross-references, and many new headings to aid retrieval. To find the new material, see start of Index. Each question is numbered. Comments (or new questions) are invited, especially if they correct errors or add significantly to the dialogue.

To find the topic you want

Check the section headings below (21 entries, second figure = number of items), or the index (over 700 entries) given at the end.

Part 1. Background to scientific research into astrology.

01. Introduction by Garry Phillipson
02. How the researchers got involved in astrology (5 questions)
03. Research methods and topics (8)
04. Subjective and objective -- two views of astrology (7)

- 05. Do researchers differ from astrologers? (4)
- 06. Reasoning errors and their disastrous effects (14)
- 07. Intuition, unconscious processes, ESP (15)

Part 2. Results of scientific research into astrology.

- 08. The picture emerging from research (4 questions)
- 09. Gauquelin, sun signs, whole chart (8)
- 10. Isolated vs multiple factors, time twins (8)
- 11. Open-mindedness, influence of world views (7)
- 12. Reactions of astrologers to research outcomes (7)
- 13. White crows, prestige, resources, could results improve? (12)
- 14. Parallels between astrology and poetry (5)
- 15. Credibility problems, education, critical thinking skills (9)
- 16. Does modern science support astrology? (5)
- 17. Our inability to cope with complexity (6)
- 18. Mind, reality, divination: are such issues relevant? (21*)
- 19. Sources of research information (1)
- 20. Summing up (4)
- 21. Index (725 entries)

* Provides a more thorough discussion of the book's final topic (What is Astrology -- Science or Magic?), which in the book was inconclusive. Here the researchers conclude that astrology is neither science nor magic, and is more likely to be a delusion due to reasoning errors and other artifacts.

Part 1. Background to scientific research into astrology

1. Introduction by Garry Phillipson

OQQ1.1

In contemporary western society science is commonly seen as the final arbiter between reality and illusion, and this book would be incomplete if it did not represent the scientific view-point on astrology. I chose to approach Geoffrey Dean -- an experienced researcher who is well-versed in scientific methodology, astrology, and what happens when the two collide. Dean suggested that he recruit others to help out, and the upshot was that I interviewed by email a team of five prominent researchers scattered across the globe. Their collective answers led to further questions, and also to changes and clarifications. To meet size constraints, we then collectively edited the entire interview down to the version that appears in Chapters 9 and 10 of *Astrology in the Year Zero*.

We have tried, in this interview, to cover the main issues which have arisen between astrology and science. Trying to accomplish this in a finite number of words made compromise inevitable -- in the questions asked and not asked, the amount of discussion and illustration possible for any given topic. The researchers have asked me to point out that, although they are similar in their scientific approach, this does not mean they are incapable of disagreement. They report that some of my questions led to differences of opinion (for example on the relevance of religion to astrology), but that once these differences were explored they tended to disappear. These explorations do not appear in the interview, whose hard-won unanimity may therefore be deceptive. My sincere thanks

and gratitude go to each researcher, and particularly to Geoffrey Dean for collating their input.

2. How the researchers got involved in astrology

OQQ2.1

It seems rare for scientists like yourselves to be involved with astrology. How did it happen?

Researchers: We were intrigued by astrological claims, and by the depth and complexity of the subject. Was astrology true? Could the stars really correlate with human affairs? How could it work? Scientists love challenges like that. The problem was the lack of evidence whether for or against (a situation no longer true). So we set out to explore the claims in depth. That was how our research started. Along the way some of us became practising astrologers, so we were able to approach the subject from both the inside and outside.

OQQ2.2

How did the astrologers become astrologers, and what effect did your researches have on your astrological practices?

Researchers: One of us (Mather) was a self-taught student of astrology and was sufficiently impressed by results to become Research Co-ordinator for the Astrological Association 1971-1978. Two of us (Dean, Smit) were full-time practising astrologers and teachers of astrology. Dean was the founding president of the Federation of Australian Astrologers WA branch. Smit was the founder of NGPA, at the time the only Dutch society for professional astrologers, and while in Australia was the distributor for Matrix Astrological Software. Both of us have lectured at international astrology conferences, and in 1988 we both received an AMR Commemorative Bi-Centennial Award for contributions to astrology, specifically for our work in research. (AMR = the Sydney-based *Astrological Monthly Review*. The Award was an international one, for example other recipients included Doris Chase Doane, Liz Greene, Robert Hand, Alan Oken, and Lois Rodden.)

We started in much the same way as any astrologer starts -- we calculated charts, saw that they seemed to work, and were hooked. Astrology became our passion. Every spare moment became devoted to it. We read more and more books, we did more and more charts for more and more people, we went to meetings and talked to more and more astrologers (whose experience was much the same as ours), and we became more and more convinced that astrology worked. Nothing we saw or experienced told us otherwise. Astrologers were generally nice people, they seemed intelligent and well-educated, they spoke from the heart, and they based everything on practical experience. Other than sun sign columns, which most of them rejected, there seemed to be nothing for anyone to complain about. We did not understand why some people should be so hostile to astrology. Nevertheless problems remained, for example chart readings still seemed to fit when by accident the wrong chart was used.

OQQ2.3

So what happened next?

Researchers: Those were the days when scientific tests of astrology were hard to come by. So we began to make our own tests. That is, we controlled for artifacts and other sources of error, something astrologers rarely did. (An artifact is something spurious that mimics a genuine effect, for example the varying number of days per month will mimic a dependence on month unless we adjust the arithmetic.)

We were dismayed to find that artifacts and errors seemed to explain everything. At which point our beautiful world of astrology began to collapse. For example when Mather used the data for 900 major earthquakes to test the claim that they tended to occur when Uranus was on the MC or IC, the claim could not be confirmed (95 earthquakes fitted but so did 91 out of 900 non-earthquakes). When Dean used volunteer clients to test charts that, unknown to the clients, had been altered to reverse their meaning, the reversed charts were accepted as readily as authentic charts. When Smit tested the main predictive techniques on people who had died an accidental death (nothing ambiguous here), the claims in astrology books could not be confirmed.

Ultimately we took heed of the mounting evidence and ceased actual practice, as did a few rare astrologers like David Hamblin (a former chairman of the Astrological Association), Terry Dwyer (a former tutor for the Mayo School of Astrology), and Jan Kampherbeek (a former editor of the Dutch magazine *Spica*). As Aristotle might have said, astrology is dear to us, but dearer still is truth. But we did not lose our interest in astrology.

Of course such U-turns can be personally traumatic. For example Smit was originally an amateur astronomer highly skeptical of astrology, so his conversion to astrologer was of momentous personal significance, making his unconversion even more so. When he realised that astrology seemed to have no basis in scientific fact, and probably never would, his rich and rewarding astrological life suddenly lost its meaning. He fell into a mental depression that lasted several years, and which was perhaps the main reason for the breakup of his marriage at the time. Even today he finds it painful to realise his initial skepticism of astrology had been justified, albeit for reasons more valid than those given in astronomy books, and that for over a decade he had been neglecting his original interests in favour of astrological ones. If nothing else, his experience illustrates the passion that astrologers can have for astrology. To dismiss them as frauds (as some skeptics do) is to miss the point.

OQQ2.4

How did the non-astrologers become involved?

Researchers: We had long been interested in related matters, namely solar effects on people (Ertel) and lunar effects on people (Kelly), so in due course we also became interested in how astrologers conceive of relationships between heavenly bodies and people.

OQQ2.5

How did this new interest affect you?

As with the others, we experienced a kind of conversion, not from science to astrology or vice versa, but from bad closed-minded science to good open-minded science. By forcing us to be neither believers nor disbelievers, astrology has helped us to be genuinely open-minded, so it is easier to be open-minded in other areas. In short, astrology has

made us better able to observe the spirit of science, which ironically seems quite the opposite to its effect on astrologers.

3. Research methods and topics

OQQ3.1

How would you define scientific research as applied to astrology?

Researchers: In astrology there are millions of opinions and we can have them for nothing. But for knowledge we must work. We must do research. Scientific research in astrology has the same aim as scientific research in general -- to improve what we know and to improve what we do. To us it reduces to four simple guidelines: (1) Be careful because pitfalls are everywhere. (2) Consider other explanations for claimed astrological correspondences. (3) Investigate all promising ideas. (4) Follow wherever the results of sound investigation lead even if they conflict with existing beliefs.

EQQ3.2

These four guidelines really look like applied commonsense. Are they really any different from what a competent astrologer would do?

Researchers: The four guidelines may look like applied commonsense but to our knowledge few astrologers actually follow them. Even the most competent astrologers seem unaware of pitfalls, they do not consider other explanations, and they do not follow where the results of sound investigation lead. In fact these are the main objections that scientists hold against astrologers. Nevertheless your point is true in one sense -- researchers investigate the same testable claims as do astrologers. The crucial difference is that researchers are more careful and more rigorous. Researchers and astrologers differ not so much in their ideas as in the approaches used to test those ideas.

To put it another way, astrologers seem to see research as being consistent with a philosophy that says "We use X, therefore we need research to confirm X." Here X might be anything from the most trivial of techniques to astrology itself. Or as Donald Bradley (then the leading US research astrologer) said in 1950, "It appears to be an unwritten article of faith ... that all improvements are welcome so long as the complacent surface of tradition is not disturbed." But we see research as being consistent with a philosophy that says "Research by many people has shown that X works under conditions where alternative explanations can be ruled out, therefore we use X."

OQQ3.3

Are there different schools of thought advocating different methodologies for scientific research in astrology, or are researchers unanimous in their approach?

Researchers: Yes and no. Methodologies in science generally may differ in detail but all involve the critical examination of ideas. The same applies to scientific methodologies in astrology -- nothing is accepted just because astrologers say it works. What matters is whether it stands up to critical examination, of which tests are an important part.

OQQ3.4

So what is your own approach to scientific research? From start to finish, what do you actually do?

Researchers: Our own approach is quite ordinary. First, we survey the literature to determine what research already exists. Very little research into astrology by scientists existed before the 1950s. Today there is a great deal, although few astrologers seem to know about it.

Second, we perform tests of promising ideas according to our interests and resources. Thus we might test astrologers to see if they get the right answers, or we might test the charts of say extraverts to see if they differ from those of introverts, or we might re-examine old studies to see if they might provide new information.

Third, we submit the results to informed critics and act on their comments. If flaws are uncovered, or if we fail to follow up a promising line of enquiry, then we must try again. Science is a tough business. Finally, at the end of years of painstaking work (nobody said research had to be easy) we survey the totality of results to get an overall indication. No individual study stands alone.

EQQ3.5

What types of test are there?

Researchers: Tests can be qualitative (what kind?) or quantitative (what amount?). A qualitative test involves categories (yes/no, male/female, Jupiter/Saturn), so shades of grey are not allowed. A quantitative test involves numbers that express position on a scale (20 kg, 50% certain, orb 5 degrees), so shades of grey are allowed. Which is best? Some astrologers say qualitative, but to us this applies only if people were never shades of grey.

Qualitative tests tend to be exploratory (finding out what might be present) rather than confirmatory (testing what is known to be present), so they tend to incorporate as many factors as possible, which might seem to make them well suited to astrology. But astrologers claim to know what is present (read any astrology book) so an exploratory method seems inappropriate. Furthermore, incorporating many factors greatly increases the chance of spurious interactions, which in effect makes qualitative tests incapable of detecting complex interactions of the kind said to be characteristic of astrology. They also tend to use small unrepresentative samples that are unable to detect weak effects (large samples are more sensitive than small samples). So once past any initial exploration stage, we prefer quantitative tests.

Indeed, much of astrology is already quantitative, as when astrologers use orbs or when they weight factors prior to chart synthesis, which they presumably would not do if qualitative really was better. But qualitative tests may be preferred by astrologers because they are easier to apply non-rigorously and are therefore more easily persuaded to give the desired outcome. Or because they are more open to creative interpretation, which amounts to the same thing.

EQQ3.6

I'm not sure I can agree. Quantitative tests require using statistics, but many astrologers feel very strongly that the statistical approach is quite unsuited to astrology.

Researchers: There are two kinds of statistics. If astrologers mean *descriptive* statistics, as in births and deaths, their argument is that statistics deals with groups whereas astrology deals with individuals. That is, each chart is said to be unique, so the success

or failure of judgements for other charts is irrelevant. But this is like saying each day is unique, so whether the sun rose on previous days is irrelevant. Those who depend on the sun might disagree.

Alternatively if astrologers mean *inferential* statistics, as in $p = 0.05$, their argument is invalid. Astrology is said to incline rather than compel, so we have no way of knowing whether a particular chart judgement is a hit or miss until after the event. Astrology works only sometimes. In other words it is essentially probabilistic, which means that probabilistic (i.e. statistical) approaches could hardly be more suitable. Furthermore, whether we describe our observations qualitatively (e.g. by categories) or quantitatively (e.g. by scale positions), we still need to count their numbers, so we still need statistics to make sense of them. Calling our approach qualitative does not avoid the use of statistics.

Although astrologers and researchers both use qualitative approaches, only researchers follow them with quantitative checks to avoid being led astray by artifacts and reasoning errors.

OQQ3.7

What sort of questions do researchers investigate?

Researchers: Is it true that positive signs are extraverted, that an elevated Neptune is musical, that adverse Mars transits indicate accidents, and that Bucket patterns become agitators? What is the best zodiac, house system, aspect system, dynamic technique? Does Saturn mean the mother, the father, or neither? Are sun sign columns plausible? Should the signs be reversed in the southern hemisphere? What about distance, latitude, the 99th harmonic? How important is experience, intuition, a friendly client, an accurate birth time? Do astrologers perform better than computers, graphologists, palmists, psychics, tossing a coin? Is X easy to see in charts? How strong are astrological effects? How important is the search for new techniques? What makes a good astrologer? How to choose an astrologer? And so on. But perhaps the most important question is one that astrologers rarely ask, namely could we be fooling ourselves? Could astrology seem to work for reasons that have nothing to do with astrology? This too has been carefully investigated.

EQQ3.8

Are there some astrological claims to which scientific research might be irrelevant?

Researchers: Some astrologers claim that scientific research is impersonal or unspiritual or insensitive to deeper truths. For example they claim that the personal direction and purpose revealed by astrology cannot be tested. Or they claim that astrology involves subtle factors not yet known to science. In each case they conclude that science is unsuited to astrology, period. But apart from its emphasis on critical evaluation, science requires only that events be observable in some way. Astrology is the same, for example the *Larousse Encyclopedia of Astrology* (McGraw-Hill 1980) says the central tenet of astrology is that the heavens and their terrestrial counterparts "are related in a significant and observable manner" (p.19).

We recognise that astrological "observations" are often little more than mere impressions. Nevertheless if astrologers can observe the claimed correlations, so can scientific researchers, and vice versa.

In fact we all use scientific methods every day whether we realise it or not. Thus when our car won't start we form likely hypotheses, all of them involving observables (such as blown fuse, flat battery, faulty starter), and then test them. If our hypotheses did not involve some observables then by definition we could never discover the problem and therefore we could never fix it. Similarly if someone is ill, or if someone is said to match their chart, we use the same approach based on observables. We act like prototype scientists. It is unlikely that astrologers could survive if science did not apply to general everyday matters of the kind that clients consult astrologers about.

Does this mean that science must apply to all areas of astrology? Not at all. If no possible observation could rule out a particular claim, then the claim is untestable, and scientific research is irrelevant. It is as simple as that. We can test the idea that Leos are more generous than other signs, say by analysing the tips given in restaurants, but as yet we cannot test the idea that Leos were Cancerians in their previous life. Even so, we can still compare astrology to other systems that claim to give direction and purpose to our lives (astrology has no monopoly here), in the same way that we can compare the origin and maintenance of religious beliefs. Perhaps more importantly, we can explore the distinction between subjective and objective astrology.

4. Subjective and objective -- two views of astrology

OQQ4.1

Are you putting "subjective" and "objective" forward as distinct categories of astrology? I'm sure that many astrologers view astrology as existing half-way between subjectivity and objectivity.

Researchers: For such astrologers the distinction is a philosophical one, as for example in whether or not we create the world we live in. But this is not the distinction we mean. We use these words in a particular way, so their definition is crucial. For our purpose we can divide astrology, however defined, into subjective and objective components as shown in Figure 1. Figure 1 shows that subjective-objective is not a matter of black-white but of shades of grey. Nevertheless we can still describe what each dimension represents, as follows:

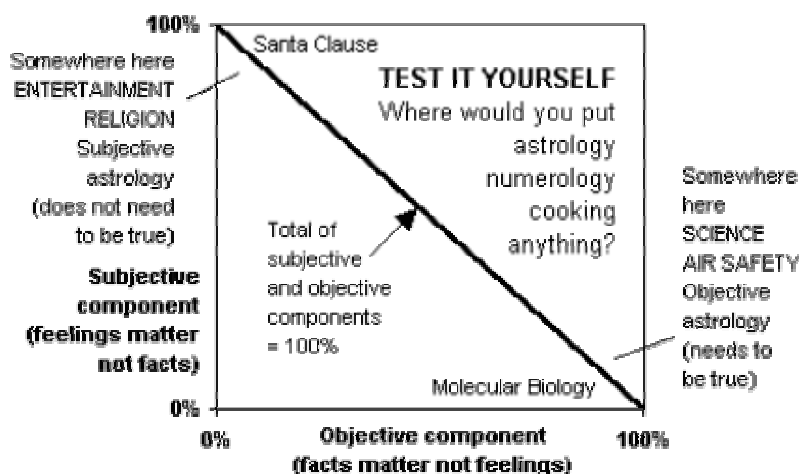


Figure 1. Subjective (vertical axis) vs objective (horizontal axis).

In principle we can take any practice and divide it roughly into two components, subjective and objective. If we make the total equal to 100%, the plot of one component against the other will then be a straight line as shown above. At the top, only feelings are important, as in pure faith-based religion. At the bottom, only facts are important, as in pure science. In between are those practices that are nominally a bit of both, such as astrology, phrenology, and cooking. To illustrate the subjective-objective distinction we have aligned them with feelings-facts. Alternatively we could have aligned them with say spiritual-material or benefit-truth or values-facts or religion-science. Of course the terms are not strictly equivalent, but our aim is to illustrate the distinction without being dogmatic about what subjective-objective should mean.

In subjective astrology only subjective values matter. The correctness of a particular statement, or of a chart reading, or even of the chart itself, is of no direct concern. What matters are issues like: Does astrology give a direction and purpose to our life? Does it provide benefit, self-understanding, insight, empowerment? Do astrologers feel that it always works? Are clients always satisfied by astrology? Does it enrich our lives in ways that the rational cannot? As say religion, myth, poetry and fiction do? *To be accepted, subjective astrology does not need to be true.*

In objective astrology our subjective values do not matter. That millions of people may feel empowered or dismayed by astrology is of no direct concern. What matters are issues like: Are the statements of astrology true? Are Leos more Leonian than non-Leos? Which techniques are the most accurate? Do rectified times agree with actual times? Can astrologers pick the real chart from a control? Can clients pick their own interpretation from a control? Does astrology provide information not available from elsewhere? *To be accepted, objective astrology needs to be true.*

Figure 1 also shows how we cannot conclude that a false or problematic belief is due to nothing more than simple-minded gullibility. The belief might be due to its spiritual value, its social value, or its cultural value. A material feast cannot appease a spiritual hunger, a point underlined by the sheer longevity of major religions. In other words there is more to astrology than being true or false. Let us look at this crucial point in another way:

The distinction between subjective and objective astrology reflects how believers and critics tend to view astrology differently. The typical believer is looking for a spiritual experience that transforms the self (does astrology give meaning, understanding, direction?), but the typical critic is looking only for material proof (is astrology true, what is the evidence, where are the tests?). So the believer sees the critic as having missed the point, and vice versa.

In summary, any particular astrological claim could fall anywhere on the straight line in Figure 1. If we do not make the distinction between its subjective component (sought by typical believers) and its objective component (sought by typical critics), we will be unable to choose the proper criteria for judging the claim, thus creating conflict where none may exist. Which is not helpful to either side.

NQQ4.2

My concern is this: many astrologers believe that astrology works precisely because the subjective and objective domains interact. In this view, subjective qualities such as detachment, confidence or empathy might be necessary conditions for an astrologer to

accurately answer a question such as "when will my daughter give birth?" -- objective information.

Researchers: There are two separate issues here. First, as shown in Figure 1, we are using the terms subjective-objective as a convenient label for a distinction that could also be seen as spiritual-material or benefit-truth or value-fact or religion-science. But astrologers (and yourself) are using the terms subjective-objective in a different way. For example Rob Hand in his 1989 Carter Memorial Lecture says "astrology does not accept that subject and object are independent. If astrology did, how could one talk about someone's spouse from a horoscope?" (*Astrological Journal* Nov-Dec 1989). Here his usage is grammatical -- horoscope (subject) indicates (verb) spouse (object), which is the same as saying that everything (subjects, objects, apples, oranges, the above, the below) is linked to everything else. In principle we can tell what our fingers are doing by looking at our toes. Nothing here about spirit-benefit-religion being a necessary condition for an astrologer to deal with matter-truth-science, or about astrologers who want to be accurate having to be X rather than Y.

Nobody denies that empathy is important for astrologers to have, but this has nothing to do with the accuracy of astrology itself. No doubt hugely empathetic phrenologists existed, but so what? To imply that their empathy converted an untrue phrenology (see 6.3) into a true phrenology is like saying empathy will convert you into a person for whom a wrecked car or TV set will instantly work. Obviously the world does not work like that.

Second, we are merely dividing astrological claims into what for convenience we have called subjective (spirit-benefit-religion) components and objective (matter-truth-science) components to make sure we choose the proper criteria for testing them. If the claim is about spiritual matters then a material test is clearly inappropriate, and vice versa. To not make the distinction would be like dismissing Christianity because archbishops cannot walk on water.

NQQ4.3

Another concern has to do with your reference to a "subjective astrology", which "does not need to be true". It seems to me that astrologers generally *need* to believe that they can access objective information from reading a chart. Those who lose this belief do the honourable thing and stop practising. Astrologers do not think of themselves as practising purely "subjective astrology" -- most would consider it to be fraud.

Researchers: Again there are two separate issues here. First, the need to believe that astrology is objectively true, which we will come back to in Part 2 when we discuss research outcomes (see 14.4). Second, the idea that a purely subjective astrology is a fraud, which is like saying spiritual astrologers are frauds but not archbishops.

NQQ4.4

If I try to picture someone, who is not a fraud, practising "purely subjective astrology", I have to see them as not saying anything which is falsifiable about the person, event, or whatever they are using astrology on. This seems to exclude virtually all statements of the form "You are like this", and "You will experience this".

Researchers: Exactly right. Nothing is falsifiable anyway, simply because astrology is said to only incline and not compel, or because contrary factors can always be found, or because the manifestation is not typical. So the statement can never be of the form "You

are like this", only of the form "You may or may not be like this". Although astrologers and clients seem quite unaware of this nonfalsifiability, it nevertheless implies that this part of their astrology is purely subjective as defined by us, but presumably they do not consider it to be fraud.

NQQ4.5

I don't see that such statements can be labelled "astrology". Astrology is, by definition, about getting information from the positions of planets and stars; and if no information has been obtained, then no astrology has taken place.

Researchers: We do not see why charts containing opposing factors, or an astrology that only inclines, should deny the getting of information. No astrologer argues that nonfalsifiability stops astrology taking place. Also, the information can be inaccurate, as research repeatedly confirms, but an astrologer's reliance on mythology and reasoning by analogy is unable to detect error or to separate the wheat from the chaff, see 6.5-6.6. So the mere fact that astrology has taken place as opposed to not taken place is no guarantee of anything.

But many astrologers argue that astrology is about getting *meaning* rather than *information*, where (like religion, myth, poetry and fiction) it enriches our lives in ways that the rational cannot -- a disagreement readily resolved by our subjective-objective distinction (meaning is subjective, information is objective). It also introduces another set of problems to do with meaning, but we have already touched on those in 4.1.

NQQ4.6

Perhaps you could go ahead and explain something more about the uses of your subjective-objective distinction.

Researchers: Our subjective-objective distinction is especially helpful when we come to judge the relevance of science because it avoids any shouting match between astrologers and scientists. Where astrology limits itself to areas where only subjective or spiritual values are required, science hardly matters. But where astrology makes objective and testable statements such as those that fill astrology books, then science becomes essential, at least for those unwilling to accept everything on faith.

OQQ4.7

How does this affect the aims of scientific researchers?

Researchers: It is not for researchers to dictate which kind of astrology (subjective or objective) is important. Their aim should be a more modest and respectful one -- to point out for astrologers the need to be careful, and to show what happens when this need is neglected.

5. Do researchers differ from astrologers?

OQQ5.1

What do you think astrologers could learn from the discipline of the researcher?

Researchers: What we do is no different from what astrologers do in that we both make observations. But we are more careful. In fact hugely more careful.

OQQ5.2

What does this mean in practice?

Researchers: Consider first how astrologers do things. Each time they erect a chart they see how remarkably it corresponds with the person or event. They see with their own eyes that astrology works even though science (apparently) cannot explain it. This is their everyday experience, and on this experience they rest their claims. What could be more fair, more reasonable, and more disarming of criticism? Who could argue against "it works"?

But consider what "it works" actually means. It means that *all non-astrological influences leading to the same result have been ruled out*. Astrologers seem to take this proviso for granted, but researchers have to be more careful. Ruling out non-astrological influences is harder than it might seem. We are too easily misled.

NQQ5.3

Why is that?

Researchers: Throughout human evolution we have been deluged with incomplete and ambiguous information arriving via our senses. But survival required us to see, hear and move instantly in response to food or danger. To stop and reason carefully on every occasion, as when a predator was about to pounce, would have been disastrous. A man seeking truth by reason did not live long. Today we have inherited the consequences -- speedy sense perception as in recognising faces but poor reasoning skills as in assessing astrology. In short, when it comes to reasoning we are easily misled, a liability that went largely unnoticed until the rise of experimental and cognitive psychology in the early 1900s. So we have to look at astrology under conditions where we are less likely to be misled.

OQQ5.4

And you see this as being where your approach differs from that of most astrologers?

Researchers: Yes. We want to avoid being misled, and avoiding being misled is part of what being scientific is about. Unless we are careful, unless we are aware of where we can go wrong, we can look at the Earth and conclude it is flat. Things are not always what they seem, a point most astrologers seem unaware of.

6. Reasoning errors and their disastrous effects

OQQ6.1

Can you illustrate what you mean about "things not always being what they seem"?

Researchers: Here's an example anyone can try. With a ruler draw a vertical line a few cm long, then close underneath draw a horizontal line of the same length. The vertical line looks distinctly longer. The illusion prevails even though many credible authorities might claim the lengths are equal. Worse, it prevails even though you re-measure the lines to check their accuracy. This example shows how, without measurement, without tests, the error would never become apparent. The thing is not what it seems.

The dangers of error become immensely greater at the higher levels of reasoning, i.e. at the levels where astrological ideas are formed, taught and applied, which is why we are

so easily misled. Indeed, errors at these levels are as diverse as human experience itself.

OQQ6.2

Can you give examples?

Researchers: Ordinary people have embraced countless things now known to be untrue, such as the belief that the Earth is the centre of the universe, or that the number 13 is unlucky, or that sleeping in moonlight sends you insane, or that rubbing frostbite with snow is helpful, or that the Moon is covered in ice 140 miles thick, or that bloodletting cures illness, or that the Fox sisters were genuinely psychic, or that the 23,28,33-day cycles of biorhythms work. Books such as Charles MacKay's *Extraordinary Popular Delusions and the Madness of Crowds* (Noonday reprint 1977) and Martin Gardner's *Fads and Fallacies in the Name of Science* (Dover 1957) attest to the pervasiveness and often amazing longevity of delusions (false beliefs). N-rays, polywater, and canals on Mars are examples where even scientists saw things that subsequent investigation showed not to exist. Cold fusion may be another. Such delusions (other than optical ones) are almost always due to our poor reasoning skills, and here the example closest to astrology is phrenology. A look at phrenology is enormously revealing about astrology.

OQQ6.3

Tell me more.

Researchers: Phrenology is a system of philosophy based on reading character from brain development as shown by head shape, or in popular terms by the bumps on the skull. Phrenology is now effectively dead but in the 1830s its popularity exceeded that of astrology today. Thus in the UK one quarter of the then 25 million population was illiterate, and a phrenology book cost one quarter of the average weekly wage. Yet roughly 1 person in 3000 was practising or studying phrenology, roughly three times the proportion practising or studying astrology today. It was just as popular in Europe, the USA, and Australia. So in terms of popularity it compares more than favourably with astrology. No obscure restricted system here.

Like astrology, phrenology predicts the general tone of life (albeit not specific events), and it encourages you to assess yourself and act on its findings to achieve harmony with the world. Like astrology, its ideas were expressed with complete authority, it lent itself to cookbook interpretations (feel your bumps and look up the meanings), and it attracted people of intelligence and a vast literature wherein every criticism was furiously attacked. Most important of all, like astrology, phrenology flourished *because practitioners and clients saw that it worked*. Unlike their critics they had been there.

So believers in phrenology were unmoved by what the critics said, and for what seemed the best of reasons. As in astrology, their views exuded overwhelming confidence. For example, according to the *1896 Year Book of the British Phrenological Association*, phrenology was "so plainly demonstrated that the non-acceptance of phrenology is next to impossible." No ifs or buts here.

Nevertheless scientific research upset everything. The experience-based claims of phrenologists were shown to be completely wrong. Character was not indicated by brain size and shape because the brain did not work like that. Nor did character break down in the ways required by phrenological theory. So a certain head shape did not mean what it was supposed to mean, nor was there any way it could possibly do so. The system that

millions of people passionately believed in, and passionately acted upon, was totally without foundation.

Note the problem: Experience led phrenologists and their clients to believe in phrenology, just as experience leads astrologers and their clients to believe in astrology. In each case the reasoning is the same -- the interpretation seems to fit the client, therefore the system works. But the reasoning was wrong for phrenology, so why should it be any different for astrology? Might astrology be just a figment of our poor reasoning skills?

NQQ6.4

One obvious distinction is that phrenology was around for not much over 100 years before its decline, whereas astrology has been around for thousands of years, continuing to appeal to people in a huge range of cultures. What would you say about this?

Researchers: One answer is that an idea has free reign only up to the point where scientific methods become capable of testing it, which gave astrology a head start. Thus much of the necessary methodology for testing astrology was not available until the 19th and 20th centuries, and the really decisive technology (computers) has been available for only two or three decades. An example similar to phrenology is that of Freudian ideas, whose initial untestability steadily disappeared as methods improved. Another answer is that physiognomy, the forerunner of phrenology, is as old as astrology. If we see the relation between modern astrology (say post Alan Leo) and traditional astrology as similar to that between phrenology and physiognomy, the comparison is almost exact. In any case longevity is irrelevant for our purpose -- ideas just as old and stable as astrology, such as the geocentric view of the cosmos, the four elements, planetary gods, alkahest (universal solvent), and the philosopher's stone, have now all been overturned.

OQQ6.5

But if the claims of phrenology were wrong, how could experience lead to the opposite belief? How could the experience of practitioners and clients support non-existent effects?

Researchers: What matters here is that systems like phrenology and astrology rest on correspondences, otherwise known as reasoning by analogy, the assumption that things similar in some respects are also similar in other respects. Thus a high forehead or a strong Mercury indicates a strong intellect. The number four and the fourth planet have the same qualities. Big handwriting indicates power and dominance. Mars the red planet indicates blood, anger and war, and by extension anything vaguely red, hot, or aggressive.

Reasoning by analogy seems at first sight to be similar to ordinary reasoning. Size indicates strength, so a big man is stronger than a small man. Loudness indicates activity, so a loud noise suggests more danger than a faint noise. The difference is that these statements involve clear causal links, so we have reason to believe them. They do not claim to tell us anything new. By contrast, reasoning by analogy involves no causal links. It requires only that X correspond with Y in some way, from which correspondence we supposedly discover something new. The problems should be obvious.

OQQ6.6

Such as?

Researchers: First, it is impossible to specify any two things, no matter how dissimilar, that do not show some kind of correspondence. A raven is like a writing desk because both cast shadows. But knowing something about ravens does not necessarily tell us anything about writing desks.

Second, we have no way of deciding between conflicting correspondences. Are black cats lucky as in ancient Egypt or unlucky as in medieval Europe? Is the keen edge of our intellect blunted by over-use or sharpened? Is Mars unfortunate because red = blood (war) or fortunate because red = blood (life)? Who can believe any correspondence when it is so easily contradicted by another?

Third, our chances of being correct are not good. No longer do we believe, as Aristotle did, that death can occur only at low tide. No longer do midwives open the door to ease a painful labour. No longer do doctors use the lungs of foxes, noted for strong respiration, to cure asthma. No longer do alchemical ideas appear in chemistry courses. In fact reasoning by analogy is generally so spectacularly wrong that it survives in scientific textbooks only as an example of fallacious reasoning.

NQQ6.7

But doesn't much of scientific thinking depend on analogy?

Researchers: Analogy can be a wonderful source of insight and inspiration, and it can lead to exciting new ways of looking at things. In science it has been an invaluable guide to the discovery of new truth, as when Darwin was led to his theory of evolution by considering the analogy between what nature does and what animal breeders do, hence the name *natural selection*. But analogy is only suggestive. It is not an arbiter of truth. Analogy cannot decide the cause of AIDS, or the location of endangered whales, or the longevity of a new romance, or whether the Earth is flat, square or circular. For this we need an independent investigation.

OQQ6.8

But what if the correspondence actually exists?

Researchers: We still have problems because we are so bad at judging correspondences. Even if the correspondence is strong, as between human height and weight, we are still bad at judging it accurately. We can also see correspondences where none actually exist, so a system such as phrenology can seem to work even though it does not. This is why researchers have to be so careful. They cannot afford to be misled.

OQQ6.9

Please explain how we can see correspondences where none actually exist.

Researchers: Consider the Draw-A-Person test. You draw a person on a sheet of blank paper, and the person's size, detail, clothing, and so on, supposedly reveal your inner conflicts. This is reasoning by analogy. Close-set eyes mean you have a suspicious nature. Big eyes indicate paranoia. A big head means you worry about being clever. This is an example of the correspondences that have been widely accepted. Nearly everyone believes these particular ones. It is also an example of the correspondences that have been critically examined, and in this case dozens of studies have found them to be wrong -- people with such features do not draw such pictures. But it does not end there.

In one famous set of studies, groups of 56 college students were given 45 drawings of a person from a Draw-A-Person test. Each drawing was accompanied by six personality statements about the drawer from which each student had to work out the meaning of features such as head size. So they were rather like astrologers trying to work out the meaning of a new chart factor, say a new asteroid, using the traditional method of comparing charts with their owners. But unknown to the students the personality statements were deliberately unrelated to the drawings. For example the statement "worried about being clever" appeared just as often for small heads as for big heads.

So did the students see what was actually in the data, namely nothing? Not at all. Nearly every student saw the correspondences even though they did not exist in the data. Worse, they continued to see them despite corrective strategies such as repeating the exercise, sorting the drawings into piles for closer study, and even when offered money for accuracy. Worst of all, when the statements totally opposed the correspondences, so that "worried about being clever" appeared only for small heads, never for big heads, the students still saw them, albeit to a lesser extent.

In other words the students saw only what they expected to see. They reasoned by analogy. The actual data (the only thing that mattered) had almost no effect. Or as the late Professor Eysenck would say, "my mind is made up, don't confuse me with facts." The important point is that these studies could not have made it easier to avoid seeing non-existent correspondences, yet the students still failed miserably. So there is no reason to suppose that astrologers do any better once their minds are focussed on astro symbolism -- and this process is only one of the many ways we make errors in our reasoning.

OQQ6.10

Can you say something about these other errors?

Researchers: Reasoning errors are the focus of dozens of books and thousands of published studies, where they are given intriguing names like anchoring, Barnum effect, cognitive dissonance, confirmation bias, Dr Fox effect, halo effect, hindsight bias, illusory correlation (this is the one we just described), misattribution, placebo effect, Pollyanna principle, Rumpelstiltskin effect, regression effect, stacking the deck, and vividness heuristic. And a fascinating lot they are.

For example the Dr Fox effect involves blinding you with style and jargon rather than content (we just did exactly that). Cognitive dissonance is the painful consequence of holding incompatible views -- if we are committed to astrology then it is painful to find evidence against it, so we search for confirmation, almost anything will do, and ignore the painful bits. The Barnum effect is where we read specifics into generalities, and is often thought to be the most important error in astrology. But other errors can be just as important, such as the placebo effect (it does us good if we think it does), the Pollyanna principle (the power of positive thinking), hindsight bias (afterwards we knew it all along), stacking the deck (ask only confirming questions), safety in complexity (so even the wrong chart fits), and vividness heuristic (judging by vividness not content).

There are many more, all of them leading us to believe in seemingly spot-on correspondences where none actually exist. They prevent us learning from experience, a result that says it all. Perhaps the cruellest blow is the absence of errors leading in the opposite direction, which means we are stuck in a one-way street -- a point to keep in mind when reading what astrologers say in your other interviews.

OQQ6.11

But wouldn't prejudice, the rejection of astrology for emotional reasons, be an error leading in the opposite direction?

Researchers: No, because we are talking about the reasoning errors made by astrologers, who presumably are not prejudiced against astrology. The only thing that might persuade astrologers to disbelieve in astrology is the informed critical mind, which of course is not a reasoning error but rather a defence against reasoning errors. Fortunately anyone can have an informed critical mind.

NQQ6.12

But don't you think it's a bit of a jump to then conclude that everything in astrology can be attributed to reasoning errors? As the great 19th century psychologist Herbert Spencer said, a belief may appear entirely wrong, but nevertheless its very existence implies that it contained (and might still contain) some small amount of truth. Might you be in danger, as Johannes Kepler said, of throwing out the baby with the bathwater?

Researchers: This is always a concern. But we still have to find that small amount of truth, and we can only do that by being properly critical. Ironically those who complain about throwing out the baby tend to be those who offer no hints on how it might be rescued from the bathwater. Not for them the grubby business of being practical. Furthermore the cautious attitude prescribed by Kepler is rarely present in astrology. Even supposedly serious astrological publications like *The Mountain Astrologer* never hint that astrology has severe problems. They give the impression that all is well and that only prejudice stands in the way of astrology being recognised. In their world bathwater does not even exist. However, note how our subjective-objective distinction sorts out the mess -- the baby is objective astrology (which needs to be true) and the bathwater is subjective astrology (which does not need to be true). But to return to your question:

Obviously no scientist wishes to reject an idea that later turns out to be right. But it does happen. Nobody is infallible. The history of science is as much the history of mistakes as of successes, as when the idea of continental drift was initially rejected. But ultimately mistakes are of no consequence because they are corrected by other scientists and other studies. It may take time but it happens in the end. Which is why science changes over time and astrology generally does not.

NQQ6.13

Be that as it may, this still carries the implication that science as it is right now contains mistaken views which are currently seen as true. The ramifications of that are probably obvious enough.

Researchers: More misleading than obvious. Your argument seems to be that "science contains mistakes, therefore science cannot be trusted", which is like saying "the sea contains gold, therefore we can all be rich" or "ideas about electrons have changed, therefore power stations will no longer work." What matters here are not mistakes as such but:

(1) The ability to find and correct mistakes. Scientific method ensures that mistakes are recognised and corrected, whereas present astrological method is nonfalsifiable (see 3.6, 4.4, 17.5) and therefore ensures the opposite. By definition, no astrology book could give agreed procedures for finding errors.

(2) Their magnitude. What matters is not whether science contains mistakes, or whether the sea contains gold, or whether ideas about electrons have changed, but whether the outcome is enough to decisively affect our trust in science, or our becoming rich, or our being suddenly without electricity. Here the outcome in each case does not start to be even weakly decisive. Compare this with objective astrology, where so much has been disconfirmed that we might reasonably distrust all of it. Nobody denies the practical success of science, but plenty of people deny the practical success of astrology

NQQ6.14

But how does this self-correcting tendency of science help the individual, fallible, scientist right now?

Researchers: It helps in two ways. (1) By ensuring that current information is the best available until replaced by something better. Current information may be perfectly adequate (Newton got us to the moon) even though a better theory (Einstein) came along.

(2) By increasing their confidence in the collective effort, where other scientists act as quality controllers (which is how we identified problems in cold fusion). The problem faced by each individual scientist is how best to choose a path between the Scylla of embracing falsity and the Charybdis of rejecting truth. In practice the only solution is to be as good a researcher as possible. Be hugely careful, consider alternatives, and act on criticism. This will not prevent mistakes but it will make them much less likely. Of course, if a claim has failed our most careful scrutiny, then we are obliged to say so, just as we would be obliged to change our views if better scrutinies than ours showed us to be mistaken. Scientists are just as interested as astrologers in possible links between cosmic conditions and terrestrial life even though such links might well have an entirely non-astrological basis.

To return to your earlier point (6.12), researchers supposedly in danger of throwing out the baby with the bathwater might also hold that it is up to astrologers to show (as opposed to merely speculate) that the baby actually exists. To merely speculate that the baby exists is of course futile because we need only speculate the opposite to create a gridlock. On the other hand, others might feel that the existence of a possible baby is a challenge to be addressed, which is fine if they then take up the challenge rather than blame others for not doing so.

Unfortunately this is invariably what astrologers do. When faced with negative findings they are quick to invent faults, for example they may claim that the test was inappropriate or not sensitive enough, but they never spell out what an appropriate or sensitive test should consist of. They curse the darkness but seem incapable of lighting candles. Note the problem -- until astrologers generally make an effort to overcome this entrenched occupational hazard, they can hardly expect to be taken seriously.

7. Intuition, unconscious processes, ESP

OQQ7.1

You have focussed on reasoning errors. But many astrologers would claim that successful chart reading isn't possible without some degree of intuition. Might this avoid reasoning errors?

Researchers: No. Intuition has been a rich source of inspiration in all fields of human endeavour including science. Yet it can be totally unreliable simply because it is not self-verifying. We have no way of resolving opposing intuitions except by reasoning. So intuition does not avoid reasoning errors. Furthermore, the golden rule to consider the whole chart is immediately broken if we select a focus, yet this is what intuition encourages us to do. Astrologers generally seem unaware of this conflict. (See also 7.8)

OQQ7.2

But is intuition really so unreliable? I know quite a few astrologers who would disagree with you.

Researchers: Their disagreement with us might be more persuasive if they did not disagree so spectacularly among themselves. If their intuitions were in fact reliable, the disagreement between astrologers, between astrological schools, and between traditions (Arabian, Aztec, Burmese, Chinese, Hindu, Jewish, Mayan, Tibetan, Western and so on, excluding purely cultural differences), should not exist.

But astrologers are here in the same boat as palmists, phrenologists, physiognomists, numerologists, and the readers of cards, colours, tea leaves, and so on. Such people frequently claim to rely on intuition, as if this somehow allowed them to home in on the truth despite the disagreement between astrologers on how to read charts, between palmists on how to read hands, between numerologists on how to read numbers, and so on. They are like mechanics who claim that intuition allows successful repairs to cars despite having no workshop manuals.

To be sure, our intuitions, for all their unreliability, serve us well in everyday life. To adopt alternatives would be unrealistic. Nobody seeks formal arguments to decide between strawberry and vanilla ice cream, and most errors are of little consequence. It would also be incapacitating -- life is simply too short. But this does not alter the fact that intuitions are unreliable. Just take a look at selection interviews, which rely for their success on the interviewer's intuition. Here many hundreds of studies are virtually unanimous in their findings -- interviewers frequently disagree completely with each other, e.g. the same candidate can be rated top by one and bottom by another. So much for the supposed benefits of intuition.

OQQ7.3

The word "intuition" is often used quite loosely, so maybe we should define exactly what we are talking about.

Researchers: In psychology the word "intuition", also called insight or hunch or gut feeling, refers to the method of arriving at a conclusion, not to any property of the conclusion itself. The key features of intuition are: (1) Everything happens in our head. (2) Answers pop up out of nowhere, especially after a rest period, so we end up knowing but without knowing how. (3) We are usually confident of being right. (4) We may be right but we can also be spectacularly wrong even though it still feels right.

However, there is no reason to believe that an answer which pops up has actually come from nowhere, or that ESP is involved (at least not during a chart reading). Instead the evidence suggests that such answers are largely based on previous experience. The relevant experience may not be quickly remembered or even remembered at all, so the rest period in (2) can be essential to allow for unconscious retrieval and unconscious processing of possibilities. Thus the supposedly effortless and unanalysable nature of

intuition means nothing -- driving a car requires endless decisions of exactly this nature, but judged by our first fumbling steps at learning to drive they clearly owe little if anything to intuition as traditionally conceived as "knowing without knowing how".

More on the unconscious. Due to a process known as priming, things not important enough to form a conscious memory can still affect our later actions, so they work without us knowing. We see or hear something that seems trivial, so we forget it (that is, we have no conscious memory of it), nevertheless it can stay behind the scenes to subtly affect our later judgement and decisions. So we end up being affected but without knowing how. Priming is probably behind much of what is traditionally seen as intuition.

Conscious problem solving (i.e. high cortical arousal) narrows the pool of possible ideas and suppresses our unconscious workings, which is another reason why the rest period (i.e. low cortical arousal) can be essential. If having gone to sleep on a problem we wake up to find the answer mysteriously before us without effort, this is intuition at work. Sleeping, or doing nothing, has worked better than thinking furiously. Most scientists including ourselves have had many such experiences.

OQQ7.4

What if there is no rest period, as in a chart reading?

Researchers: If there is no rest period, intuition can still apply, the main feature here being a quick confident conclusion based on a small (and therefore seemingly inadequate) number of clues. Studies using problems with known clues and known answers have revealed two underlying dimensions, namely clues (few-many) and answers (correct-incorrect). The dimensions are independent, so correctness is generally unrelated to number of clues, which is not what we might expect. Getting the right answer also increases with IQ but only slightly.

Interestingly, a person's position on these two dimensions seems to be inherent. Thus a person can be few-correct or many-correct, or few-incorrect or many-incorrect, just like any personality trait, where correct = intuitive and incorrect = non-intuitive. These are not rigid categories, so most people are a shade of grey. Intuition is not a yes/no quantity but something we have more of or less of.

These two dimensions also align with the personality dimensions of tough-tender mindedness (few-many clues), and emotionally stable-anxious (correct-incorrect answers). Non-intuitives tend to be tender-anxious. Intuitives tend to be tough-stable (also creative and unconventional). On this basis the genuinely intuitive chart reader is tough, unemotional, and uses only a few chart factors. This is so different from the warm caring emotional (and therefore non-intuitive) stereotype using the whole chart that we might doubt whether intuition really does play a part in chart reading. Even if it did, it could only work if the chart factors thereby selected actually had the meanings they are said to have, which (given the research results to date) seems doubtful.

In any case, the bottom line is that unconscious processes are as fallible as conscious processes, which is why intuition (despite our confidence) is not necessarily correct. Even self-proclaimed psychics cannot tell when their intuitions are correct, otherwise they would rule the world. No wonder that intuition has been defined as the strange instinct that can tell us we are right even when we are wrong.

NQQ7.5

You mentioned the need for prior experience, and that people rarely have intuitions about things they have no experience of such as the moons of Saturn. But quite a few people have predicted and described life on other planets on the basis of what would seem to be "leaps of intuition." What (if anything) do you think this tells us about the need for prior experience?

Researchers: Since the time of the visionary scientist Emanuel Swedenborg (1688-1772), many hundreds of intuitives, psychics and mediums have documented such leaps in hundreds of books -- see Martin Gardner's *The New Age: Notes of a Fringe Watcher* (Prometheus Books 1988), pages 252-263 on Psychic Astronomy. The results are generally glowing descriptions of exotic landscapes, undiscovered moons, and abundant life (usually hominoid), most of them conflicting and all of them wrong. We now know that the other planets are not like that. The supposed leaps of intuition were to no avail. They produced only heroic delusions. So in this case the results amply confirm the need for prior experience.

NQQ7.6

Has any research been done into the reliance of astrologers on intuition?

Researchers: The use of intuition by astrologers has not been systematically studied. One 1960 survey of 250 professional or semi-professional astrologers (mostly in the USA) found that over half claimed to use intuition in their chart readings, which of course does not prove that they did or that it was useful or accurate. Nevertheless this still leaves a substantial proportion who claimed not to use intuition.

NQQ7.7

You have argued that the astrologer's reasoning errors make it unlikely that they will learn anything valid from doing chart readings for clients. But surely this experience has to be good for something.

Researchers: Experience of people can make us more astute, and more aware of cold-reading cues, allowing us to make better judgements in ways that have nothing to do with astrology. Experience can also bring insight, and the bigger the similarity between problem and experience the better the insight. Consider this interesting test made in 1945:

Six laboratory-raised chimpanzees are put one at a time into a cage containing a stick. Outside beyond reach there is food. Will they use the stick to get it? Each animal is given half an hour. The first four have no history of stick-using, and in each case the answer is no. The fifth has used sticks before and gets the food within 12 seconds. The sixth has no history of stick-using and reaches for the food without success. After four minutes his thrashing arm brushes the stick and moves the food slightly. He stops, pushes the stick against the food, and sees it move. A few more trials and the food is his. The four unsuccessful animals are then given sticks to play with for the first time in their lives. After three days the use of sticks is old hat. The food test is then repeated, and all get the food within seconds. Conclusion: there is no insight that does not go back to actual experience.

Of course if our experience is illusory due to our reasoning errors, then so is our insight. Furthermore, the insight that brings a truly creative achievement may come only after months or years of uneventful labour and general floundering. Thus Newton did not

suddenly happen on the law of gravitation in his mother's orchard. Instead it came "by thinking on it continually."

NQQ7.8

All of which actually suggests an important role for unconscious processes.

Researchers: Yes, just as in intuition. But we should remember that, as in intuition, unconscious processes are just as fallible as conscious ones. The role of unconscious processes was shown by an ingenious study in 1990 in which subjects were presented with numerous items like the following. Imagine you are doing a crossword puzzle. You have to guess a certain word, for which you are given two sets of clues:

(1) Bird. Pipe. Road. (2) Goat. Pass. Green.

Only one of the sets is correct. What is the word? If you cannot guess the word, which is the correct set of clues? (We tell you the answers in a moment.)

The test seems completely bizarre and meaningless. Unsurprisingly, only 4% of subjects could guess the word, yet (and this is the interesting part) no less than 67% picked the correct set. Why? In each case the correct set of clues had an association with the target word, so it was coherent, and the other set had no association with the target word, so it was incoherent. It seems that the subjects perceived the coherence unconsciously, which activated the relevant mnemonic networks, which kept on working until the outcome reached awareness as an intuition or gut feeling. They knew without knowing why. In this case the correct set of clues is (2) and the word is *Mountain*.

The same principle suggests that an astrologer will select from a chart those factors that are the most coherent, which in effect could mean ignoring the whole chart in favour of isolated factors. To the extent that different schools disagree on what factors to use they will also tend to disagree on what is most coherent, in which case their respective intuitions are likely to be unhelpful.

PS. If you cannot see any connection between *Mountain* and *Green*, think of alpine meadows and mountain greenery

NQQ7.9

Does this mean, do you think, that astrologers should try to interpret charts on a purely linear non-intuitive basis, as a computer program might?

Researchers: Not necessarily. It would depend on whether the aim was subjective astrology or objective astrology. If the former, then coherence (which in effect would narrow the range of options shown by the chart) might in some cases be counter-productive. It might stifle discussion. But what astrologers could do is look at the strategies used by top experts in other fields. Various studies have found that ordinary people tend to use intuition and naive reasoning, whereas experts gather information systematically, use systematic decision rules, use sound foundations such as empirical evidence and empirical equations, keep careful track of hits and misses, and remain alert for improvements.

For example one recent study looked at experts recognized by their peers as being the best in auditing, business management, livestock judging, nursing, personnel selection,

or soil judging, all areas where there are well-known proven principles and systematic feedback, which is not true of astrology. These top experts had several characteristics that set them apart from lesser experts. They could home in on the relevant information, were always up to date with the latest developments, and knew which problems to tackle and which to avoid. More importantly, they also used strategies designed to overcome reasoning errors. For example they sought feedback from associates, learnt from past successes and failures, used aids such as written records to avoid judgement biases, focussed on avoiding really bad mistakes rather than on being exactly right, and solved large problems by dividing into parts and then reassembling the partial solutions.

OQQ7.10

You mentioned (in 7.3) there are reasons for believing that ESP is unlikely to be involved in a chart reading.

Researchers: At first sight it might seem that ESP (if it exists) could account for all astrological predictions that are difficult to explain yet appear to be correct, whether personal, electoral, horary, or whatever. Similarly it might seem that ESP could also explain any successes due to palmistry, tea leaf reading, and so on. But if ESP was really responsible, planets would be interchangeable with tea leaves, and we would have no grounds for claiming that such methods are valid in themselves. In fact the study of astrology would become irrelevant, which presumably is not a view supported by astrologers. This alone is good reason for believing that astrology is not merely ESP in disguise.

Furthermore we should recognise that ESP can be defined as *not the result of any means we know of*. So if an outcome can be explained by normal intuitive processes in the brain, no matter how mysterious they may seem, we are not entitled to invoke ESP. We can invoke ESP only if all other explanations can be ruled out, which would require safeguards that are generally never present during a chart reading.

OQQ7.11

Are you saying that ESP could never be involved in a chart reading?

Researchers: Parapsychologists have explained such ESP effects as may occur in terms of two models. In the *reduction of sensory-noise model*, the key is relaxation and a constant low-level sensory input. If the subject is relaxed, hears white noise, and sees only a featureless warm glow, sensitivity to ESP (should it occur) begins only after 15-20 minutes of habituation to these conditions. That is, under conditions of unvarying sensory input it takes 15-20 minutes for the brain to stop attending to the senses and become attentive to internal mental events instead. But if the astrologer is having sensory inputs, as is necessarily the case when reading charts for clients, habituation cannot occur and ESP is unlikely to manifest.

Alternatively, in the *reduction of bias-and-rigidity model*, the key is the absence of preoccupations and constraints. ESP can then be triggered by need, e.g. to avoid a not-consciously recognised hazard, but not too much need, which produces stress and impairs performance. If the subject is preoccupied, e.g. with finishing before the next client arrives, or is constrained, as is necessarily the case when addressing particular issues for clients, ESP is unlikely to manifest.

In both cases, contrary to what some astrologers have claimed, the process of reading charts, or focussing on mandalas, seems not conducive to ESP, at least not in the

presence of clients. Nevertheless, if astrologers could consistently score above chance under conditions where ordinary explanations could be ruled out, then ESP would have to be considered, even though we have no reason to suppose that ESP would be any less fallible than our ordinary senses. But the prospects do not seem promising, given that a direct test of top psychic readers found them to be no more accurate than matched non-psychics.

OQQ7.12

Could you describe this test?

Researchers: It was a remarkable study finished in 1988 that took five years. It monitored a total of more than 130 readings by the top 12 counselling psychics in the Netherlands, and then rated their accuracy against matched groups of non-psychics. Typically each reading involved 60-90 statements spread over personality (35%), general circumstances including occupation (25%), relationships (15%), and physical matters such as health (25%), much the same as for a typical astrology reading. Over 10,000 statements were obtained, of which 10% were sufficiently specific to be tested, of which 14% turned out to be correct, i.e. only about 1.4% of all statements were both specific and correct. No difference in hit rate was observed between psychics or between psychics and non-psychics. It was concluded that psychics were no more accurate than non-psychics, but their sensitivity to human ills and their huge experience (their own lives were often traumatic) still made them useful counsellors.

EQQ7.13

What might this mean for astrology?

Researchers: It would seem to deny that intuition and ESP (or at least claimed ESP) could play a useful role in the reading of *charts*, though intuition might play a useful role in the reading of *clients*. But regardless of whether astrologers use intuition, they are in effect claiming that chart factors have real intrinsic meanings as opposed to ones imagined by the ancient Greeks, and that their permutations can be accurately disentangled by astrologers as opposed to the mere appearance of disentangling.

In fact some astrologers leave us in no doubt that chart factors have real intrinsic meanings. For example Charles Carter, the leading British astrologer of the 1930s, says "Practical experiment will soon convince the most sceptical that the bodies of the solar system indicate, if they do not actually produce, changes in: (1) Our minds. (2) Our feelings and emotions. (3) Our physical bodies. (4) Our external affairs and relationships with the world at large" (*Principles of Astrology* 1925 page 14). Similarly Julia and Derek Parker tell students that "over the years ... your own files will increasingly convince you ... of the basic and valuable truths to be found in the birth chart" (*Parker's Astrology: The Definitive Guide to Using Astrology in Every Aspect of Your Life* 1991 page 9). Nothing here about astrology needing intuition before it can work.

But we need not rely on selected quotes. You have interviewed many astrologers. Generally speaking, did they have any doubts that chart factors have real intrinsic meanings?

OQQ7.14

There is a range of opinion. Certainly, all the astrologers I interviewed believe that they can access real information from the chart, but views differ as to how this happens. Some see astrology as an empirical science where each chart factor has an intrinsic

meaning, much as H₂O always means water to a chemist. Others consider that meaning does not inhere in chart factors per se, but is created by the coming together of chart factors with the astrologer's mind, so H₂O could mean Antarctica, emotion, making tea, ships, or anything else with watery connections. These are extreme positions, with most astrologers existing at points on the spectrum between them. So do astrologers think that chart factors have real intrinsic meanings? Some do, some don't, and most are somewhere in the middle.

Researchers: The issue boils down to our distinction between objective and subjective astrology, so it is good to see how well it agrees with your astrologers' responses. Some believe that chart factors have real meanings, so theirs is objective astrology. Some do not, so theirs is subjective astrology. Others try for both, quoting scientific evidence if positive but ignoring it if negative. Astrologers can check their position by asking the questions listed in the discussion of Figure 1.

OQQ7.15

Part 1 has looked at questions that science raises about astrology in principle. Part 2 will look at some of the research that has been carried out to test astrology in practice.

Phillipson interview of researchers

Part 2. Results of scientific research into astrology

8. The picture emerging from research

OQQ8.1

What has been going on in the world of astrological research, and what kind of picture is emerging?

Researchers: If only subjective values matter, see Figure 1 again, the objective results that have been reported to date will be irrelevant whether positive or negative, as will much of this interview. Otherwise we can summarise the emerging picture as follows:

If we are to accept the claim that astrology provides reliable knowledge and accurate diagnoses, it has to do this under conditions where errors in our reasoning cannot intrude. Yes, the chart may fit the person, but does it fit better than other charts? Yes, clients may identify with their reading, but can they pick their own reading out of several? Yes, the prediction was a hit, but how many were misses, and is the hit rate better than that achieved by tossing a coin or by informed guessing?

Many such tests have been made, some by scientists, some by astrologers, and some by scientists and astrologers working together. Many have been made by ourselves since the 1970s when we first started our researches. But over the whole range of approaches the answer has been generally negative. The occasional promising result has not been confirmed, which illustrates the importance of not depending on just one study. Half a century of research into astrology, using techniques incomparably more powerful than those available to the Babylonians and Greeks, has failed to reveal effects (or at least

effects commensurate with astrological claims) beyond those due to ordinary causes such as errors in reasoning. Which of course is very disappointing to those of us who have been astrologers. On the other hand it does not deny that future tests may be more positive, or that astrology may be fruitful in subjective ways.

EQQ8.2

Could you give an example of a promising result that was not confirmed?

Researchers: What got newspaper astrology columns off the ground was the apparently amazing accuracy of the British columnist R H Naylor. Unlike columns today, his column included predictions of national and world events as well as birthday predictions, then made by birth date rather than by sun sign. In the 5 October 1930 edition of the London *Sunday Express*, he made this prediction among several others:

"Earthquakes will occur, mostly near deep-sea levels, and affecting peninsulas, in the autumn quarter of 1930. They may not actually occur in October -- though from the 8th to the 15th is a real danger point -- but they will be exceedingly likely in November or December. British aircraft will be in danger about the same date."

On 5 October 1930 the great British airship R101 crashed in a storm near Paris. There were 46 dead and 8 survivors. Newspapers showed pictures of terrible wreckage. Naylor said this about his success:

"My prediction last week was based on a very simple observation. It can be proved that, whenever the new moon or full moon falls at a certain angle to the planet Uranus, aircraft accidents, electrical storms, and sometimes earthquakes follow. Now ... the configuration referred to [Full Moon opposition Uranus] occurred on October 7; the destruction of the R101, therefore, prematurely fulfilled the indication."

At first sight Naylor's hit seems quite amazing. Which is why his column took off. But the hit is ambiguous. Naylor's forecast said 8-15 October, during which time no aircraft crashes, electrical storms or earthquakes were reported by British newspapers, so no hits can be counted there. The crash occurred when the Moon was 33 degrees from conjunction, a long way from modern orbs of a degree or so. And later studies of air disasters did not confirm any link with the Moon and Uranus. So was it a hit or a coincidence? In fact an isolated hit is no more meaningful than an isolated chart factor. It is the totality of research which matters.

Less ambiguous were the forecasts of Edward Lyndoe, Naylor's rival in *The People*, who in 1939 consistently saw no war, e.g. "I see absolutely no signs of a Great War during 1939" (1 January), "The Nazis attacking Britain? Don't make me laugh! Not a sign in my charts" (25 June), "Hitler will not do it!" (27 August). Then, ingeniously, after war was declared, "A madman against the stars!" (3 September).

So were the columnists accurate or not? To find out, the London investigative magazine *Picture Post* tested the accuracy of the top five newspaper astrologers (including Naylor and Lyndoe) against nine outstanding events of 1939-1941 such as the German invasion of Poland and the collapse of France. Bear in mind that these astrologers were specialists in event prediction, so for events as momentous as these their accuracy should be as good as it gets. But they scored no better than informed guessing, the most notable

result being "that the astrologer so often fails to make any reference whatever to the event in question" (from the 6 September 1941 issue).

Later, the issue of 27 September 1941 contained this letter from the predictive astrologer P J Harwood: "Like other astrologers, I have made my mistakes ... but, on the other hand, a large number of very close hits have been scored. I am sending you a copy of my booklet, *When the War Will End*, and if you are really interested in it I should be obliged if you could give it some publicity." To which the editor pithily replied: "Readers would be wise not to make their plans for peace celebrations too definite. Mr Harwood's booklet foretold invasion in May 1941, a separate peace with Italy in July 1941, and considered Russia unlikely to be implicated seriously in war" (all wrong, including his prediction that the war would end on Christmas Eve 1941).

Interestingly, in the days when few tests existed, most astrologers held that astrology was demonstrable and therefore testable. Just try it, they said, and you will experience for yourself how well it works. In fact those of us who were astrologers said exactly the same -- it was how we got hooked in the first place. But the advent of scientific tests and their predominantly negative results has caused a U-turn. Today many astrologers hold that astrology is not testable after all, thus denying the bad news, as if this did not also deny that astrological correspondences could be confirmed by experience or even discovered in the first place.

OQQ8.3

Astrologers who say astrology is not testable may do so because they see it as a divinatory tool more akin to a ritual that prepares the mind to intuit what needs to be said. In their view the working of this tool is not necessarily testable in a scientific way.

Researchers: Their view is hard to understand. It is like saying we don't know how gravity works, therefore we cannot test the fall of apples. The issue is whether the astrology ritual works better than a control ritual, e.g. by providing new information or by improving the clients self-esteem. Much is testable here.

NQQ8.4

Alternatively astrologers who say astrology is not testable may be referring to astrology as a world view. They may simply mean that an entire world view is not testable.

Researchers: This hardly helps. There are very many world views available in philosophy and religion, all of them untestable. But as shown in the journals devoted to metaphysics and the philosophy of religion, they can still be critically examined for consistency and how well they fit with the observed world. At the end of the day we may have many reasons, some of them empirical, for preferring one over another. We do not have to buy a flight ticket without knowing the destination.

Furthermore, astrologers in their daily practice do not invoke an entire world view. Nor do they agree on what this view is. Instead they invoke various sub-views, or what we called "real intrinsic meanings" such as Leos are generous or squares are difficult. If astrologers cannot test these sub-views, nothing about them can be discovered including their truth or falsity. To hide this awkward point some astrologers have retreated into obscurity, for example by defining astrology as a sacred science or as the language of individuality or as the study of potentials. Their obscurity also hides the underlying distinction between subjective and objective astrology, which (once again) is essential to avoid confusion.

9. Gauquelin, sun signs, the whole chart

OQQ9.1

You are certainly painting a gloomy picture. What would you consider to be the most convincing research in favour of astrology, and what are the weaknesses in it?

Researchers: Astrologers tend to quote the Gauquelin results as the most convincing evidence in support of astrological claims. (These results showed that eminent professionals tended to be born when the planet relevant to their occupation was just past rise or culmination; this tendency was later called the Mars effect, but depending on the occupation it could equally well have been called the Moon, Venus, Jupiter, or Saturn effect.) Indeed, two of us have worked for some years following them up.

Gauquelin's work was certainly the most rigorous of its time. But his planetary effects, even though independently confirmed by us, are too tiny to be of the slightest practical value. For example, given that Mars tends to be just past rising or culminating in the charts of eminent sports champions, this information is of no practical value unless your client is eminent (say 1 in 20,000 of the population), in which case the information is already superfluous.

Furthermore, Gauquelin's other results showed no effect for half the planets, or for signs, or for aspects, and work by one of us (Ertel) has disconfirmed initial hints of a planetary link with character traits, all of which is contrary to astrological claims. So the relevance of the Gauquelin results tends to be overstated. On the other hand some astrologers claim that the Gauquelin results are at best peripheral to astrology. Here again our subjective-objective distinction resolves the conflict.

OQQ9.2

But doesn't the Gauquelin research deserve more acknowledgement of its implications? Such as the statement made in *Recent Advances* that the Gauquelin results "provide, for the first time, rigorous and objective evidence about the basic fundamentals of astrology, upon which everything else depends ... something that astrologers themselves, despite millennia of study, have consistently failed to do" (page 394).

Researchers: A lot of research has occurred since that statement was made in 1977, and the results require it to be modified. There are two separate issues at stake here. First is the reality of the Gauquelin findings. Research by one of us (Ertel) has found that, despite some deficiencies, the basic findings withstand rigorous tests. Second is their relevance to astrology. Research by another of us (Dean) has found that they may have an ordinary explanation, hitherto unsuspected, in which case it would be premature to conclude that they are relevant to astrology. Real yes, relevant perhaps not. The reason is a simple one -- the Gauquelin data show evidence of manipulation by parents, for example there is a consistent deficit of births on the 13th. But if parents can manipulate dates then why not hours and thus planetary risings and culminations? So the Gauquelin findings might be due to parents, not planets.

OQQ9.3

Are there no other promising areas of research?

Researchers: Twenty years ago they seemed quite numerous. There was John Addey's harmonics ("promises to revolutionise astrology" said *Recent Advances*), Donald

Bradley's Jupiter Pluvius (the tendency for heavy rainfall to occur if Jupiter aspected the local meridian when the Moon entered sidereal Capricorn), John Nelson's radio propagation quality (worsened by hard heliocentric aspects), the Mayo-Eysenck sun sign zigzag ("possibly the most important development for astrology in this century" said *Phenomena*), and Vernon Clark's matching experiments (see later). Even the mathematics (of aspects, of orbs, of probabilities, and so on) seemed promising.

Interest in research grew accordingly, only to fade away as artifacts were discovered. As in the above cases, once artifacts were controlled the supposed astrological effects disappeared. The most recent example is Gunther Sachs's best-selling book *The Astrology File* (Orion 1998), a supposed proof of sun sign effects. One of us re-analysed his results but found only artifacts. The whole massive study (it involved several millions of cases) was not careful enough.

OQQ9.4

Let me come back to some of the research areas you mentioned right at the start, starting with sun sign columns. What work has been done here?

Researchers: Lots. When labels and other cues are removed, people cannot pick the sign that is supposedly theirs. Yes, some columns might be uplifting, but the point is: Does the use of sun signs add otherwise unattainable truth and uplift to sun sign columns? Or do they merely con columnists and readers into believing that their "twelve thoughts for the day" are more meaningful than if they appeared in say Kahlil Gibran or a desk calendar? Research indicates the second.

Sun sign delineations have the distinction of being more widely tested by astrologers and researchers than any other factor in astrology. Altogether something like a hundred tests have been made involving a total of several millions of cases. The usual approach is to compare the distribution of births (of bakers, bankers, extraverts, and so on) across sun signs with that expected by chance. Unfortunately the latter is affected by astronomical and demographic variables to such an extent that the expected distribution can vary a great deal from country to country, from year to year, from place to place within the same country, and from one social group to another. When these variations are not recognised (as is usual), they are easily mistaken for sun sign effects. But once they are controlled no evidence for sun signs is found.

For example, in 1980 Michel Gauquelin compared the biographical details of famous people with their Sun, Moon and Ascending signs. He searched thousands of biographies to find people who had the qualities attributed to sign X, but they showed no tendency for their Sun, Moon or Ascendant to be in X rather than in any other sign. Other controlled studies have consistently supported this finding. In short, tests more rigorous and sensitive than any astrologer's experience have consistently provided no evidence whatsoever that signs mean what they are supposed to mean.

Interestingly, a weak but statistically significant link between sun sign delineations and extraversion scores was reported in 1978 by Mayo, White and Eysenck (*Social Psychology* 105, 229-236), advance notice of which was hailed by astrologers as "possibly the most important development for astrology in this century" (*Phenomena* 1977, 1.1, 1). The effect disappeared when people unfamiliar with sun signs were tested, so it had a simple explanation -- prior knowledge of astrology. Ask Sagittarians (who are supposedly sociable and outgoing) whether they like going to parties, and their answer might be tipped by astrology in favour of yes rather than no. The bias may be

unconscious and very slight but in large samples it can become surprisingly consistent. Of course it has nothing to do with sun signs as normally conceived.

OQQ9.5

Moving to the whole chart, has any work been done to test the accuracy of individual astrologers and their procedures?

Researchers: Again, lots. Can astrologers match birth charts to their owners? Can clients tell which chart reading is theirs? Unfortunately in each case the results have been no better than chance, see Figure 2

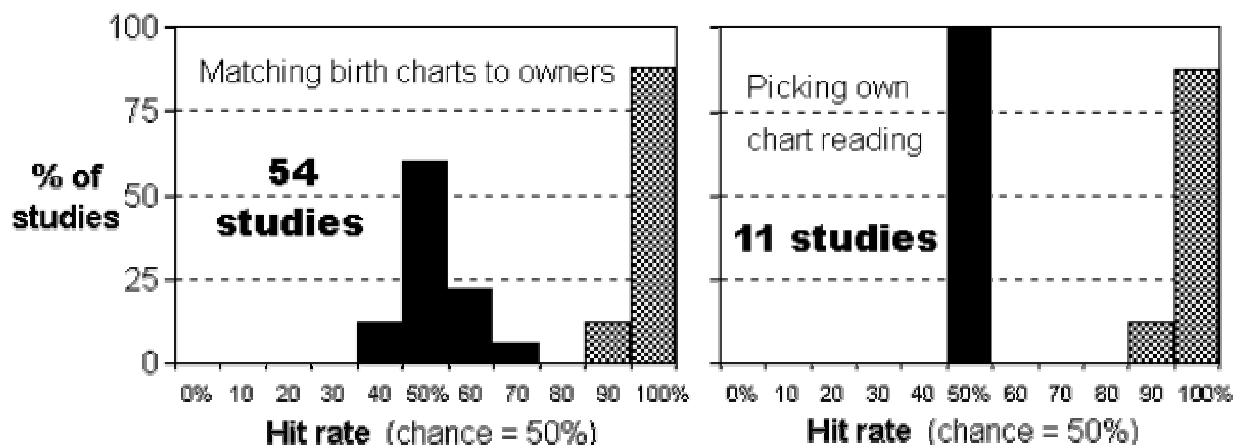


Figure 2. How astrologers (54 studies) and clients (11 studies) performed when put to the test

Left. According to astrology books, birth charts accurately match their owners. So in studies where astrologers have to match charts to owners, the hit rates should pile up close to 100% (the hit rate is the proportion of correct matches), perhaps something like that shown in grey. But in 54 studies made during 1950-2005 totalling 742 astrologers and 1407 charts, the mean hit rate was 51.7% as shown in black, or not usefully better than tossing a coin. Included are studies where only top astrologers were used, or where more information was given than in a normal consultation, or where artifacts might reasonably be suspected, so the results are optimistic. Nevertheless the astrologers could not usefully tell the difference between authentic charts and controls.

Right. Similarly, in studies where clients have to pick their own chart reading out of several, the hit rates should pile up close to 100%, perhaps as shown in grey. But in 11 studies totalling 423 clients where we can be reasonably sure that cues such as sun sign were absent, the mean hit rate was only 50.2% as shown in black. The client's own chart reading fitted them no better than somebody else's.

OQQ9.6

I thought some early results, namely those of Vernon Clark, were dramatically better than chance.

Researchers: Vernon Clark's results are in the upper third of the results shown in Figure 2 left. However, his results and those of most other matching tests have fatal problems due to their small sample sizes, typically 10 birth charts or 10 pairs of birth charts. Imagine a hand of 10 playing cards picked at random. Even though there are equal

numbers of red and black in the pack, we seldom end up with equal proportions in our hand. Our hand has been affected by sampling variations. Of course the bigger our hand the closer we get to the proportions that exist in the pack.

The same with birth charts. Given that the stars only incline, charts will tend to be of two kinds, those that fit their owners (call these red) and those that don't (call these black). Suppose like Vernon Clark we want to know the proportion of owners with red charts. So we collect ten owners and send them to astrologers. If the astrologers know their stuff they will quickly discover which charts are red and which are black. But the reds in such a small sample will be determined much more by sampling variations than by the proportion in the population (which is what we want to know). Worse, for any given study we cannot remove the sampling variations, just as we cannot remove the sampling variations for any given hand of cards. They are there to stay. So our results will not tell us what we want to know. Yes, we may have three or seven reds instead of the five predicted, but so what?

Vernon Clark and nearly everyone else used few birth charts and many astrologers, which is precisely the combination guaranteed to produce this kind of uninformative outcome. Figures 3 and 4 show why such results cannot be taken at their face value.

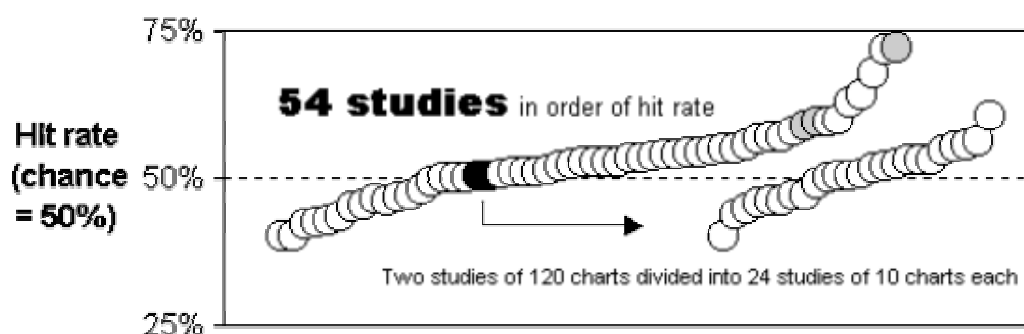


Figure 3. How a small sample size scatters the hit rate.

The **upper curve** shows the hit rates from 54 studies of astrologers matching birth charts to their owners. The hit rates show a marked scatter from a low of 40.0% to a high of 72.0% (grey dots = Vernon Clark's results). At first sight the higher values seem encouraging, but as we shall see, the scatter is due to small sample sizes, typically 10 birth charts or pairs of birth charts per study (the range is 4-120, Vernon Clark used 10).

The **lower curve** shows what happens when the studies using 120 birth charts (black dots) are subdivided into 24 studies of 10 charts each. The same marked scatter emerges even though the original hit rates (50.2% and 50.5%) are close to 50%. Further subdivision increases the scatter. Even worse, if we now report only the higher hit rates and ignore the rest (astrology editors dislike negative results), we will be creating support for astrology where none actually exists.

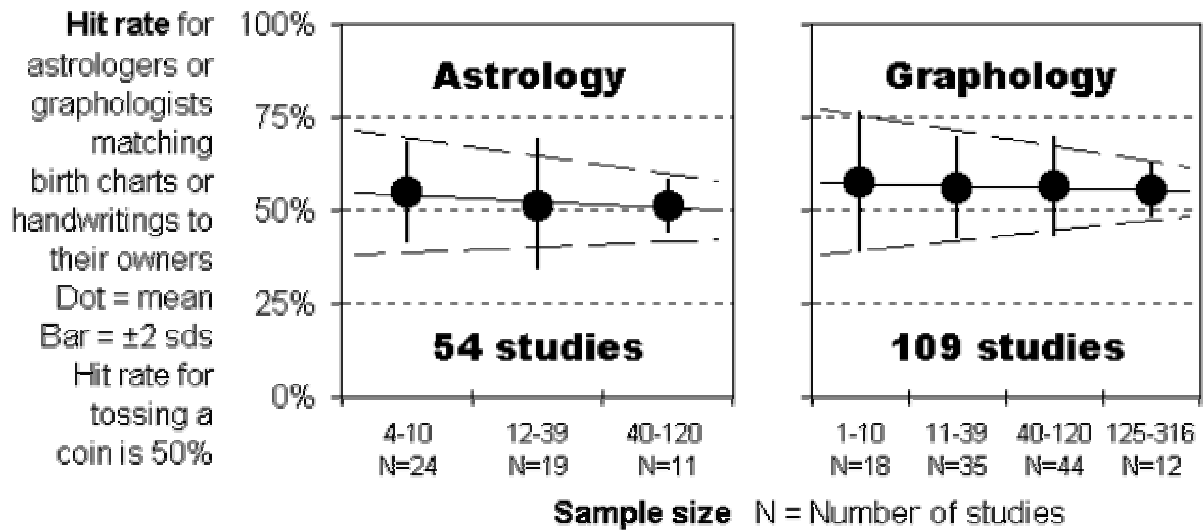


Figure 4. How large sample sizes home in on the truth for astrology (left) and graphology (right)

Left. Hit rates for 54 studies of astrologers matching birth charts to their owners, grouped by sample size (number of birth charts or pairs of birth charts per study). As the sample size increases from left to right, the hit rates show a general decrease in scatter as shown by the trend in bar lengths, and a closer approach to the truth. The length of each bar is ± 2 standard deviations, which is the range within which just over 95% of the results from a large number of repeat studies are expected to fall. In each case the chance level of 50% falls well inside each range, which suggests that these astrologers were generally unable to match charts usefully better than tossing a coin, a point confirmed below.

Right. Decreasing scatter and increasing accuracy is a general consequence of increasing sample size. Thus the same trend is shown by 109 studies of graphologists matching handwritings to their owners, but this time the trend is more uniform due to the larger number of studies. Mean hit rate for the 109 studies (55.8% sd 5.6%) is higher than for the 54 astrology studies (51.7% sd 5.8%) due to personal information inadvertently present in some handwriting samples, which the graphologists took into account even though they are supposed to ignore content. But neither mean differs significantly from 50% ($p = 0.30$ for graphology and 0.77 for astrology). Tossing a coin would be easier, quicker, and generally just as accurate.

So what can be done? The solution is either to use many charts, as for the rightmost dot in Figure 4 left, or to submit the collective studies to what is known as meta-analysis. Meta-analysis subtracts the sampling variations to see if there is anything left (something not possible with an individual study), and therefore reaches sounder conclusions.

In this case meta-analysis of the 54 studies confirms what we already know from Figures 3 and 4 -- the sampling variations are so massive that there is nothing left for astrology to explain including the apparently encouraging results of Vernon Clark. Yes, the differences between results might seem to reflect differences in test quality, but such a view is mistaken. Here the differences between results reflect only sampling variations. Differences due to test quality may exist but they are swamped by sampling variations.

In other words the reported hit rates offer no support whatever for the accuracy of judgements based on birth charts. Tossing a coin would be just as accurate.

(An earlier meta-analysis when the number of studies was 43 is given in visual form in *Astrology in the Year Zero* pages 146-147 and in *Correlation* Northern Winter 1998 page 75, but is not included here because Figures 3 and 4 are less technical and easier to understand. However, it suggests that future studies will show no improvement in hit rate, and that a publication bias exists against negative results.)

NQQ9.7

Have any tests been made of horary, medical, or business astrologers?

Researchers: Not systematically, but the isolated tests that have been made have not been encouraging. To be sure, some successes have been claimed, but on inspection the methodology has proved to be suspect. Tests of money market astrologers are particularly suspect because there is no way of knowing how many market investors are actually using astrology, so we cannot decide whether successes are due to astrology or to investors using astrology. Ironically, once a majority of investors are using astrology, the market cannot fail to contradict astrology. Thus if astrology says sell on the expectation that the market will go up, and all the astro investors sell, the market is likely to go any way but up.

At first sight horary astrology seems ideal for testing because it is supposed to give clear-cut yes or no answers. Thus Charles Carter could say of horary charts cast for him that "they have usually been downright wrong and never strikingly right" (*Astrological Journal* December 1962, a quote we repeat later in 18.12). But as noted by Koen Van de moortel (*Astro-Logics* 1997/2002, self-published), horary astrology has so many conflicting opinions about technique that "it's much easier to toss for it, if you really want a cosmic answer" (page 102). Koen points out that each opinion is based on years of experience, so if horary astrology actually worked the opinions should agree. But they generally disagree, often spectacularly. In other words researchers have no clear place to start, so perhaps it is best to wait until horary astrologers put their house in order.

NQQ9.8

Have any astrologers challenged scientists to test them?

Researchers: Such cases are not numerous but they have happened. For example one US astrologer was so confident he could match chart to appearance that he ran a newspaper ad challenging scientists to test him. Which they did, not once but twice, under conditions he was completely satisfied with. But each time he scored no better than chance. One French astrologer was confident he could pick cause of death but again the results were no better than chance. The crucial point here is not the poor results but how the astrologers could be so confident of having a skill they did not in fact possess. Reasoning errors score yet again.

10. Isolated vs multiple factors, time twins

NQQ10.1

Tests of one, or just a few, isolated factors have always seemed problematic, simply because they do not reflect the way in which astrologers read charts. Any competent

astrologer will avoid using factors in isolation, and will try to look at each in terms of its relationship to the rest of the chart.

Researchers: But sun sign astrologers by definition never do this, and they might not agree that they are not competent. In fact even the most aggressive advocates of the everything-is-affected-by-everything-else viewpoint, such as the US astrologer Dr Glenn Perry, can still fill their writings with statements such as "individuals with Venus square Pluto are distrustful of love." The same is true of every astrology textbook, as shown by the following examples from reputable authors:

- Aquarians are gregarious and enjoy social interactions.
- Leos have yellow bushy hair, Aquarians are never short.
- Positive signs are characterised by extraversion.
- Planets mostly below the horizon indicate introversion.
- Saturn rising indicates an inhibited personality.
- Neptune in fourth house is artistic and musical.
- Easy Mercury-Mars aspects have good eyesight and hearing.
- Hard Moon-Uranus aspects incline men to divorce.
- Adverse Mars transits incline to accidents and injuries.
- Bucket patterns inspire or teach or become an agitator.
- Progressed Sun-Venus contacts usually indicate marriage.

The statements are respectively from Hand's *Horoscope Symbols* page 236, Mann's *Round Art* pages 147 and 159, Larousse *Encyclopedia* page 223, ditto page 133, Ebertin's *Combination of Stellar Influences* page 192, March and McEvers *The Only Way to Learn Astrology* Volume 1 page 261, Hone's *Modern Textbook* page 189, Llewellyn George's *A to Z* page 153, ditto page 465, March and McEvers Volume 2 page 118, and Davison's *Technique of Prediction* page 55.

Ironically Perry claims that testing such statements is meaningless, but evidently it is not considered meaningless for textbooks to publish such statements in the first place. Nor is it considered meaningless to welcome positive evidence for isolated factors, e.g. Gauquelin. In our view whatever is good enough for textbooks and for welcoming is good enough for testing.

NQQ10.2

Has anyone tested a large database, say one of sports champions showing a Mars effect, to see if invoking additional factors such as midpoints and dignities makes the effect stronger?

Researchers: Yes, and no it didn't. Invoking additional factors necessarily reduces the hits because the frequency of having A and B is always less than the frequency of having A alone (unless of course all have B, in which case adding B accomplishes nothing).

If we make it A or B instead of A and B, the problem is that, given enough additional factors, some can always be found that will make the effect stronger purely by chance, in the same way that shuffling cards enough times will sooner or later give you a full house. So we need to divide the sample in half to allow the results from one half to be tested on the other half. Unfortunately this immediately increases the sampling variations, whose effect was so decisive in Figure 2.

Even if we stay with the Gauquelin factors the outcomes are no more promising. Thus one of us found that the probability of an eminent birth did not increase when two or more relevant planets were in Gauquelin sensitive zones, or when the birth time was more precise, or when the planets were closer to the earth, all of which is contrary to what might be expected (but not if the effects are due to parents not planets, see 9.2).

In general the utility of any chart indication depends on two things, namely (1) the effect size, the correlation between the indication and reality, and (2) the base rate, the rate of occurrence in the general population. For areas of client interest such as illness or managerial ability or musical ability or lack of confidence, the base rate in the general population is typically 10% or less. For such low base rates the indication (whether by astrology, graphology, palmistry or whatever) will increase accuracy above the base rate only if the effect size exceeds about 0.4 or 0.5. Otherwise using the indication will make the prediction worse. But Figure 2 indicates a mean (and statistically nonsignificant) effect size for the whole chart of only 0.05, which also happens to be the effect size for Mars and eminent sports champions. So the chances of exceeding 0.4 or 0.5 do not seem good.

NQQ10.3

This seems to be an argument against ever using multiple factors.

Researchers: The argument here is only that the effect size for factors *A and B* will be less than for factor *A* alone. But there are many other ways in which multiple factors could operate such as *A or B*, or *if A then B else C*. If collective multiple factor *X* gave an effect size of 1, the effect size for *X and B* would still be less, but then *B* would not be needed. The real argument is not against using multiple factors but against using not-needed factors, which in the case of eminent sports champions seems (as far as we know) to be everything except Mars in key sectors. Incidentally the last is what might be predicted if the effects were due to parents and not planets.

OQQ10.4

Perhaps a refined and balanced technique is the only one which will work in astrology.

Researchers: The idea that only a refined and balanced technique will work seems incompatible with the high level of disagreement about techniques, all of which are claimed to work. If they actually work, the technique is evidently unimportant, and astrologers should be piling up hits in Vernon Clark experiments instead of scoring at chance level. But if they actually do not work, astrologers are evidently unable to tell. So the supposedly uniquely-true technique referred to in your question would be either redundant or unidentifiable. Nevertheless let us speculate to the contrary. Let us say okay, so elephants don't fly, but given the right conditions maybe tigers might fly, or maybe giraffes might fly. Clearly this won't do. There comes a time when we have to grasp the nettle.

OQQ10.5

And conclude that nothing in the jungle can fly?

Researchers: The point is that nothing in the jungle is flying. Maybe many things can fly, but this is back to speculating forever. We still have to grasp the nettle, namely that when nothing is actually flying, nothing is actually flying. People do not travel to Heathrow on the off-chance that somebody will suddenly discover aeroplanes.

EQQ10.6

How complex does your research get? Is it possible to design tests of sufficient complexity to allow for all the permutations of meaning between the various chart factors?

Researchers: Your question implies that astrologers are somehow better equipped to deal with complexity than scientific researchers are. But because researchers are more careful than astrologers, this is like saying that only sloppiness produces good astrology, which seems ludicrous. It will certainly be news to those who set astrology exams. Indeed, the inability of astrologers to agree over most things would seem to arise directly from their inability to deal with complexity.

Actually the complexity issue is a non-issue because (1) it has never stopped astrologers from practising, and (2) we can test astrologers directly as in Vernon Clark tests. If astrologers cannot perform better than chance then the complexity said to be responsible for their success (but which is supposedly beyond the grasp of scientific researchers) does not exist. Before we worry about complexity or any other detail we need to know if it actually delivers, else we end up chasing phantoms.

Nevertheless imagine that a level of complexity exists as yet undreamt of, and that it actually does deliver. Can tests be designed to cope with it? The answer is yes. Examples of approaches that take any complexity in their stride are multiple discriminant analysis, which finds the factors that discriminate best between a set of charts and controls, and probabilistic modelling using item response theory, which does everything an astrologer can do short of using ESP but includes what no astrologer can do, namely address astrology's inherent uncertainty directly. Both techniques require a computer. A scan through back issues of *Correlation* will lead directly or indirectly to examples of tests that address the complexity issue.

Another approach is to bypass complexity issues altogether, notably by a test of time twins (persons born close together in time and place), which avoids all problems of how the various chart factors should be interpreted and combined. A failure to validate sun signs might be dismissed as a failure to use the correct interpretation or to properly allow for competing chart factors, but a failure to show that time twins are significantly alike is less easily dismissed. In a city of one million people about 40,000 will have a time twin within 1 minute, so time twins are numerous enough. Here is the calculation:

The occurrence of time twins follows what is known as a Poisson distribution, see any statistics textbook. Once we know the mean number of births in a given interval, say ten minutes, for a particular location, say London, the number of births with at least one other birth in that interval can be obtained using a hand calculator. Time twins are surprisingly numerous. Thus in a city of one or ten million people with a typical birthrate of 2% per year, about 4% or 32% of the people will have at least one other person born there within one minute, and 32% or 98% will have at least one born within ten minutes.

EQQ10.7

Some striking cases of time twins have been reported, such as Samuel Hemmings and King George III. Have you looked into these?

Researchers: One of us has. Legend says that the prosperous London ironmonger Samuel Hemmings and King George III were born at the same hour and died at the

same hour after lives showing striking similarities such as being married on the same day. But a careful check of contemporary records showed that the ironmonger's name was not Samuel Hemmings but Richard Speer, and of the events only the simultaneous death could be verified, the rest being most likely fabricated. Several other well-known cases of time twins could not be verified, either through lack of records or evident fabrication. But the number of exact time twins existing even in Western history is so enormous (hundreds of millions) that many striking cases are to be expected by chance alone, so the reported cases are unremarkable.

More systematic tests of time twins have recently been made. For example Roberts and Greengrass, in their *The Astrology of Time Twins* (Pentland 1994), collected a total of 128 people born on six dates, but they found no clear parallels in personality scores, appearance, handwriting, names, interests, occupation, or life events. The strong similarities predicted by astrology were simply not there. Even so, they claimed that the proportion of "close resemblers" increased as the birth interval decreased, which would provide some support for astrology. But an independent re-analysis (*Journal of Scientific Exploration* 1997, 11, 147-155) found that their division of the data had given samples very uneven in size, a point concealed by their use of proportions, which violated the technical requirements of their test. When the data were divided more evenly, or when tests were applied that did not require dividing the data, the effect disappeared. Roberts and Greengrass also claimed that personality differences measured within dates were smaller than the same differences measured between dates, which would again provide some support for astrology. But the re-analysis found they had overlooked the natural changes in personality with age, which immediately explained their result. Furthermore their data showed evidence of contamination by prior knowledge of astrology. In other words, any apparent time-twin effect was clearly an artifact. It was another case of astrologers being insufficiently careful.

Now look at ordinary twins. The time interval between births is much the same whether the twins are identical or non-identical. Therefore according to astrology they should be equally alike. But they are not. Identical twins are very alike, but non-identical twins are generally no more alike than ordinary siblings. This is one of the oldest arguments against astrology, but it is generally ignored by astrologers.

NQQ10.8

Although similarities should be found in twins if astrology means anything, how widely do you cast your net in defining similarity? For instance, if one twin is an athlete and the other is a welder, is this allowed as a "hit" since both are expressions of Mars?

Researchers: It does not matter how we define a hit because we can always generate controls (e.g. by computer) to suit our definition. What matters is not the definition but the difference between twins and controls. But time twins lead to another problem, namely the way astrologers explain misses by appealing to birth time errors. For example an error of one minute can affect the exactness of aspects to angles and house cusps, and therefore can in principle explain differences between supposed time twins. The argument is that, if the birth times were known accurately enough, the misses would disappear. But then so would the rationale for applying astrology to the average client, whose birth time would rarely be known to this suddenly-necessary level of accuracy, let alone to the readers of sun sign columns. Astrologers seem to want it both ways, which along with the practical difficulty of finding exact time twins may explain why the area is relatively neglected -- it requires too much work and produces too much embarrassment.

11. Open-mindedness, influence of world views

OQQ11.1

The subject of open-mindedness came up earlier (in 2.5). What is it, and how is it cultivated?

Researchers: Open-mindedness means a willingness to explore new ideas and arguments. Everyone (especially scientists) thinks they are open-minded, in the same way that everyone thinks they have a sense of humour. But when evidence exists both for and against a belief, most people do not show low levels of conviction, which logically they should, but high levels of conviction either for or against, which logically is indefensible. Logically they should have open minds but in fact they have the opposite. Open minds, like the Scarlet Pimpernel, are damned elusive.

So what is happening? An open mind requires us to embrace uncertainty. But for most of us uncertainty is something we hate. Our need to avoid uncertainty explains the popularity of superstitious beliefs, which can be seen as attempts to reduce anxiety using ineffective techniques when effective ones are unavailable. Or as Bertrand Russell said, "What men want is not knowledge but certainty." No wonder astrologers are amazed when we express no interest in where the astrological chips fall. To them it seems inconceivable that we should not be either for or against.

How to cultivate open-mindedness? (1) Explore new ideas and arguments. (2) Have critical colleagues watch over you and act on their criticisms.

NQQ11.2

What you say seems to imply that it's impossible for a group of people to share the same prejudices, and to reinforce those prejudices in one another. Which is -- obviously, I think -- implausible.

Researchers: You are right. Which is why it is so important to avoid cliques of yes-persons and to place ideas in the open marketplace for examination, as science does but astrology rarely does. Whereas science reserves its highest praise for those who prove their predecessors wrong, astrology drums critics out of the corps. Criticism in astrology is simply not welcome. In our case we try to avoid prejudice by sending our pre-publication material to astrologers for critical comment, but in most cases the response is a deafening silence. For example we invited four astrologers with research experience to check our answers to your questions, just in case we were missing something, but without success.

NQQ11.3

Would you agree that, if people who think of themselves as scientists consider astrology at all, they tend to feel hostility towards it?

Researchers: No. We certainly don't feel hostility towards astrology. True scientists will consider many things during their professional lifetime, and they have to consider them dispassionately, otherwise there is no point. But scientists, like the rest of us, are likely to show a wide range of attitudes towards astrology, just as they would towards religion, medicine, or politics. So if they do feel hostility, we might ask why. Is it because they see it as involving a commercial exploitation of untruths such as sun sign astrology? Or because they see astrology as the opposite of good science, a closed system impervious

to disconfirming evidence? Or because they cannot abide ideas contrary to their own? Their hostility (except in the last case) might be justified. But as scientists it is their job to rise above it.

NQQ11.4

And you believe that it is possible to have a genuinely disinterested approach to the subject of astrology's validity?

Researchers: Yes, it is certainly possible, as shown by Gauquelin and Eysenck. That is the short answer. But as we said in reply to an earlier question (11.1), the open-mindedness required to be disinterested (i.e. not taking sides) is elusive. It requires constant vigilance. People who investigate astrology often hold strong views otherwise they might have no motivation, but what matters is whether they are willing to consider other views, and to change their own views according to the evidence. Here is an example:

For decades Fred Hoyle strongly advocated the steady-state theory of the universe, but when the accumulating evidence supported the rival Big Bang theory, he changed over. He followed where the evidence led. End of story. Unfortunately astrologers tend to see research that supports their beliefs as okay no matter how badly done. They also tend to see research that contradicts their beliefs as incompetent or misconceived or simply stupid, no matter how well done. It seems difficult if not impossible for astrologers to be disinterested and open-minded. Very few are like Fred Hoyle.

OQQ11.5

Perhaps it is still necessary to question the underlying world views of researchers. How would you describe your own world views and how they fit in with astrology?

Researchers: As scientific researchers our world views (e.g. the view that being careful will be productive) are only tentative. Show us a better way of doing things and we will explore it regardless of our world views. Success is the arbiter, but so far astrology has failed to deliver. It has not delivered the results promised by astrologers, nor has it provided the evidence required for careful people to adopt an astrological world view.

Astrology may of course be more compatible with some world views than with others, but by itself this means little. For eighteen centuries the doctrine of the four elements was compatible with prevailing world views, but the doctrine is now known to be wrong. Astrology (like UFOs, channelling, hobgoblins or magic spells) still has to make its own case regardless of its compatibility with a particular world view. Make a convincing case and we will explore it.

NQQ11.6

But this would not deny the possibility that astrology might change present beliefs about the world?

Researchers: Absolutely, just as we cannot deny the possibility that the discovery of elves might change present beliefs about the world, or that a gust of wind might save us if we jumped off a cliff. But for astrology to change present beliefs about the world will require an objective astrology based on sound arguments, convincing evidence, and an underlying theory agreed to by astrologers worldwide, which are precisely the things it presently lacks. At the moment claims such as "astrology is the science of the future"

are a clear contradiction in terms. A subjective astrology is of course incapable by definition of changing science-based beliefs about the world. However, this might no longer apply if the beliefs became religion-based as in the Middle Ages, as might happen if Islamic fundamentalists were to realise their aim of conquering the world.

OQQ11.7

How can you be sure that the results of research aren't just reflecting your world views back at you?

Researchers: Presumably an example might be researchers whose world view requires isolated factors to be meaningful, so they test only isolated factors despite protests from astrologers. The answer to your question is easy -- we use as many approaches as possible regardless of what a particular world view might dictate. As we said before, show us a better way and we will explore it. But turn your question around -- how can astrologers be sure their claims aren't just reflecting their own world views back at them? An example might be astrologers who ignore reasoning errors despite protests from scientists. The question is one that only research can resolve (and in our view has probably already resolved), using as many approaches as possible, yet astrologers show little interest in such research.

12. Reactions of astrologers to research outcomes

NQQ12.1

In the discussion so far, you keep returning to the theme that astrology fails to deliver. As far as I can see, the Gauquelin findings do not support claims that astrology, as practised, is true. But they also close off the option of concluding that all ideas of astrological influence are false. Surely this is a significant point?

Researchers: We don't see why. One swallow does not make a summer. The fact that Claim A seems to be supported does not mean it is useful or beyond ordinary explanation, or that Claims B-Z have to be true. The fact that flying elephants might conceivably exist, say in tornado areas, does not improve our chances of catching the next flying elephant shuttle to Heathrow. Similarly, we cannot deny the possibility that surfing in Hawaii affects the waves in Australia, but would we bet on it? Until astrologers can replace their ten-a-penny (see 1.3) armchair proclamations with good empirical evidence, or engage in rigorous debates like this one, why should we believe any of it?

Nevertheless, suppose that all the research ever done has got it wrong, and that we have a world where astrology works to the extent claimed in astrology books. Hunger and hardship have disappeared because economic trends and climate are predictable. Science has disappeared because horary astrology answers any question. So has competitive sport for the same reason. Cars and planes are hazard-free because assembly times conducive to accidents are routinely avoided. Crime, war, illness and divorce are unknown because predictable. Every person is empowered, self-actualised, spiritually enlightened, and knows their individual purpose and direction. Abuse of astrological knowledge is prevented by restricting it to those whose charts reveal due merit. This is astrology world. Now compare astrology world with the actual world. Bearing in mind that astrology has had two thousand years to get it right, can we conclude that it really does deliver? Probably not.

NQQ12.2

Perhaps there are only two possibilities: either astrology is bunk, or it is a subtle and elusive art. Hopefully readers of this interview will be gathering some basis upon which to form their own conclusions.

Researchers: There could be more than two possibilities. Thus astrology could act as a focus for discussion without any claim to validity, or it could act as a projective tool like inkblots, neither of which would be bunk or elusive. But the straightforward claims made in astrology books contradict the idea that astrology is a "subtle and elusive art", always assuming that there is a single such art that astrologers would agree on. For example the rear cover of the reprint of Ronald Davison's best-selling book *Astrology* (CRCS 1987) says that its simple keyword system "allows even beginners to start interpreting charts immediately with great accuracy." Nothing subtle or elusive here, not even for beginners.

NQQ12.3

I wonder how well the book would have sold if the back cover had promised, "this subject baffles people who have studied it for years, and you have no chance of ever understanding it fully"!

Researchers: Presumably not well at all even though it might be less misleading. But the point is, this is not just another astrology book. Ronald Davison (1914-1985) was a highly respected British astrologer. He succeeded Charles Carter in 1952 as president of the Astrological Lodge, serving in that position until 1982, and was editor of *Astrology: The Astrologer's Quarterly* from 1959 to 1983. A review of his book in the *Astrological Journal* for 1963 comments "But the test of a first-class production perhaps is that it should have something to teach the experienced student too, and here again Mr Davison scores some very good points. There is in his descriptions a great fund of original observation and the maturity of judgement of one who has listened attentively to many viewpoints and separated the wheat from the chaff."

Furthermore, in the CRCS reprint, the US psychologist and astrologer Stephen Arroyo describes how, in the 1960s, he and his friends would look up their chart factors: "In an amazing percentage of cases, we would find reliable descriptions of the person I was talking with, and in fact I well remember the looks of fascination and reflection on people's faces as they revealed how impressed they were with the accuracy that this kind of astrology could provide. In fact, in numerous cases, they could not hide the strong impact made from insights into their motives and needs that they had never really considered before in that light. I have continually recommended Ronald Davison's Planets in the Signs keyword system for over twenty years to those ... who want to develop astrology as a reliable science of human nature." Again, nothing subtle or elusive here.

Indeed, almost every astrological textbook makes it clear that astrology is not an occult subject, and that anyone with diligence and application can learn to set up and interpret birth charts. Complicated and demanding yes, subtle and elusive no. Or so we are told.

NQQ12.4

If astrology fails to deliver, it means that all the astrology books ever printed, all the magazines, and all the claims, arguments and speculations therein, to say nothing of astrological organisations, conferences, meetings, lectures and courses -- that all this could be completely without foundation. Do you really think this could be the case?

Researchers: We think such a view is simplistic. To start with, it ignores the distinction between subjective and objective astrology. If we prefer subjective astrology, then astrology does not need to be true, in the same way that a religion does not need to be true (although we may need to believe it is true). In this case the emerging picture is hardly relevant.

But if we prefer objective astrology, then you could be right. Of course, until many more astrologers investigate astrology with proper care, or put themselves forward for testing, we should not be too hasty. We must wait and see. Nevertheless the emerging picture does suggest that people can justifiably discount the objective claims of astrologers in the same way that they can justifiably discount the objective claims of phrenologists. Which of course is not exactly good news for the writers of astrology books.

OQQ12.5

How do astrologers generally react to the picture that is emerging from research?

Researchers: Most astrologers seem unaware of it. Those who are aware of it either (1) dismiss it on the grounds that scientific research is irrelevant to astrology, or (2) they admit its relevance but claim its methods are presently inadequate for unravelling astrology's secrets.

Re (1), the philosopher Thomas Kuhn noted that when an idea is in crisis, its supporters retreat behind a smokescreen of speculation that sounds good but is actually empty. This is precisely the situation with modern astrology. Rather than demonstrate their claims under artifact-free conditions, or specify what research would be relevant or how controversies and disagreements might be dealt with, astrologers retreat behind a smokescreen of speculation about the nature of truth, reality, perception, language, and so on. Talk yes, actual progress no.

Re (2), recall that the claims of astrology are grandiose, and that almost no area of human affairs (individual, collective, past, present, future) is supposed to be exempt. In other words we are supposed to believe simultaneously that astrology, like gravity, is writ most exceedingly large, while its influence is most exceedingly difficult to demonstrate. Scientists tend to part company with astrologers at this point. How can astrology be so difficult to demonstrate when astrologers are so readily convinced that it works?

EQQ12.6

One answer might be as given by Stephen Arroyo in his *Chart Interpretation Handbook* (CRCS 1989). He says "statistical studies in astrology have been almost universally pointless" because "only experiments with living people in a clinical situation can fully show astrology's value and validity in its guidance, counselling and psychotherapy applications." What do you think of this view?

Researchers: Arroyo does not give examples of such experiments for others to try out, nor does he show how they have resolved conflicting claims, so we have no reason to believe him. Arroyo seems unaware that phrenologists said the same thing about an actually invalid phrenology, and that "living people in a clinical situation" is precisely the situation where reasoning errors (Barnum, Dr Fox, hindsight, placebo, Polyanna, and so on) rage most out of control. In fact clinical studies of the kind he advocates have been made, but they have revealed nothing not explainable by reasoning errors and other artifacts.

Indeed, scattered throughout the astrological literature are accounts by astrologers who had accidentally used the wrong chart during a client consultation. One of us (Smit) had the same experience, and another of us (Dean) deliberately used wrong charts. According to Arroyo, because "living people in a clinical situation" fully demonstrate astrology's validity, the error should have been instantly apparent. In fact nobody noticed. In Smit's case he had always been told that charts uniquely fitted their owners, so he was profoundly shocked -- it showed that "astrology's validity" was effectively meaningless.

On this point, listen to what Donald Bradley said in a 1964 issue of *American Astrology*: "How many times have you worked with erroneous birth data and found admirably apt indications for everything that happened in the native's lifetime? We've all had this jarring experience ... Give me some false data and ... the chances are good that I'll be able to find a convincing configuration, progression, transit, key cycle, revolution, direction or dasa that is appropriate ... with multiple confirmation too, making everybody cluck about how marvelous astrology is. Too many times have we found that somebody was really born in 1923 and not 1924; or a rural doctor ... wrote pm instead of am on a birth certificate; or someone ... was still using an Old-Style birthdate; or a birth hour should have been recorded in daylight-saving time -- and so forth. But even though the information was seriously in error, the gears of the chartwork seemed to click off just fine. ... But is it science? That's the big question, and on this question hangs the whole disposition of astrology's worthwhileness."

Or as Rob Hand says in the Nov-Dec 1989 issue of the *Astrological Journal*, "I'm sure you've all experienced, those of you who do any number of consultations, the horrible and demoralising phenomenon of giving a brilliant reading from the wrong birth data! It's one of those little classic embarrassments we don't like to talk about. ... nevertheless, we have to agree that convincing readings of the wrong birth data are a real phenomenon." Or as Geoffrey Cornelius says in his book *The Moment of Astrology* 1994, "The entirely 'wrong' horoscope produced by misinformation or gross error not infrequently (but not always) works just as if it is a 'right' horoscope" (page 259).

NQQ12.7

Some astrologers claim that the lack of proof for astrological effects has shown only the ineffectiveness of the measuring tools. They claim that the tools used to test astrology are like trying to catch plankton with a shark net. Scientists draw in the net, but it reveals nothing. Which is proof that plankton don't exist, right?

Researchers: This is a classic example of woolly thinking. Scientists would conclude that objects above the mesh size did not exist, not that objects below the mesh size did not exist. Furthermore they would be careful to use the same nets as astrologers and in the same way. If the nets reveal nothing, how can astrologers claim the opposite? This is basically the bottom line. It bears thinking about.

13. White crows, prestige, resources, could results improve?

OQQ13.1

Do you see any ways in which the scientific approach might be modified to increase the possibility of detecting genuine astrological effects?

Researchers: Increasing the sensitivity is straightforward -- just increase the sample size. Alternatively we can increase the signal to be detected, say by testing only the best astrologers, or by selecting only extreme cases so they are unambiguous. But such approaches have already been well explored without success. In fact the variety and extent of studies to date is seldom appreciated, especially by astrologers who claim that the scientific approach is inadequate. To be sure, the original studies may be hard to find, but increasing numbers of reviews now exist. Ignorance is no longer an excuse.

OQQ13.2

How likely is it that the emerging picture will become more favourable to astrology?

Researchers: The totality of research results to date involves hundreds of diverse studies, some positive but mostly negative. Even the positive studies tend to be incommensurate with astrological claims, for example a positive study in which astrologers scored 55% hits vs 50% expected by chance is incommensurate with the near-100% expected on the basis of what we read in astrology books. To overturn such a weight of negative evidence would require an avalanche of new studies where the results were consistently and dramatically positive. If Figure 2 is anything to go by, this is not going to happen.

Nevertheless could astrology deliver the necessary goods? For twenty-five years we have tried to find out. We have ransacked the literature and tested the most promising claims, both as astrologers and scientists. We have gathered our own data and analysed it using the most powerful methods available. We have looked at related areas in astronomy, philosophy, psychology, parapsychology, sociology, and statistics, in each case going back to the original academic literature, something that astrologers rarely do. We have lectured at conferences, run critical debates, issued challenges, and held prize competitions (all now closed) with prizes up to \$US5000 for evidence in support of astrological claims. As far as we know nobody else has been as systematic or as thorough. The point is, if astrology could deliver the necessary goods then somewhere in all this it should be shining through. But we found nothing that could not be explained by reasoning errors and other artifacts. Yes, a great way to spend twenty-five years!

OQQ13.3

Were you disappointed?

Researchers: To some extent. But had we been working for a research institute, we would have been more than disappointed, we would have been fired, or at least diverted to more productive areas. Negative results means no grant money, little contribution to knowledge, little chance of publication, and no academic advancement. So nobody could have wanted positive results more than us. Which is not to say that negative findings are unimportant, for example it is useful to know that eating lettuce does not send you mad. But to continue pursuing a topic with grave theoretical difficulties and grave lack of supporting evidence does seem rather futile.

But before we slash our wrists there is one beacon of hope. Many of these hundreds of negative studies would be instantly overturned if an astrologer could be found who delivered the goods under conditions where reasoning errors and other artifacts did not apply. In short, all it needs is one white crow. As the famous psychologist William James said in 1897, "If you wish to upset the law that all crows are black, you must not seek to show that no crows are; it is enough to prove one single crow to be white." Of course

the research studies in astrology collectively cover a wider field than could be overturned by a single white crow, but it would be a good start.

For twenty-five years we have tried our best to find a white crow, as have those skeptic groups around the world who are currently offering a total of over one million dollars to anyone who can demonstrate genuine paranormal powers, astrology included, but without success. (For how to apply, visit the websites www.csicop.org and www.randi.org.) There are many tens of thousands of astrologer crows but few seem willing to be proven white -- and the few who have come forward have so far proven to be black. This might seem remarkable in view of the whiteness that shines out of astrology books, but such is the case. It might of course seem unremarkable to anyone familiar with phrenology.

Recently one of us (Smit) discovered a rare Dutch book describing a test of Leo Knegt (1882-1957), one of the Netherlands' most famous astrologers. Knegt was given the anonymous birth data of ten people and had to describe their character and circumstances. Because he was given no details whatever, this was far harder than a matching test -- he had to describe each person from scratch. Unknown to Knegt each person had a distinctive life, e.g. a university professor, a fantastic swindler, and an unsuccessful job-seeker, so to achieve a hit he would have to be very specific. And he was, ten times out of ten. For the university professor Knegt correctly predicted an emotional but pioneering intellectual, for the swindler he correctly predicted fraud and an unexpected scary end (it was actually suicide), and for the unsuccessful job-seeker he correctly predicted she would eventually find a job on a passenger ship.

Not only was this the kind of specificity that many modern astrologers claim is impossible, it was achieved using only nine planets (the year was 1933 and Pluto had only just been discovered). Unfortunately the test had none of the features such as controls that we would consider essential today, so these results are difficult to assess. So we have only one option -- we must try and repeat the test.

OQQ13.4

Did you try to do this?

Researchers: Yes. Smit compiled a new test using five of the ten cases for which Knegt had been successful. This new test asked astrologers to match case histories to birth data, a much easier task than the one given to Knegt even without the fewer number of charts. Furthermore, because Knegt had been successful, it could not be argued that the new test was poorly designed -- the charts had clearly delivered the goods that astrologers want. If Knegt could succeed in such a difficult task, other astrologers should succeed in this much easier task using the same data. You could hardly get a fairer test!

OQQ13.5

Sounds reasonable enough. What happened?

Researchers: In order to reach as large an audience as possible, the entire membership and council of the Astrological Association (over 1500 astrologers and students) were canvassed through the AA's newsletter *Transit*. Only two astrologers responded, so readers of the smaller but more active international monthly *Astrologers' Forum* were canvassed, which increased the total to 23. Their performance was poor (this is the result labelled Smit in Figure 2) and their agreement was even slightly worse than expected by chance. Astrologers will have to do better than this if they are to stop high-

profile skeptics concluding publicly that white crows do not exist, and that astrology has nothing to contribute to science or philosophy. So, to answer your original question, is it likely that the emerging picture will change? Don't ask us, ask astrologers about white crows. The ball is firmly in their court.

EQQ13.6

The conclusion that astrology has nothing to contribute to science or philosophy would no doubt be disputed by astrologers.

Researchers: The problem here is the spectacular never-ending disagreement among astrologers on techniques, validity, and how astrology works. This enduring disagreement tells us that astrology has nothing to contribute to science and philosophy except enduring incoherence. Indeed, the most plausible reason for this enduring disagreement is that there is no real phenomena to be explained, as would be the case if astrology was the result of reasoning errors. Such an astrology could never contribute to science and philosophy except as an example of how not to do it. And this seems to be precisely its present status:

Go to any university library or large public library and look at modern works of science or philosophy. They almost never mention astrology. This is true even in the two fields closest to astrology, namely psychology and astronomy. Of the two dozen histories of psychology published since 1970, only two mention astrology, and even then only as an example of pseudoscience. No modern astronomical theory has been even slightly influenced by astrology. Astrologers do not even pose meaningful questions for astronomers to investigate. Evidently astrology, despite having ridden for eighteen centuries into the hearts and minds of learned people on the unity of Greek ideas, is seen as having made no contributions to psychology or astronomy worth mentioning.

The same is true of philosophy. Astrology either receives no mention, as in *The Oxford Dictionary of Philosophy* (OUP 1994), or is mentioned as an example of superstition, as in Bertrand Russell's classic *History of Western Philosophy* (Allen & Unwin 1961), where in the Renaissance "the first effect of emancipation from the Church was not to make men think rationally, but to open their minds to every sort of antique nonsense [like astrology]" (p.489). Evidently in philosophy, as in psychology and astronomy, astrology is considered worthless by people looking for productive ideas. The reason is simple.

EQQ13.7

Prejudice?

Researchers: No, track record. Astrology has been spectacularly unfruitful in guiding enquiry, mainly because it makes much less sense than existing theories. Which is why scientists and philosophers ignore astrology except for historical purposes. Nevertheless if astrology explained things for which there was no other conceivable explanation, or if it led to useful new discoveries such as new energies or channels of communication, they would immediately become interested.

Similarly, if cosmic connections with human mental processes were ever discovered, we might find astrology being treated in textbooks as an ancient belief with some kernel of truth. But for the moment there is not even that.

NQQ13.8

The popularity of astrology shows that many people see it as interesting, even uplifting, and worth spending time on. So how can it not be a productive field of study?)

Researchers: Astrology is certainly productive in the sense you mention. For that matter so is flower arranging, guitar playing, and pottery. But we meant productive in the sense used by scientists and philosophers.

A good example is Darwin's theory of evolution, which has been quite spectacularly productive. It not only provides a scheme for unifying the diversity of life, it also raises clear questions for research to address. How do new characteristics arise in populations? What are the mechanisms of inheritance? What criteria decide when a characteristic confers advantage? These and many other questions make Darwin's theory vulnerable from many directions, for example the mechanisms of heredity might have made it impossible for advantages to arise and spread. Yet attacks by armies of biologists, geneticists, morphologists, physiologists, ecologists and others have revealed the need for only minor departures from Darwin's original theory.

By contrast, astrology has been spectacularly unproductive in guiding inquiry. This does not deny that astrology may be productive in other ways, but these other ways are of little interest to scientists and philosophers.

NQQ13.9

Perhaps the problem here is a lack of resources. Most serious astrologers are simply too busy making a living to devote time to research, or to gaining the interest of scientists or philosophers.

Researchers: But astrologers have had more than two thousand years to prove their value. How much longer do they want? Furthermore, as we already noted (13.1), there now exists a large amount of research conducted by astrologers, sympathetic scientists, and critics. If astrology really was productive it would be more than apparent by now.

NQQ13.10

Recently in both the UK and USA there have been discussions about the possibility of introducing astrology into university courses. Despite what you say, this seems to indicate that astrology now has some academic respectability, or even prestige.

Researchers: This "academic respectability" might be misleading. First, undergraduate courses in astrology would most likely be very profitable. It is easy to miss the financial motive and see the outcome as an academic seal of approval. Second, the blessings might be decidedly mixed. Unlike ordinary schools, universities are at the top of the intellectual ladder. They set the standards. Standards mean rigour, and rigour means requiring students to be critical. Liabilities now hidden would be minutely explored on a scale never experienced before. Astrologers would be in a court ruled by empirical evidence and critical thinking skills, i.e. precisely those areas where they are most disadvantaged. Academic staff would not only have to respond publicly to criticism, they would also have to propose a research agenda, supervise research students, and publish positive test results in high-quality journals (weak or negative results might be fatal). A teaching position could be the hottest of seats. Who would be brave enough to accept?

That said, courses could still escape the requirements of critical thinking and empirical testing if they focussed on history, or religion, or philosophy, or counselling, or any other area of astrology that does not require it to be true. Interestingly the courses you refer to seem to do just that, so it would be quite wrong to suppose that astrology is now about to acquire "academic respectability."

As for "prestige", there is a problem here because real prestige is deserved. It is the result of disciplined work, of critical thought, of willingness to put beliefs to the test, and of following where the chips fall, none of which is presently true of astrology. Prestige cannot be created out of nothing. Astrology cannot aspire to prestige without striving for the virtues on which it is based.

NQQ13.11

Whilst I wouldn't want to claim that all astrologers possess the virtues you mention, I certainly believe that I have met a number who do. So what you say on this point strikes me as one-sided.

Researchers: Some astrologers do have those virtues in a general sense, for example astrologers such as John Addey were extremely hard working and certainly willing to put beliefs to the test. But what is missing is a good grasp of what scientific discipline demands. Being hard working and being scientific are not necessarily the same thing, and being the former does not make up for not being the latter. In our experience very few astrologers have those virtues in a scientific sense, which is what matters. After all, we can have all the right virtues for the history and philosophy of phrenology, but this does not make the practice of phrenology respectable and prestigious. The same applies here.

NQQ13.12

In general terms, many astrologers might see what you have been saying as less a statement of impartial evidence and more a statement of evidence for the prosecution. Of course I accept that you may sometimes choose provocative language in order to get a response. Nevertheless the one-sidedness seems out of place at times.

Researchers: Our focus is scientific research, and our standards are scientific ones. Our aim is not to defeat astrologers or their system but merely to point out the need to be careful and to show what happens when this need is neglected. We agree that our comments may seem somewhat provocative. They might even seem prosecutory to those inclined to feel guilt. But given the huge neglect by astrologers of scientific caution, and the disastrous effect of this on their credibility, we think our comments are justified. In fact many scientists might find our attitude towards astrology to be overly charitable. They would note how the grandiose claims of astrology far outweigh the flimsy observations, ill-considered speculations and armchair proclamations offered in lieu of evidence, and how the general ignorance of reasoning errors can explain everything. So they would see no reason to elevate astrology beyond pseudoscientific piffle. If you find *us* prosecutory, you should try the others!

14. Parallels between astrology and poetry

OQQ14.1

Perhaps we might look again at what you have defined as "subjective astrology." Could you give an example of research into this?

Researchers: In subjective astrology we are concerned with astrology as the language of images, metaphors and similes. The art form closest to astrology is poetry because both rely on words whereas music and pictures do not. Indeed, some astrologers hold that astrology is a form of poetry in disguise. So our example involves poetry.

We can describe the best poetry quite simply. It is beautiful, it conveys the poet's passion and feeling, and it reveals inner meaning. The same is true of the best astrology. It is beautiful, it makes us care, and it reveals inner meaning. But note how subjective everything is. Who is to say what is beautiful, worthy of passion, and meaningful? But this is art, not science. Here we are concerned only with feeling. What matters is that our hearts are moved. Now the logical next step:

Could an understanding of poetry improve the practice of astrology? If poetry moves hearts better than prose does, could we improve a chart interpretation by writing it as a poem? These are the questions some of us looked at. The results were rather fruitful. For astrologers they suggested three useful things: (1) If your technique *feels* right, be it ever so humble, then for you it *is* right. (2) By the same token, it will not feel right for clients unless they share your particular sensitivities and understanding. (3) Good poetry takes time. Before making an interpretation you should allow the chart to incubate in your unconscious, allowing its factors to translate spontaneously into poetry.

NQQ14.2

Could you give more details? Your interest in poetry certainly throws a new light on your researches.

Researchers: To start with, we compared various poetic descriptions with the keywords pioneered by the famous British astrologer Margaret Hone, as in Table 1.

Table 1. Astrological keywords vs poetic descriptions.

Hone keywords	Poetic descriptions with apologies to Byron, Tennyson, Shelley, Wordsworth et al
SO Power, vitality	The sun, bright eye of your universe.
MO Response,	A faded Moon in dim, silver twilight.
fluctuation	Azure Moon, rippling in verdant skies.
ME Communication	Nor all your tears wash out a word of it.
MA Energy, heat	Mars, hectic red and pestilence stricken.
	The Martian came down like a wolf on the fold.
JU Expansion	In fair round belly with good capon lined.
NE Nebulousness	Neptune, brackish with the salt of human tears.
	The still, sad music of humanity.
8th solar house	Setting sail beyond the sunset.
Conjunct Venus	That deep in sweet embraces dwell.
Unaspected Moon	Alone and palely loitering.

For the present purpose (i.e. stirring the emotions) the accuracy of these poetic descriptions is of little consequence. What matters is what our imagination can do with them. They do not have to make sense to make sense. Which is bad news for hard-nosed objective researchers, but good news if you are into writing subjective astrology books. Any use of poetic descriptions would of course be as an addition to existing keywords, not as a replacement. Thus to describe the Sun as "bright eye of your

universe" will be ambiguous without the context of power and vitality. Otherwise it could mean the telly.

NQQ14.3

How could this provide useful insights into the consultation?

Researchers: When groups of people are asked to rank various poems in order of appeal, it is usual to find that the same poem can be ranked top by some and bottom by others. This is not something peculiar to poetry -- it is true also of pictures and music. In other words there are marked individual differences in taste, which means you cannot possibly please all the people all the time.

Research by others has found that the main factors influencing the appeal of a poem are as follows: (1) Its merit. Good poems are more popular than bad poems, for example a poem may scan so badly that nobody likes it. Of course merit may be strongly decided by culture, in the same way as we may prefer Gershwin to a Zulu war chant, or vice versa if we are Zulu warriors. (2) IQ, especially verbal IQ. Poetry is more popular with bright people. (3) Personality. Particular personalities tend to prefer particular types of poem as shown in Table 2, which to be reliable would need to be much longer but it gives you the idea.

Table 2. The types of poem preferred by particular personalities.

Extraverts	Into the silence of an empty night I went,
prefer simplicity:	And took my scorned heart with me.
Introverts	Thou art not more lovelier than lilacs
prefer complexity:	Nor more fair than single white poppies.
Unstables	Come, let us make love deathless, thou and I,
prefer emotion:	Seeing that our footing on the Earth is brief.
Stables	Here lies a most beautiful lady,
prefer restraint:	Light of step and heart was she.

In our experience much the same applies to the appeal of astrology. For example, other things being equal (which they rarely are), we have found that stable extraverts tend to prefer the direct simplicity of Margaret Hone whereas unstable introverts tend to prefer the obscure complexity of Dane Rudhyar. So when astrologers promote this or that amazing new method, they have to take into account the personality of the astrologer or client. Otherwise they will be performing a mischief in areas where astrologers, if anyone, should know better. To feel the poetry in a chart the astrologer should not be hindered by technique.

OQQ14.4

What of those clients who come to an astrologer seeking straightforward answers to questions on health, wealth and romance? How would your poetry findings apply to them?

Researchers: Probably not at all, because this would no longer be subjective astrology. It would no doubt be okay if clients wanted only sympathy or spiritual uplift, but if they also wanted something factual then we are back to objective astrology and the dismal emerging picture. Poetry might only annoy them.

Actually your question uncovers a fundamental dilemma. Astrology seems unlikely to feel right unless astrologers and clients share a belief in objective astrology. Otherwise why bother with accurate charts? The same dilemma applied in phrenology. Phrenology worked because people believed (incorrectly) that it worked. If phrenologists had said (correctly) that "phrenology uses interesting superstitions to stimulate self examination", or that "phrenology is basically tea and sympathy", would clients have bothered?

OQQ14.5

How would you resolve this dilemma?

Researchers: The dilemma is without doubt an agonising one. But it is one that only astrologers, not researchers, can resolve.

Phillipson interview of researchers

Part 2 continued

15. Credibility problems, education, critical thinking skills

OQQ15.1

What would you consider to be the most harmful things to astrology's credibility?

Researchers: We see five things as severely reducing astrology's credibility: First is refusing to acknowledge the disconfirmation of claims. For example, without doubt the most disconfirmed claim in astrology is that of sun signs, yet the outpouring of fiction disguised as sun sign books seems unending.

Second is the dramatic disagreement on fundamentals such as which zodiac, which house system if any, what planets once past the first seven, what aspects, what orbs, what methods of direction, and so on. Surely after several millennia there should be better agreement than this. There is not even agreement on how the fundamentals are supposed to work: In public it is asserted that the stars only incline and only acausally, but this conflicts with the conversation at any astrology conference -- yes, I gesture a lot but that's because I'm a Gemini, or I have a strong Jupiter so I'm very religious, or we get on (or don't get on) because our Suns are in opposition, or Uranus always brings accidents, or Saturn is retrograde making financial markets unsettled. No acausal inclination here.

Third is the poor agreement between astrologers judging the same chart. For example various astrologers have worked backwards from the life events of Ronald Reagan to produce over 30 different birth times spanning 15 hours, each one supposedly definitive according to the astrologer concerned. Even for a simple chart reading the agreement between astrologers is generally so poor that it is scarcely better than tossing a coin -- a finding confirmed by more than two dozen studies (the mean correlation was 0.10)

including those made by some of us. What price astrology if astrologers cannot even agree on what a chart means?

Fourth is the stagnation of astrology. When we look at psychology or sociology we find disciplines that have advanced because workers have been responsive to disconfirming evidence and alternative ideas. Their textbooks are packed with research studies and critical comparisons of competing theories, often with emphasis on areas needing investigation. Not so in astrology. Except in very rare cases, there is no critical evaluation of ideas and claims, no basing of theory on empirical results, and no mention of negative evidence except to explain it away. Instead astrology has stagnated into a continuing war between one untested idea and another. In 1973 the US astrologer Dr Zip Dobyns could complain that "astrology is almost as confused as the earthly chaos it is supposed to clarify." Today it is even worse. Which is hardly a sound basis for a profession or even a religion. Nevertheless astrology books still read as if they have the Rosetta stone for life on Earth.

Fifth, perhaps worst of all, is ignorance of existing research and of problems due to errors in human reasoning. This leads to making claims at variance with the evidence. Astrologers need to be more careful. Which is nothing not already required of any ethical discipline.

Our five points would of course be weakened to the extent that white crows could be found. They might disappear altogether if astrologers were to publicly define astrology as a religion, and then refrain (as priests do) from making claims that could be contradicted by scientific enquiry.

NQQ15.2

Don't some of your objections also apply to psychotherapy? When it comes to dealing with people, the range of schools with differing views -- Freudian, Jungian, Adlerian, Psycho-dynamic, Humanistic, Existentialist -- seems to be proliferating, with plenty of contradiction and disagreement between them, including disagreement on what is important.

Researchers: The supposed contradictions arise only because the ideas are generally described without mentioning the empirical evidence for their validity. As shown by H J Eysenck and M W Eysenck in their pioneering book *Personality and Individual Differences: A Natural Science Approach* (Plenum Press 1985), when the ideas are examined in their historical context together with all the empirical studies, there emerge striking commonalities. Far from exhibiting "plenty of contradiction and disagreement", they all boil down to essentially the same things. The contradictions are not supported by evidence, the agreements are.

NQQ15.3

Surely the point here is that any model of human psychology is of limited relevance when it comes to actually dealing with people.

Researchers: This will be news to psychologists such as Freud and Rogers who based their models on their work with individual clients. Furthermore, the search for general models is conducted in order to understand the individual members, and the ultimate test of a model is whether or not it explains individual events. For example a model of learning might predict that Joe Bloggs will learn better under the conditions specified by the model. If he does not then we reject or revise the model. In fact a long-established

part of psychology is the study of individual differences, i.e. the characteristics, qualities or traits by which one individual may be distinguished from another. Individual differences were central to the investigations of Sir Francis Galton in the late 1800s, and today they are the focus of major publications such as the journal *Personality and Individual Differences*.

Of course there can still be apparent disagreements about application, as when the Freudian school says that the therapist's role is to interpret and explain the client's world, while the Existential school says that the therapist's role is to avoid interpretation and to accept the client's way of seeing things. But such disagreements arise largely for the same reason as before -- because the schools have not approached the topic with due caution. When cautious scientists discover that interpretation is beneficial for type A clients but is best avoided for type B clients, the disagreements tend to disappear.

Similarly, whenever psychotherapy has been approached with due caution, the general outcome (with the notable exception of behavioural therapy) has been that all psychotherapies seem to be roughly equally effective and little better than no psychotherapy. So the supposedly fundamental disagreements are of little or no consequence. In fact what really matters has little to do with the kind of therapy, namely that the practitioner and client should like each other, and that both should have faith in the therapy. The actual therapy seems to be of little consequence provided there is faith in it. The relevance of this to astrology should be apparent.

NQQ15.4

To which discipline should astrology be compared -- psychology or psychotherapy? Is the diversity of astrological practices a sign of problems, a sign that at least some people are getting it wrong? That is the way it looks if the comparison is with psychology. Or is the subjective element sufficiently important that there can be different ways of working which suit different circumstances? That is the way it looks if the comparison is with psychotherapy, in which case the diverse approaches within astrology would be inevitable.

Researchers: To ask if astrology is like psychology (the study of mental processes and behaviour) or psychotherapy (the treatment of mental disorders usually by personal consultation) is to take a very narrow view of astrology, one from which say mundane or horary are excluded, and one that does not fit our own wide view. Nevertheless your comparison comes back to our subjective-objective distinction, the distinction between the underlying objective ideas in astrology (as in psychology) and their subjective application (as in psychotherapy). We should expect to find agreement on what a cake is, as opposed to what a stew is, but not on how to serve it since this is a matter of personal choice. But even then both the ideas and their application would be amenable to scientific study, which is presently lacking in astrology.

OQQ15.5

What in the world of astrology do you see as helpful or beneficial to people?

Researchers: Good persons. A warm and sympathetic astrologer provides non-threatening therapy that is sometimes hard to come by, especially as no admission of some physical, mental, or moral weakness is required, as with a doctor or psychiatrist or priest.

OQQ15.6

And what do you see as unhelpful or harmful?

Researchers: Bad persons. Donna Cunningham in her book *An Astrological Guide to Self-Awareness* (CRCS 1978) suggests we avoid the guru, the power-hungry, the astro-junkie, the totally negative, the totally positive, the prurient peeping tom, and the spotlight seeker.

OQQ15.7

Earlier (10.6 and 15.1) you felt that the failure of astrologers to "be careful" was one of their main faults. How might this be addressed?

Researchers: The single most important factor in helping astrologers generally to be careful might be an improvement in their general education. This would be a necessary first step in correcting the five harmful influences on astrology's credibility that we talked about (15.1).

OQQ15.8

And what should this improved general education for astrologers include?

Researchers: To be adequately educated astrologers need to be informed about *all* aspects of applied astrology. Not just astrology but also related disciplines, not just counselling skills but also religion, philosophy, psychology, statistics (because astrology is probabilistic) and research methods. They need to be aware of the errors in reasoning to which they seem so abundantly prone. If they advocate subjective astrology then they need to refrain from making statements open to scientific challenge. If they advocate objective astrology then they need to be familiar with research results (all of them, not just the ones selected to support a particular view) and with informed criticisms of astrology (not just the nonsense put out by hostile debunkers). And before anyone starts to study any kind of astrology they need to acquire the critical thinking skills that today are part of any university course in the social sciences. Until they do such things, astrologers cannot expect to know what they are talking about.

OQQ15.9

What do you mean by "critical thinking skills"?

Researchers: Critical thinking is about evaluating evidence, judging conclusions, and considering alternatives. It gives teeth to rigour. Consider psychology, perhaps the single discipline nearest to astrology. In 1998 a survey of the 37 current introductory psychology texts found that 25 treated critical thinking in some detail, typically 1000-2000 words. This is in addition to the entire books that already exist on critical thinking. By contrast none of the hundreds of introductory astrology texts examined by us over the years give any hint that critical thinking even exists, even though it could hardly be more relevant to their implied invitation to "test astrology for yourself."

Indeed, even for astrologers, "Anyone used to reading books on or around our subject must have a mind which positively aches with the effort of keeping it open: a reader put off by *non sequiturs*, evidence which isn't evidence at all, irrationality and eccentricity will not get halfway along the first shelf [at any astrology bookshop]" (Derek Parker, *Astrological Journal* 1991, pp.264-265). So nobody should blame psychologists for reading astrology books and then dismissing astrology out of hand.

16. Does modern science support astrology?

OQQ16.1

Are there developments in modern science which weaken the case against astrology as being intrinsically impossible?

Researchers: Nothing that we know of. If by astrology we mean the ideas found in astrology books, such as Saturn rising signifies an inhibited personality or adverse Mars transits incline to accidents, then in our opinion there are no developments in modern science that would support such ideas.

But if by astrology we mean "the way most astrologers behave", i.e. with no basing of theory on empirical results, no consideration of negative evidence except to explain it away, and no serious verification of a continuing profusion of claims, there would seem to be no developments in modern science, even in principle, that could possibly restore the feasibility of such sloppiness. Only a more disciplined approach by astrologers could succeed here.

OQQ16.2

This seems dismissive. Astrologers have pointed to numerous developments that supposedly make astrology more plausible, such as fractals, interconnectedness, the theories of Bohm, Pribram, Sheldrake, and so on. Are these of no relevance?

Researchers: Even if science did turn out to be based on say interconnectedness, astrologers have not explained how this would support the idea that the heavens reflect what happens on Earth, let alone ideas such as Leos are generous. It is like saying astrology involves books, cooking involves books, therefore cooking makes astrology more plausible. Crucial steps in the argument are missing.

The theories are physicist David Bohm's idea of implicate order, where connections between things can exist independent of space and time, neuropsychologist Karl Pribram's idea of holographic order, where time and space are collapsed into a single frequency so that normal causality (which requires time and space for its operation) no longer applies, and plant physiologist Rupert Sheldrake's idea of morphic resonance, where the form of past systems has a cumulative effect on the form of subsequent similar systems. But astrologers do not erect charts by ignoring space and time or by collapsing them into a single frequency or by assuming they all have the same form. Indeed, the idea of morphic resonance suggests that, over the centuries, astrologies around the world should have become more similar, and astrological effects should have become more noticeable, but neither seems to be the case.

Claiming that such ideas make astrology more plausible, or that they explain why Leos are generous, is like claiming that rhubarb explains why airplanes fly. Until the steps in the argument are spelled out, it remains circular -- astrology is made feasible by the kind of thing that, if it existed, would make astrology feasible. To bring support to astrology we need to know *exactly* how astrology is supported, but astrologers never tell us. Their arguments never even get started.

OQQ16.3

There seems no doubt that various modern theories such as quantum mechanics are attempts to explain real phenomena, and that these phenomena do not fit within the

Newtonian model which is often blamed (or praised) for undermining belief in astrology. If a model that undermines astrology is flawed, surely the undermining is also flawed, which might conceivably restore feasibility to astrology?

Researchers: It does not follow. The discovery that quantum phenomena are real and undermine Newton's ideas does not necessarily restore the feasibility of astrology, just as the discovery that atoms are mostly empty space undermined Dalton's idea of oxygen but did not restore the feasibility of phlogiston. Nor does the undermining of one theory necessarily have any effect on the many other theories (in astronomy, in psychology, in medicine, in statistics) that are equally incompatible with astrology. As before, crucial steps in the argument are missing. In any case, how can any kind of theory restore feasibility to something for which there is no convincing evidence to start with? It is like asking for a theory to explain flying elephants.

NQQ16.4

What about claims that known extraterrestrial influences provide support for astrological claims?

Researchers: Astrologers frequently argue that the existence of say lunar effects on oysters proves that astrology is credible, which is like arguing that money exists, therefore everyone is rich. But how can oysters explain why only Leos are generous? It is a huge leap of faith from such effects to the claims of astrologers. Crucial steps in the argument are again missing. If a connection existed then we might expect planets to have added to our understanding of living organisms in the same way that genes have, but such is not the case. In fact lunar effects on the spawning cycles of marine species such as the Palolo worm are well established, but lunar effects on oysters may be an illusion, see a long article in *Journal of Theoretical Biology* 1965, 8, 426-468.

OQQ16.5

We ought not to omit a mention of Jung's synchronicity. In the past it was perhaps the idea that astrologers most often quoted in support of astrology. Is there anything you can say about it?

Researchers: Astrologers see synchronicity as a *meaningful coincidence*, but Jung saw it as more than that. Among other things he held that it was unlikely to occur unless the observer is experiencing strong archetypal emotions (see his *Letters* 1976 volume 2 page 537). So it would require the chart reader to experience the most intense archetypal fear, anger, joy, sorrow, love, hatred, etc., in rapid succession. No reader or client could stand it. And even if they could, such intense emotions would impair their reasoning. (Try it and see!) So synchronicity is not the answer.

In 1931, before he invented synchronicity, Jung had his famous idea that "whatever is born or done in this moment of time has the quality of this moment of time", which of course seems perfectly matched to astrological claims. But there are problems. To start with, his idea implies that time quality is the same instantaneously throughout the universe, which is no help at all (light travels too slowly for us to ever know what that instantaneous condition is). So if time quality is to explain astrology, it has to be localised. In which case the relevance of the outer planets (even all the planets) might be denied, which presumably is not what astrologers have in mind. So time quality is probably not the answer either.

In any case, both synchronicity and time quality are examples of circular reasoning, as in "astrology is explained by X, which, if it exists, explains astrology." It is like claiming that levitation is explained by mysterious forces that, if they exist, explain levitation. Which is hardly a reason to be confident when jumping off a cliff.

17. Our inability to cope with complexity

OQQ17.1

An alternative view is that it is not possible to talk about astrology as a single, coherent technique. Instead, each astrologer necessarily forges their own approach (e.g. by using midpoints or not), in which case there could be as many different astrologies as there are astrologers.

Researchers: To obtain a judgement from a given chart, astrologers have to juggle many factors at once, typically 40 for the traditional natal chart and 60 for an Ebertin midpoint chart. And that is just for starters -- a genuine whole chart is immeasurably more complex, see Figure 3. But our short-term memory cannot juggle more than about 7+/-2 chunks of information at a time, as is apparent whenever we try dialling an unfamiliar 10-digit telephone number. As a result the information content of the chart *always* exceeds our capacity to handle it.

This means that astrologers cannot do what they say they do, namely juggle unaided every chart factor simultaneously. Instead they are forced to focus on whatever tiny subset of factors their experience or their teacher's experience has shown to "work." But the subset that "works" is rarely the same from one astrologer to another, for example one astrologer may use factors such as midpoints or asteroids that the other rejects, which has led to the idea that every astrologer forges their own approach -- and of course to the idea that astrology is even more mysterious (or perhaps even more problematic and implausible) than we might think. Exactly what are we talking about if every astrologers' definition of astrology is different?

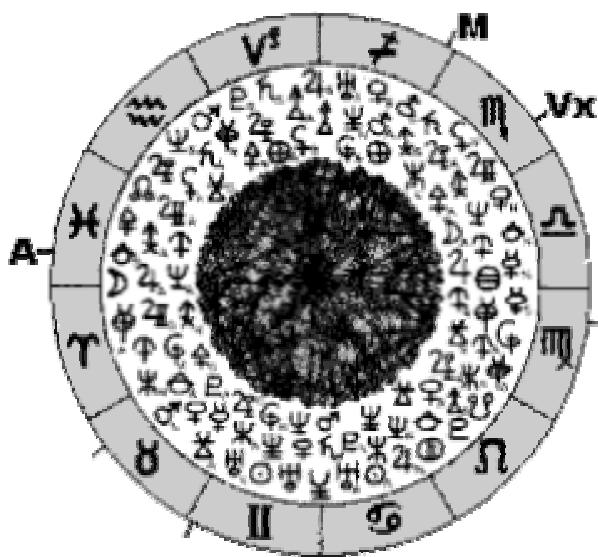


Figure 5. The superchart.

The above superchart contains only those factors proposed and testified to by astrologers of some standing. With 20 words of delineation per sign position, aspect, etc., the result would be larger than the London or New York telephone directory. All you need is one client and you have enough work for the rest of your life, forecasts extra. But even this is a drop in the ocean compared to what a genuine whole chart would contain. (Reproduced with permission from *Recent Advances* page 35.)

OQQ17.2

Surely the situation is not unique to astrology?

Researchers: It applies quite generally where variables are numerous and ill-defined. For example, when people judge the aesthetic quality of artworks, the number of possible criteria is so large that they are forced to consider only a subset. But the subsets differ between persons and between occasions, leading to spectacular disagreement. Thus a given work may be top-rated by one and bottom-rated by another. Contrary to expectation, training in art reduces disagreement only slightly and may even increase it, so perhaps we should not be surprised by the disagreement among astrologers despite their training in astrology.

However, as noted by the psychologist David Perkins in Nodine C & Fisher D (eds), *Perception and pictorial representation* (Praeger 1979, pages 301-314), training in *art criticism* does tend to reduce disagreement, which suggests that training in *astrology criticism* (i.e. critical thinking) should have similar beneficial effects. His subsequent comments are worth quoting because they seem equally applicable to astrology:

"For there to be any hope of finding, or, one might better say, constructing, a common aesthetic reality [i.e. reaching agreement on artworks], viewers would need to look more carefully and thoroughly at works, trust initial perceptions less, cross-check them more with other individuals, attempt alternative perceptions of the work, determine from others what significant features might have been missed, locate and recognise ambiguities of a work's appearance, set aside first conclusions that turn out to be attributable to personal idiosyncrasies, and so on.

[Note how this agrees with the strategies used by top experts as discussed by us earlier in 7.9.]

"Such strategies rely heavily on communication between individuals, and that points to another difficulty. Not only the individual encounter with the work, but also discourse about works, suffers from many problems that interfere with constructing an aesthetic reality [i.e. reaching agreement]. For instance, people often neglect to answer one another's points, do not clarify whether evaluative claims assert goodness or preference, fail to pursue claims back into reasons supporting them, deliberately censor their points or adopt defensive attitudes. All these, and other factors too, confuse talk about art." (pages 313-314).

In short, reaching better agreement on artworks will be difficult but seems feasible via scientific approaches and hard work. There will still exist legitimate differences due to differences in personality and so on, which affect the appreciation of artworks in the same way as they affect the appreciation of poetry, but in principle there is nothing that cannot be allowed for. As Perkins says, "we know what to do" if we want to reach better agreement on artworks. The same would seem to apply to astrologers and birth charts -- if they want to reach better agreement, we know what they should do.

NQQ17.3

I wonder whether the problem of remembering ten digits which you mention actually reveals anything about the difficulty of reading a chart. Surely there is a much greater level of complexity in (for instance) playing chess to a high standard, which people seem to be perfectly capable of doing.

Researchers: To chess masters, a chess board and chess games are not just a collection of positions, as they might be to most people. They acquire individuality. Thus when chess pieces are distributed at random, chess masters are no better than ordinary people at remembering them. But if the pieces are in actually meaningful positions, chess masters do hugely better. They see them as being the combination arrived at say after 25 moves in the Capablanca-Tartakover match of 1925, so all they have to remember is one item, not hundreds as must the ordinary person. In technical terms their expertise in memory span is obtained not by increasing short-term memory but by invoking long-term memory encoding processes and permanent knowledge during encoding. With enough practice (hundreds of practice sessions) this can increase memory span by a factor of ten or more. Which is crucial in helping chess masters win.

No doubt much the same applies to expert astrologers. Chart factors and entire charts acquire individuality and are remembered and used as such, in much the same way that chess masters remember entire boards. Even so, the number of possible chart positions is almost infinitely more than the number of possible chess positions. Chess has 64 squares and 12 kinds of pieces, astrology has say 360 squares and 10 kinds of pieces, so the maximum number of combinations is chess $12^{64} = 10^{69}$ vs astrology 10^{360} . In chess only some of these combinations could occur in actual games, but in astrology nearly all could occur in actual charts, thus making the disparity even greater. So even an increased memory span is still not enough to cope with chart complexity. It might produce astrologers whose grasp of charts seems astonishing to ordinary people, but the information content of the whole chart still exceeds human capacity to handle it. It will always exceed human capacity.

There is a further point. Consider what our observations would entail if we knew nothing about astrology and wanted to set it up from scratch. For one planet enjoying just 12 signs, 12 houses, and 9 kinds of aspect (5 major, 4 minor) to 9 other planets, there are $12 \times 12 \times 9 \times 9 = 11664$ unique combinations without even taking the sign and house position of the other planet into account. For ten planets this gives a total of $(11664^{10})/2 = 2 \times 10^{40}$ unique combinations (we divide by 2 to avoid double counting). The total is somewhat less than our previous 10^{360} but is still so huge that merely writing down one keyword per combination would require a stack of paper heavier than a million Suns. If we are forbidden to consider factors in isolation, we are now obliged to match this huge number of combinations directly to the almost infinite variety of human behaviour. It would be like matching stars in the sky to grains of sand in the Sahara and claiming we had got it right. Even without reasoning errors our capacity could not possibly cope, let alone our supply of paper. Which brings us to our further point -- that astrological theory could not be based on observation. Armchair proclamation yes, observation no.

In case you wondered where the "million Suns" comes from, assume 50 keywords per A4 80-gsm page weighing 5 grams, i.e. one keyword plus list-of-factors-comprising-the-combination per line. Weight of paper required is then more than $5 \times (2 \times 10^{40})/50 =$ more than 2×10^{39} grams. The Sun weighs about 2×10^{33} grams. So the weight of paper required is more than $(2 \times 10^{39})/(2 \times 10^{33}) =$ more than a million Suns, to which might be added the weight of folders/binders needed to contain and index them. Purists who

insisted on allowing for the sign and house position of the other planet would need to increase their paper supply (or alternatively decrease the size of their handwriting) by a factor of about 10^{22} .

OQQ17.4

I understand that only a minute fraction of the information which the senses send to the brain actually appears in consciousness. But this doesn't prevent us from getting along in everyday life, basing our actions on simplified versions of "what is really going on". So why should the complexity of the chart preclude the discovery and application of patterns at a relatively simple level -- that of ten planets and twelve signs, for instance?

Researchers: In 10.1 you pointed out that a competent astrologer will avoid using simple patterns, i.e. factors in isolation, because everything depends on the rest of the chart. Because all possible factors are not considered, and because the stars only incline, the outcome might not be true to type. So you have already answered the question -- complexity precludes the application of simple patterns because astrologers say so.

Alternatively, it is a property of correlation that, as the number of factors increases, the correlation between any one of them and behaviour must decrease to leave room for the others, in the same way that having dinner cannot be entirely determined by time if it is also determined by hunger. When the number of factors is large, as in astrology, the maximum possible correlation between any single factor and behaviour ends up well below our ability to detect it. Hardly anybody can detect unaided a correlation of 0.4, and 0.7 is still missed by one person in four. The number of charts required (at least ten times the number of factors) may also end up well beyond our resources.

This is why complexity precludes the discovery of simple patterns. It means that a correlation could be detected unaided by three out of four astrologers only if the complexity involved no more than two factors, say one planet x two signs, which is not even sun sign astrology. For something more complex it could not be done. Ironically, we can cope with what tradition forbids (simplicity), but we cannot cope with what tradition requires (complexity).

NQQ17.5

You say it could not be done. Which is to say that research into astrology is impossible. So what have we been talking about?

Researchers: We have been talking about determining factor meanings from scratch. This has nothing to do with testing the meanings claimed by astrologers. It does not follow that research into astrology is impossible. It is true that researchers might collect say 1000 Cancerians to see if they reflect the alleged characteristics of Cancer, the assumption being that in a large enough sample the other chart factors (including their ability to only incline) will cancel out. But it does not work in reverse. We can collect 1000 orange fruit cakes to see if they really do contain orange, but we cannot tell which of the countless attributes of cakes (such as flour, eggs, butter, sugar, fruit, nuts, candied peel, milk, salt, baking powder, spices, wine, spirits, juices, essences, shape, size, baking time, temperature, type of container, type of oven) is the one that is unique to our particular cakes, especially as we have no way of telling whether the cook actually followed the recipe. Similarly, we cannot tell which of the countless attributes of people is the one that is unique to Cancer, especially when charts only incline. It could not be done.

This allows astrologers a convenient double standard -- positive results can be shouted from the rooftops, negative results can be brushed aside as the consequence of chart complexity or fickle inclination. The problem of course is that the resulting nonfalsifiable astrology could not be based on observation. For if no observation could prove astrology false, astrologers could never be wrong even when using the wrong chart. So we think it is far more plausible to say that our own inability to confirm astrological claims is not because charts are too complex, but rather because charts seem not to work at any level whether simple or complex. If they did then we would not be getting the dismal Vernon Clark results shown in Figures 2, 3, and 4, see 9.6.

OQQ17.6

Astrologers have different opinions about what constitutes the "whole chart", and how much is needed for an acceptable reading -- it being, as you illustrated with Figure 3, possible to delve into the minutiae of a chart ad infinitum. These differences seem to explain much of the mystery, and the confusion, which surrounds the practise of astrology.

Researchers: But the mystery and confusion might be an illusion. As far as we know the perceived chart correspondences arise only through reasoning errors. So the different approaches confidently adopted by different astrologers are precisely equivalent to the different poses confidently adopted by Skinner's pigeons. (Their pose was whatever it was when food was first delivered into their individual feeding tray, which led them to believe their pose brought food, so they stayed with that pose, which then necessarily confirmed their belief even though the subsequent deliveries were actually at random, hence their confident but completely different poses.) That is, the diversity of approaches confidently adopted by astrologers is more plausibly explained by reasoning errors than by invoking mysteries.

Again, because reasoning errors can lead astrologers to believe in correspondences that do not actually exist, we can hardly view the conflict between approaches as something special. Indeed, conflict would be predicted, just as the pigeons' differing poses would be predicted. Of course this explanation rather brutally de-mystifies the chart reading process, but the chips fall where they may.

18. Mind, reality, divination: are such issues relevant?

NQQ18.1

William Lilly wrote, "The more holy thou art, and more neer to God, the purer judgement thou shalt give." Do you have any comment on this idea that -- all considerations of technical knowledge aside -- the mind of the astrologer is a relevant factor in the quality of an astrological judgement, in the way that Lilly states?

Researchers: The quote is from Lilly's message "To the Student in Astrology" in his famous textbook *Christian Astrology* (1647). Astrology's then main problem was its early grounding in astral determinism, a problem that persisted despite unending disclaimers such as Lilly's motto *non cogunt*, or the stars do not compel. An astrologer's main battle was therefore to prove that astrology was compatible with Christianity, which explains Lilly's choice of title. In other words the quote may be more to help the battle than to provide actual hints for purer judgement. This view is supported by the rest of Lilly's message, which is basically a list of Christian virtues to be adhered to, ending with "be

not dismayed if ill spoken of ... God suffers no sin unpunished, no lie unrevenged." But back to your question:

If being "near to God" makes the astrologer more warm, more sympathetic, more wise, and more sensitive to body language, then in a counselling situation it has to be an advantage. But outside of counselling and other face-to-face situations, studies have so far revealed no advantage in being "near to God." As far as we can tell, holier or more intuitive astrologers make judgements that are no different in accuracy from those made by other astrologers. In fact nothing seems to make much difference, not even personality, technique, or experience, which is not to say that clients won't have preferences. Historically some astrologers such as William Lilly and Leo Knecht have had an impressive reputation for accuracy, but until their modern equivalents (which earlier we called white crows) come forward for testing, we have nothing to go on.

OQQ18.2

Staying with the issue of mind and its relevance in astrology, I imagine that what many astrologers will find surprising, and perhaps disappointing, about your approach is that there is no real debate about the nature of mind, the nature of reality, and the way in which we perceive reality.

Researchers: We find this hard to understand. First, our concern for reasoning errors is in effect precisely about such topics. Second, astrology books do not hedge their bets with such debates, so how are they suddenly relevant? Third, "real debate" seems premature until astrology has been shown to work under conditions where reasoning errors are controlled. In short, what has mind-reality-perception to do with testing whether astrologers can pick correct charts from controls? How can it be relevant when astrologers give readings without worrying whether client and chart are real, or a figment of the mind, or a misperception?

OQQ18.3

Astrologers might claim that it is impossible to test or evaluate astrology without first addressing questions about the nature of subject and object, the nature of perception, and the nature of truth and its relativity.

Researchers: We don't see how. If you check the psychological and philosophical literature you will find these questions are discussed at great length without any mention of astrology. And with good reason. Why should a process heavily prone to reasoning errors raise questions about the nature of truth? It is like claiming the nature of piano playing is questioned by wearing boxing gloves.

NQQ18.4

To illustrate the point, let's go back to your earlier example (6.1) of equal lines being perceived as unequal. You used this to show that we may misperceive "real reality" (to coin a term); but it could also be used to suggest that human perception is inherently interpretative, and that the reality of "reality" is only relative. After all, if we saw reality directly then we could never be deluded.

Researchers: You are right. The idea that perception is modelling arose from the cognitive revolution of the 1950s and the birth of artificial intelligence. Before then the talk was on stimulus and response. Now it is on things like the selective filtering of experience and strategies for handling information. Perception is seen as a set of ideas and models on which we act until they are proved wrong, in which case we change

them. That is, we do not merely receive experience, we use it to selectively test models. These models are basically labour-saving devices that collapse the information into manageable chunks. They determine to some extent what we see and how much. For example, in a given landscape the geologist will see rocks, the developer will see building sites, and the artist will see metaphors and meaning.

So what is more important in determining perception, the model or the information input? The answer is the model. For example, suppose we see a slippery wet road ahead. Because the image on our retina is neither slippery nor three-dimensional, the perception must be generated by choosing the model that best fits the cues. So perception is not simply seeing. It is a matter of guessing followed by adjustments if we choose the wrong model, as for example when the shadowy figure in our bedroom turns out to be a coat hanging behind the door. This explains the reasoning error known as hindsight bias (where afterwards we knew it all along) -- once the choice of models has been biased by the experience, it reintroduces itself into the original perception.

The problem is that guessing from inadequate data can go off the rails, because wrong guesses are not easily dispelled by knowing the truth. Although we may know when our perception is wrong, this does not correct the perception, as in our example of equal lines. In other words intellect and perception are almost separate processes. No wonder we need the scientific approach to keep us on the rails.

NQQ18.5

That analogy is a telling one, I think. Isn't the question really whether there are any rails to keep on? There are two extreme philosophical positions: *realism*, where we simply observe a "master reality"; and *idealism*, where we create our own reality. The article on "Realism and anti-realism" in the *Oxford Companion to Philosophy* says "no sane position is reached at either extreme." It is a commonplace of philosophy that we create our own reality to some degree.

Researchers: Does it matter? Like clients, we are concerned only with whether astrologers can do what they claim to do. How is reality relevant?

NQQ18.6

How could reality not be relevant? Different astrologers claim to do different things, which rest on different interpretations of reality. We already touched on this at 7.13-7.14. Some hold a "realist" position; in their view, the laws of astrology are similar to the law of gravity -- objective, quantifiable laws which work regardless of any mental involvement by astrologers or anyone else. This position is easy to understand. Its chief problem is that the laws which are supposed to be there have yet to be isolated and defined -- a point which you have mentioned already in this interview.

The other positions held by astrologers -- the majority, in my experience -- depart from the "realist" position to varying degrees. Under these views, astrology involves an element of art as well as of science; several astrologers used the analogy of playing music -- the point being that it is necessary to know the basics, but that a mental quality ("inspiration", for want of a better word) is required in order for an astrologer to do their best work. The mental attitude of the client is also sometimes brought in as a factor which has to be "right".

Researchers: A problem with both the above views is that the claimed success is most readily explained by reasoning errors. There is no need for alternative realities or mental

attitudes or other mysteries. It is like invoking the end of the world to explain a power cut.

NQQ18.7

I disagree, and would suggest that it is worth looking at the consequences which follow from the approach I am talking about. Under this system -- sometimes labelled "divinatory astrology" -- two things in particular require comment:

(1) Apparently contradictory systems of astrological interpretation (such as tropical and sidereal zodiacs) might work for different individuals (as, say, be-bop and hip-hop might suit different musicians). If that were so, it would make no sense to try and evaluate whether an astrological technique worked as a general principle, only whether it worked for a particular person.

(2) Another plausible inference would be that nearly all research into astrology has been unsuited to its subject -- the knowledge "this is a test" being sufficient to destroy the attitude of genuine enquiry needed for synergy between astrologer, chart, and client. This interpretation, of course, would make astrology almost impossible to test.

Researchers: Almost all astrology books and journals claim that astrological effects hold for everybody, whether or not they believe in astrology, and are consistent. So (1) cannot be right. Similarly a responsible astrologer will always test the chart to the client's satisfaction before proceeding to matters of importance. So (2) cannot be right.

In any case, (1) and (2) do not provide grounds for disagreeing with our point that "reasoning errors can explain the claimed success." Both involve situations where there is no control over reasoning errors, so reasoning errors can still explain the claimed success.

NQQ18.8

I can't disagree with your point about reasoning errors, but would add that reasoning errors *can* explain anything we care to think of; for example our belief that the world exists may be one huge reasoning error.

Researchers: Which would leave nothing to do the believing. Could we make that kind of mistake? We might mistake a pen for a pencil or by mistake forget to order lunch, but could we be mistaken that other people exist or that the world exists?

Your comment implies that our reasoning is always so faulty that we can reach any conclusion we like, in which case car repairs would be effectively denied. Obviously this is not so. With care we can avoid reasoning errors, repair cars, and reach sound conclusions. More to the point, if astrology really did work, it would work even when we avoided reasoning errors. So they could not be an explanation.

NQQ18.9

The interesting thing, surely, is whether reasoning errors provide the most consistent and comprehensive explanation of a given phenomenon. But before this can be assessed, we have to be clear about what the alternative explanation to reasoning errors is, and how it is supposed to operate.

Researchers: The alternative being that an astrology with disagreement all along the line is true? Such special pleading would not be accepted in other areas, so why should we allow it for astrology? If we avoid reasoning errors and find after much research that there is little or nothing left to explain (which situation is now as true of astrology as it was for phrenology), it seems pointless to seek explanations for likely non-existent effects, a point also covered in 16.3 and later in 18.12. It would be like seeking explanations for flying elephants. But tell us anyway.

NQQ18.10

Here is a brief overview of the alternative way of seeing astrology -- the divinatory approach. In this, astrology is seen as similar to the I Ching or tarot. There are two consequences of this which may be worth dwelling on. The first is that the significance of chart factors *in themselves* is taken away. Mars near the ascendant does not make things happen, any more than the fall of yarrow stalks causes things to happen. ("we would do better to look at the nature of the act of imaginative assignation by which we make time itself significant" -- Geoffrey Cornelius, *The Moment of Astrology* 1994, p.255).

Researchers: Divination uses a chance process (shuffling cards, casting dice, throwing yarrow stalks) to eliminate human interference so the will of the deity can be discerned. The outcome has to be vague to avoid falsification, and to allow the seeing (like seeing faces in clouds) of whatever seems appropriate, so divination actually encourages human interference rather than eliminate it. It also denies the relevance of accurate birth charts -- why bother when we can pick one at random, just like throwing stalks?

Such a picture is quite contrary to the one given in astrology textbooks. Thus in his review of Cornelius's book, Charles Harvey (*Astrological Journal* Nov-Dec 1994) accepts that divination can play a role in astrology. But he rejects the idea that all of astrology is divinatory because it would deny a secure basis to chart interpretation, thus wiping out astrology textbooks overnight. It would also deny the improvements actually achieved by astrologers such as Addey, Ebertin, and Lewis, and by some computer programs, and it would deny the cyclicity on which many successful mundane forecasts are based. In short, astrology as practised by most astrologers could not be divinatory. But let us continue the discussion anyway.

NQQ18.11

The involvement of an act of imagination on the part of the astrologer effectively means that a chart reading is not repeatable (because it is impossible to repeat all the conditions which lead Astrologer X to apply their imagination in a particular way at a particular time). Non-repeatability would make many types of test inapplicable to astrology, albeit not the Vernon-Clark approach. The second consequence, which emerges particularly from the analogy between astrology and the I Ching, is that the intention to make a test, on the part of astrologer or client, would prevent an accurate reading from being produced.

Researchers: So an astrologer could never get the same reading twice, nor could any other astrologer, nor could they discover whether one approach worked better than another, or even whether anything worked in the first place. Indeed, to repeat the reading must necessarily prove one of the readings wrong. Compare this with faith healing -- if you have faith you will be healed, but if you are not healed then you have insufficient faith. Why bother with tests when the whole process so readily self-destructs?

NQQ18.12

The attitude of the I Ching to being tested is given in hexagram 4: "It is not I who seek the young fool; the young fool seeks me. At the first oracle I inform him. If he asks two or three times, it is importunity. If he importunes, I give him no information." It adds: "If mistrustful or unintelligent questioning is kept up, it serves only to annoy the teacher. He does well to ignore it in silence." (I Ching -- Richard Wilhelm translation, pp.20-21). The point is that questions based in doubt about that which one consults are invalid; the doubt becomes a self-fulfilling prophecy. Under this view, Vernon-Clark type tests would also be unsuitable. So there may be no such thing as suitable research, making divinatory astrology almost impossible to test.

Researchers: The outcome is thus true by definition, which puts all the blame for a faulty reading on the client. How very convenient.

To consult the I Ching we choose our moment and toss a set of yarrow stalks. But according to hexagram 4, if we simultaneously toss *two* sets of yarrow stalks, or two pennies as in the Australian and New Zealand gambling game of two-up, their agreement should be affected by the degree of mistrust we assume. But as anyone can discover for themselves, no connection actually exists, so we have no reason to believe that mistrust has any effect.

More to the point, if astrology is almost impossible to test then it is almost impossible to discover in the first place, or to claim that some techniques work better than others, which (as noted by Charles Harvey in 18.11) would wipe out astrology textbooks and deny the improvements actually achieved. Furthermore, as we showed in 12.5, the idea that astrology is almost impossible to test cannot be true when astrologers are so readily convinced that it works (or not, thus Charles Carter says "my own experience with figures cast for me by horarists has been unfortunate. In fact they have usually been downright wrong and never strikingly right" *Astrological Journal* December 1962).

Interestingly, we seem here to be in precisely the sort of situation where failure to observe our subjective-objective distinction (see 4.1) can send us off the rails. Before we can judge whether the claims of divinatory astrologers are impossible to test, we need to know precisely what claims they are making. If they cannot be specific then it is like asking us to debate the merits of flying elephants without regard for whether they actually exist.

NQQ18.13

To answer the first part of your question: So far as I am aware, the prevailing view amongst divinatory astrologers is that astrology -- and other modes of "symbolic perception" -- are innate. Turtles are born knowing how to dig their way out of the sand, walk down the beach, get into the sea and swim away; similarly (these astrologers might argue), humans are born knowing how to derive information about the world from the way their minds respond to symbols.

Researchers: Astrologers have to do more than just argue. After all, there is no evidence that what they say is true. Otherwise astrologers would not disagree on nearly everything, the skeptics' million dollar prize in 13.3 would have been snapped up long ago, and science would be redundant. Our world would resemble astrology world (see 12.1). And how does it explain the existence of skeptics?

NQQ18.14

On the second part of your question: I don't think divinatory astrologers would have too much difficulty in being specific about what they claim to do: they might say something like, "we provide the information which it is right to provide at the time". Since the model here is one of participating in an order which transcends the individual, the individual wishes of client or astrologer will not necessarily be met. Sometimes, therefore, it may not be appropriate for a question to be answered; perhaps the client will get the answer to a question other than the one they came for. But, usually, information is provided which will have meaning for the client. This includes specific information about objective things in the world, such as "Is this boat, which I am thinking of buying, damaged below the water line?".

Researchers: This seems testable to us. But whether the astrology is divinatory or ordinary, the issue boils down to the same thing: Does it deliver results beyond those explainable by non-astrological factors? There is nothing here to say that divination should be any less immune to reasoning errors than non-divination. In fact, given that it encourages human intervention (see 18.11), one might expect the reverse to apply.

NQQ18.15

The physicist Niels Bohr once remarked to a colleague, "Your theory is crazy, but it's not crazy enough to be true." Perhaps the only frame of reference which could begin to explain astrological phenomena would be entirely crazy from a commonsense point of view. Suggestions such as this may, as you have suggested, be smoke-screens which only serve to obscure scientific truth. I only want to make the point that, whatever conclusions people draw, those conclusions will be based on assumptions about the world.

Researchers: If we developed even crazier theories than astrology, would this increase their chance of being true? Presumably not. Bohr still thought the truth of a crazy theory could be determined, which is said to not apply to divinatory astrology. As for assumptions, they provide a framework (just as talk of a reality does) for testing claims. Your comment implies that just picking the right assumptions will validate astrology, but it does not follow, any more than picking the right assumptions validated phrenology. Indeed, astrologers do not even agree about their own assumptions, as in divinatory vs ordinary astrology, so the problem also applies to them. But does it apply to researchers? After all, assumptions never stopped scientists making tests. If astrologers claim to see X in charts under conditions Y and Z, then this is the claim we test. To argue that the outcome depends on our assumptions is like saying a change in our assumptions can turn a losing lottery ticket into a winner.

NQQ18.16

Other assumptions which come into play in evaluating astrology's truth are these: Do we understand nearly all of the world, or hardly anything? What is the scope, and what are the limits, of the scientific method? Do we play an active role in the creation of the world in which we live? Since such questions are the domain of philosophy rather than science, I stand by the point made earlier (in 18.6) -- that our view of reality is relevant to the interpretation and understanding of astrology.

Researchers: We don't see how. Astrology books and journals, and client consultations, generally deal in straightforward things like health, wealth and relationships without ever worrying about the nature of reality or the limits of science. So how can they be suddenly relevant? They seem to arise only when research results are negative, never

when they are positive. In any case, we are merely testing the claims of astrologers to see X in charts. Why should a process heavily prone to reasoning errors raise questions about the nature of reality or the validity of research? It is like arguing that the Cottingley fairies have invalidated science.

To be sure, if astrology really did deliver results beyond those explainable by artifacts, reasoning errors, and other non-astrological factors, it would show that our science-based understanding of the world is incomplete. In which case your points would be relevant, and we would be the first to debate them. But half a century of systematic enquiry has consistently found no useful effects beyond non-astrological ones. Until the situation changes, debate seems premature. As Mrs Beeton might say, first catch your rabbit before printing the menu.

But over to you. Given the idea that astrology delivers results beyond those explained by non-astrological factors, what approach would you recommend for testing this idea? Interestingly, when we put this question to astrologers, we generally receive no response, which suggests they have no interest in finding out if they might be fooling themselves. Note that our own views and assumptions are deliberately excluded here, so their merits or flaws have no bearing on the issue.

NQQ18.17

Before addressing your question I should say that, in order to answer it, I have to step outside the role which I have tried to take in this interview of an astrological everyman, and answer in terms of my own approach and understanding of astrology. There are many people in the astrological community who would answer differently, many of whom are better-qualified than I am to reply. I hope that some of them will in fact feel moved to respond. Now, to my reply:

You ask for an approach capable of testing astrology. Despite your best efforts to exclude all views or assumptions, this does not get beyond the assumption that astrology should function irrespective of the attitude and motivation of those who try to use it. That this does not fit with the divinatory model of astrology has already been discussed at 18.11-18.12. From that perspective, your question could be rendered as, "Show us a test which is not a test". Unsurprisingly, I do not have an answer which meets your criteria. What I can offer is three suggestions which -- though hardly conclusive in your terms -- seem at least to be relevant, and promising areas for research:

(1) Research into the influence of researchers on findings -- is there any difference in the results obtained from two sets of identical tests which are run (a) by sceptics, (b) by believers in astrology? If (as suggested), the mental attitude of those involved is important, it might be expected that experiments run by believers would be more favourable to astrology than those run by non-believers

(2) Time twins. As noted earlier, research in this area seems as if it should avoid most of the objections to which research into astrology is generally subject. In order to allow astrology to perform under its own terms, studies should focus not only on parallels which are obvious to all (such as time-twins getting married on the same day), but also parallels which exist only in terms of astrological symbolism (for example lead poisoning and promotion could both be expressions of Saturn).

(3) In addition, I believe there is room for anthropological fieldwork: talking to scientists and astrologers to elucidate and clarify the ways in which astrology can be seen; and talking to astrologers (ideally their clients as well, though confidentiality issues make this problematic) to get specific information/advice arrived at from chart readings. This approach has, I think, a part to play in establishing whether astrologers are getting significant-looking results in their daily practice, whether there are identifiable conditions applying in those cases, and what kind of phenomenon astrology might actually be. This, of course, is the approach taken in *Astrology in the Year Zero*, including this interview.

Researchers: Your suggested "promising areas for research" have already been looked at by researchers, but with unpromising results. Tests by believers have not been more positive than those by skeptics, for example in 1987 German astrologer Peter Niehenke obtained only negative results after comparing over 3000 charts with their owner's responses to a 16-page questionnaire, while the results most generally hailed by astrologers are those of arch-skeptic Gauquelin. Time twins (see 10.7) have so far shown no similarities commensurate with astrological claims. Analysis of consultations has found only reasoning errors and nonfalsifiability (see 4.4). Whether or not all this is bad news will depend on our subjective-objective distinction as shown in 4.1.

Might others have better ideas? This was essentially the focus of the \$US5000 prize mentioned in 13.2, which in 1983 challenged astrologers to provide "evidence that the accuracy of chart interpretations cannot be explained by non-astrological factors." The 34 entries totalling 1500 pages from around the world were agreeably diverse, being spread roughly equally over personality, events, and other (e.g. synastry, horary), but 16 did not address the issue and 3 produced only negative results. Of the remaining 15 entries only one was successful, but this was a bogus study entered to counter allegations that the prize was unwinnable because appropriate tests could not be designed and the panel of eight judges was not impartial. For details see *Astrological Journal* 1986 and 1987, most issues.

NQQ18.18

Staying with the topic of reality, what is your view of the idea that, in principle, different views of reality can result in the world being experienced differently?

Researchers: Just proclaiming that different realities exist is no argument in favour of their existence. We need to know exactly what they entail, how we can tell one from another, and whether there are many realities or a single complex one. Nevertheless the idea of alternative realities (or truths or world views or paradigms) is popular among some astrologers on the basis that we need only find the right reality and astrology is proven beyond all possible doubt. Which is like claiming we could fly if only we could find the right reality.

However, although ideas about alternative *perceptions* are straightforward (some people see Joe as a nice guy, others see him as a bully), ideas about alternative *realities* are problematic. Instead of solving problems for astrology they create new ones. For example, how many alternative realities are there? How can we tell if they actually exist? Are they really alternatives or are they just another complexity of everyday reality? Astrologers never tell us.

More to the point, how could these alternatives upset scientific research but not the everyday experience of astrologers? (Recall that if astrologers can study it then so can researchers.) How could failure to choose the right reality upset our testing an

astrologer's claim to see X in charts? A particular reality might be more congruent with astrology (e.g. by involving holism) but it does not mean that astrology is automatically supported, any more than a congruent reality (normal science) supported phrenology. In short, we have no reason to view astrology differently just because an alternative reality might happen to be congruent with it. The idea confuses more than it clarifies.

NQQ18.19

In the Autumn 1997 issue of *Noetic Sciences Review* there is what its editor calls a "spirited debate" on astrology between the US physicist Dr Will Keepin (for) and the US psychologist Professor Roger Walsh (against). One passage that interests me is by Keepin:

If the [Gauquelin findings] can be substantiated, the implications are dumbfounding. Borrowing on Wilber's concepts [Wilber is a US philosopher], astrology can be viewed as a transrational discipline -- epistemologically rooted in "vision-logic" and intuition -- that points toward a vast "holarchy" which not only unifies the physiosphere, biosphere, and noosphere, as Wilber calls for, but does so in a larger celestial context that "transcends but includes" the Gaian system. ... Astrology does not preclude free will. ... Astrological correlations are perhaps the consequence of a unitive cosmic process that unfolds holographically at multiple levels of reality simultaneously. (p.34)

Walsh's response is that "since astrologers don't usually undertake transpersonal transformative disciplines", Keepin's argument begs the question, so "the unreliability and invalidity of traditional astrological readings would still remain." I realise that Keepin's jargon is rather daunting but I think his gist is clear enough. Any comments on what Keepin is saying?

Researchers: Keepin makes a leap of faith from "Gauquelin findings" to "astrology." Fortunately we do not have to deal with Keepin's jargon because Wilber himself, in his *One Taste: The Journals of Ken Wilber* (Shambala 1999), has commented on this passage. Wilber is generally critical of astrology. He confirms that Keepin has used his [Wilbur's] concepts correctly and then comes straight to the point: "The question is, are we working with upward or downward causation?" (p.179). Wilber notes that Keepin has opted for downwards astrology, where higher-order influences at the level of the universe or World Soul filter down to lower-order people. This process inevitably gets degraded by free will, birth time errors, interpretive errors, and so on, so the weak correlations that Gauquelin observed give a misleading picture of the true influence of astrology.

NQQ18.20

It's an interesting perspective. Keepin is saying that an underlying Greater Truth exists but it gets more or less lost in the translation because astrology, the means of translation, is prone to so many complicating factors and errors.

Researchers: But did you notice how an underlying Greater Truth is compatible with all possible situations? Even if astrologers were always wrong, the Greater Truth could still be true. The problem is, we have no idea how to confirm or disconfirm such speculations, and neither do astrologers. The same with Keepin's unifying holarchies and Wilber's World Soul, which is why we prefer to let these two fight it out rather than deal with their speculations:

Wilber notes that astrology could be working upwards rather than downwards. Physical planets could be affecting the physical body directly, with subsequent upward influence on the emotions, mind, and higher levels. So Wilbur asks the question: Is astrology upwards or downwards? He then argues in favour of upwards, because anything downwards is usually very strong. Thus when we will our arm to move, all of it moves, not just 5% of it. Similarly a World Soul that could not downwards override a Caesarian birth or a non-eminent birth is not much of a World Soul. By contrast, anything upwards is usually very weak because the lower has to struggle very hard to decisively affect the higher. This means that upwards astrological influences would not survive unless they were initially really strong. But as far as we know they are so weak as to be effectively non-existent. Or so Wilber argues.

He concludes: "For the average person, who is presumably not getting a huge dose of what was already very weak astral forces, these tepid influences would wash out entirely." In short he is arguing that, contrary to Keepin's view, Gauquelin's weak effects correspond to upwards astrology, not downwards astrology. Keepin 0, Wilber 1.

Our own comment is that neither Keepin nor Wilber have taken into consideration the role of reasoning errors. In our view, what astrologers think they observe corresponds most likely to reasoning errors, not to upwards or downwards astrology. Is that shadowy figure haunting the church at midnight really a ghost, or is it a hallucination, or is it just a coat hanging behind the vestry door? Keepin and Wilber have assumed the former without considering the others. Their views seem to be a good example of how not being careful can lead you astray.

OQQ18.21

Much of this discussion has been about "objective astrology", as you have characterised it. But supposing that every astrologer in the world held up their hands tomorrow and said, "We admit it -- astrology is an entirely subjective art." What then?

Researchers: If their astrology is subjective (no need to be true) and not objective (needs to be true), the research implications are then rather different. Subjective astrology is more like a religion, and researching it would be like researching a religion, where we examine its effects on people rather than its content. Research would focus not on the actual beliefs but on how people use them and are affected by them. For example to study how astrological counselling works we could apply the same procedures used to study ordinary psychological counselling. The problem is that if you believe it is all foolish nonsense then by its own rules you are right. The implication is that subjective astrology should compete with other forms of counselling on an effectiveness scale determined by scientific investigation.

At the same time we should not make the mistake of treating astrology as if astrologers did not matter. For example it is a common experience that clients (unless suffering from a genuine organic condition) prefer astrologers to psychiatrists because they find the former more caring, or more approachable, or more sympathetic to their religious views, and so on, all of which are attributes of the astrologer rather than of astrology. On this basis, whatever our views of astrology, if it encourages people to explore and express humane and spiritual values or to examine the problems of mankind's existence, if it does so in ways that are gentle and respectful or inspiring and uplifting, if in a chaotic world it provides individual retreat or support, if it helps provide a bridge between a person of wisdom and a person in need, then these qualities deserve study as much as any objective claim. Our respect for these qualities should not be diminished by

our rejecting, at the same time, astrology as a source of scientific knowledge. There is more to astrology than being true or false.

19. Sources of research information

NQQ19.1

Most popular works on astrology do not defend it but simply teach how to use it. Anyone who has read only such works might be unaware of the research that has been conducted into astrology. Where can they find the other side of the story?

Researchers: There is a surprisingly large number of books that give the other side of the story. The problem is that they tend to be out of print, or out of date, or unavailable in public libraries. For every such book there are dozens of articles that are generally even harder to find. The main thing is whether the material is up to date, simply because the pace of recent work has been rapid and many previous gaps have now been filled. So rather than nominate specific titles (which is no use if you cannot get them) we have annotated the more important or more recent titles in our list.

[An updated version of this list is included in *Finding Info* under Adroit Utilities on this website. The interview contains no cross-references to this website because it was completed before the website began. Nevertheless most of the website's articles address issues raised in the interview, for example sun signs, reasoning errors, Gauquelin planetary effects, tests, and test results. To date the researchers' arguments and conclusions remain unaffected. -- *Webmaster*]

To give you an idea of what to expect from critical psychologists, other than a scrutiny of the evidence, here are some quotes from Leahey & Leahey's *Psychology's Occult Doubles: Psychology and the Problem of Pseudoscience* (Nelson-Hall 1983), which devotes a dozen pages to astrology: They note that astrology conjures up a "universe where nothing is meaningless. ... This beats the hell (quite literally) out of a meaningless, absurd universe composed solely of atoms and the void" (p.32). "Moreover, even if it [astrology] had no practical use in pursuing wealth and fame, it would still have some of the same improving virtues as philosophy" (p.37). "It is less a pursuit of truth than a pursuit of happiness. ... Believers in astrology want to look into their souls -- but as safely and sanely as the Fourth of July without fireworks. Not for them the dark night of the soul, the assumption of responsibility for all aspects of one's being" (p.41). "For those with only slight religious needs, the astrology column in your newspaper may well be as satisfying as lighting a candle to a saint or saying grace before eating" (p.42).

20. Summing up

OQQ20.1

Why are you still interested in astrology? Why haven't you just given up hope and turned your backs on it?

Researchers: No matter what attitude we might have towards astrology, the experiences of astrologers and their clients are themselves fascinating, whether or not they prove to be astrological. Similarly, something that so many people believe in has to be worthy of study, whether or not the reasons prove to be astrological. Of course, study may not be easy or quick or financially rewarding, but with skill, care and knowledge we can do it.

That is, if we want to -- and surely we should. As for your second question, none of us have vested interests in astrology, so there are no particular results we could "hope" for. If we do turn our backs on astrology it will be because we have finished our researches, not because we have given up hope.

OQQ20.2

So would you recommend anyone to take up astrological research?

Researchers: If the aim is to prove that astrological claims are true, the chance of a positive result strong enough to overturn the present predominantly negative evidence seems remote. There is no case for the investment of research dollars because the competition from other more profitable areas is simply too great. But as mentioned in our previous answer, the picture improves if the aim is no longer to prove astrology. The area remains worthy of study. Even so, students who hope it will open the door to research grants may be disappointed.

OQQ20.3

One last question. For the benefit of readers who may feel overwhelmed, could you provide a summary of your position?

Researchers: Four things. First, astrology is no longer the mystery it used to be. Most of the important questions that can be asked now have answers that are generally consistent.

Second, the claim that astrology works implies that all non-astrological influences leading to the same result have been ruled out. Don't accept the first unless you can be sure of the second. The second is never true of your typical astrology reading.

Third, ask yourself if your kind of astrology needs to be true. If no, you are safe. If yes, you are on shaky ground, and you should ask yourself which alternative is the more likely: (1) That pervasive astrological influences exist which contradict known science even though astrologers spectacularly disagree on the nature of those influences, or (2) that the many known errors in human reasoning of which most astrologers are spectacularly unaware explain astrological beliefs.

Fourth, whatever our views of astrology, they cannot deny its historical importance, nor should they deny our open-mindedness to possible future discoveries in astrology and in extraterrestrial influences.

OQQ20.4

This ends the collective interview. I asked each researcher if they would like to add a personal view. They replied as follows:

Dean: Readers' comments are most welcome. [Send them by email via the form given in *Site philosophy* under Adroit Utilites.] We want to hear from you.

Ertel: Despite our refuting astrology as a source of knowledge we should acknowledge the stimulating effect of the Gauquelins' prolific research. Although some of their purported discoveries have been disconfirmed there remains a core that has withstood my own and other researchers' independent tests. If this core cannot be explained by parental tampering of birth data, we would need some more demanding explanation

which, in my view, might eventually help to improve our understanding of mankind's place in the universe. Such understanding would differ considerably from astrology's historical intuitions. Rather, it would have to be consistent with existing astronomical knowledge and with models of cosmological evolution.

Mather: Astrology has been of major historical significance. The resistance so far to its disproof continues to pose a challenge.

Smit: Despite my changed views of astrology, I still cherish very fond memories of my dealings with my then fellow astrologers.

Kelly: On behalf of the group I would like to thank you for focussing on problematic areas that astrologers themselves tend to ignore. We hope your readers will explore these areas further. We also thank Geoffrey Dean for synthesising our diverse views into a mutually agreeable framework. The end result has been one of satisfaction to all of us.

Postscript December 2003. Garry Phillipson reports that responses to our interview in *Year Zero* have ranged from claiming we were paid \$US400,000 by an evil organisation to hide the truth about astrology, to seeing the validity of our arguments as putting astrologers to shame.

Projection

Why birth charts are like tarot cards

Geoffrey Dean

Abstract -- How can a positive experience of astrology arise from astrological effects that, according to half a century of research, seem not to exist? The answer is a process called *projection*, which underlies the hidden persuaders we call "finding meaning where none exists" and "consider only confirming cases". We can see how projection works by looking at the psychological tarot of the French-Canadian psychotherapist Denise Roussel. The client deals 13 cards and interprets each one according to their personal situation. What they don't see (or don't want to see) is as meaningful as what they do see. The approach works extremely well. Tarot images have a huge richness, so clients can look at almost any card and find it meaningful. Examples are given that show how the same card can evoke quite different responses in different people. Conclusion: it is the client who personalises the cards and gives them meaning, not some mysterious paranormal process. In more than five hundred psychological tarots, there was not a single instance where significant meaning could not be perceived. Susan Blackmore's tests of the tarot confirm that nothing paranormal is involved. Projection alone is sufficient to explain tarot success. The same applies to astrology. Astrological images are as evocative and ambiguous as tarot images (ambiguous both in their interpretation and in the inevitable presence of opposing images elsewhere in the birth chart). The projection process that works so well for the psychological tarot cannot help but work equally well for astrology including horary astrology. Indeed, the psychological tarot deals very well with horary-like questions (many examples are given). Of course to view an astrology reading as an exercise in projection may seem inappropriate for what can be a strong emotional experience. In a sense it hardly matters whether astrology involves truth or other levels of reality or projection or whatever, because for most clients it does its job, and that may be enough. They can proceed in whatever direction the experience suggests, confident that it was meaningful and had changed their lives. On the other hand, for people to deal with problems better, they need to learn a whole series of coping skills. So we need to ask what type of learning takes place during a chart reading, and whether the astrologer is competent to guide such learning. Self-determination is one of the more important components of well-being. Astrology should not be allowed to suggest there are mysterious forces we can tap into to achieve happiness, for that (like heroin) could be devastatingly harmful. Ten references.

Worldwide, hundreds of thousands of clients now living have had a positive experience of serious astrology. Their encounter with an astrologer was helpful. For them, astrology was true in very real and practical ways. Whatever our views of astrology, there can be no doubt that such experiences are genuine. (That the experience for some clients may be less than positive is here of no consequence.)

However, half a century of research has found no evidence for the existence of planetary gods, no evidence that astrological effect sizes are commensurate with astrological claims, no evidence that clients can tell a genuine reading from a counterfeit, and much evidence against such claims. How could a genuine experience arise from something that seems not to exist, at least not according to conventional reality?

Some astrologers, like some theologians, hold that other levels of reality exist, and that the experience of astrology involves these other levels. Astrologers tap into these levels via the birth chart and thus produce genuine truth and a genuine experience. Or so they claim.

We could of course accept their view if the existence of other levels of reality could be demonstrated. It is not enough for astrologers to point out that reality can do strange things at the quantum level, simply because we do not live at the quantum level (when were you last in two places at once?). We need to demonstrate that the wine used in the Catholic Mass, for example, would under appropriate conditions exhibit the properties of the blood of Jesus. It is as simple as that. But so far the existence of other levels of reality is an article of faith associated with a particular belief system. We can regard it as a possibility, but in the absence of evidence we have no right to assume it, and indeed we have an obligation to see how far we can manage without it.

The article *Artifacts in reasoning* on this website under Doing Scientific Research shows how unaided human reasoning is subject to systematic errors we call hidden persuaders. Hidden persuaders explain how an experience-based astrology can seem to work even if (as the evidence suggests) it is actually invalid. The present article shows how the psychological process called *projection* underlies the hidden persuaders we call "finding meaning where none exists" and "consider only confirming cases". It then shows how the process works using examples from the psychological tarot.

Projection and projective tests

Every experience of astrology starts with a need, spoken or unspoken, ranging from simple curiosity about astrology to resolving a personal crisis or religious doubt. And it ends with a chart interpretation. Regardless of the means of interpretation (self, computer, or astrologer), the interpretation is assessed in ways that necessarily involve the client's needs via a process called *projection*.

In psychology *projection* is a defense mechanism where we blame others for our unacceptable feelings and actions (it wasn't me who did it, it was Satan), which in an extreme form results in paranoia. It has led to *projective tests* where we have to respond to vague but neutral pictures or incomplete sentences. The assumption is that we project our private feelings and needs on to the accommodating vagueness and reveal them in our responses. If asked what we see in these inkblots and we see only violence then we might be judged antisocial and in need of treatment. However, what we project may not reflect our enduring personality but our artistic skills or the film we saw last night. The assumption is open to doubt.

Projective tests were once many and varied, and tens of thousands of studies have been made to assess their performance. Two of the most frequently used were the Rorschach Test (inkblots made by spilling ink on paper and folding in half, introduced in 1921), and the Thematic Apperception Test or TAT (vague pictures, introduced in 1938). But those tens of thousands of studies have shown that projective tests have such poor validity and reliability (both typically around 0.3) that today they are generally seen as not

worth bothering with (ironically even 0.3 is well beyond what astrologers can achieve with astrology, see *Effect Sizes* on this website under Doing Scientific Research).



Left. An inkblot similar to a Rorschach inkblot. What do you see in it? A monster with big hands or two bulls fighting or something else? **Right.** One of the TAT pictures. What is happening? To answer, you make up a story that describes the situation and how the people in it are feeling. In each case the stimulus is vague and neutral, so our responses are held to reflect the private needs and feelings that we project on to it.

About the Rorschach, for example, even in 1964 Jensen could say "the 40 years of massive effort which has been lavished on the Rorschach technique [over 3000 published studies by 1964] has proven unfruitful, at least as far as the development of a useful psychological test is concerned. [Therefore] ... it seems not unreasonable to recommend that the Rorschach be altogether abandoned in clinical practice, and that students of clinical psychology not be required to waste their time learning the technique" (Jensen 1964:75). For the record, Jensen's conclusion had no immediate effect, at least not in North America. Thus twelve years later Liebert and Spiegler (1978:153) noted that, despite the poor validity and reliability of projective techniques, they continue to be popular among clinicians, for which "the simplest [explanation] can be summarised in one word: *Tradition!* [their emphasis]. Projective techniques have the longest history and have received the most attention of all personality assessment instruments. It is difficult to discard such a huge investment of time and effort". It could be astrologers speaking.

The tarot

Tarot cards, and a game requiring them, were invented in 15th century Italy. It was originally used for play only, and was not used as a divinatory device until the late 18th century. There are 78 cards. The images on the cards are held to represent the total energies of the universe, to offer opportunities for spiritual development, and when properly approached to open doors into the hidden reaches of the soul. The cards are read in rituals of shuffling and laying out in various patterns where each position has a particular significance. Hundreds of tarot packs have been designed and published, many with disagreements over symbolism and procedures. Esoteric descendants grow increasingly eccentric and tendentious. Some cards undergo radical revisions, each prompting another explanatory book. Like astrology, the tarot has newsletters, seminars, and readings available by telephone. (From Decker 1996 and Guiley 1991).

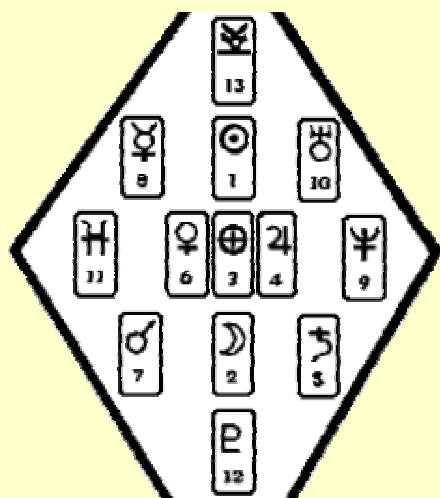
The psychological tarot

In her 1983 book *Le Tarot Psychologique: Miroir de Soi* (The Psychological Tarot: Mirror of Oneself), the Canadian psychotherapist Dr Denise Roussel describes her use of tarot cards in what is essentially a projective technique. Her book is full of pictures of tarot cards and meanings, ways of setting them out to maximise symbolic content, and examples of what clients saw in them during counselling sessions.

Roussel calls her approach the *psychological* tarot as opposed to the *divinatory* tarot. She uses the cards as a counselling tool to help clients express their problems and then find solutions. She stresses that her approach is based on the projections of the client, not the clairvoyance of the reader (p.148), and is

Resolutely psychological, it breaks with the fortune-telling tradition based on clairvoyance. Nevertheless it keeps its best characteristics, where the tarot images are used to illuminate the serious problems for which the client is making a consultation. However the counselling and decisions come from the consultant, supported by the procedures laid down in this guidebook. ... Approached as a psychological tool, the tarot will shed its connections with the Shaman and Gypsy ... In this way technical skill will add to the personal quality already present in this resource (p.12).

Certain tarot packs such as the popular Tarot de Marseille are not suitable because their minor arcana are too monotonous (like modern playing cards) to be evocative. Roussel much prefers the Hurley pack. The client shuffles the pack while thinking of the problem (this stimulates the concentration) and then lays out 13 cards face down in a diamond pattern in the order shown below (p.242).



Interestingly, the 13 positions are named in astrological (mostly planetary) terms as shown by the glyphs. Roussel says this is because "The astrological language is descriptive of observable behaviour. Contrary to psychiatric and psychoanalytic language, it describes personality in a way that does not make clients feel guilty or pathological. This language, in its simplicity and suggestive capacity, covers each and every person" (p.244).

Once the cards are laid out, Roussel tells the client to turn over #1 and "describe it. Say everything that comes to you. By establishing links with your life, we will finally discover... [insert the words shown below]". The client then proceeds to #2, and so on, until all cards have been turned and responded to.

We will finally discover...

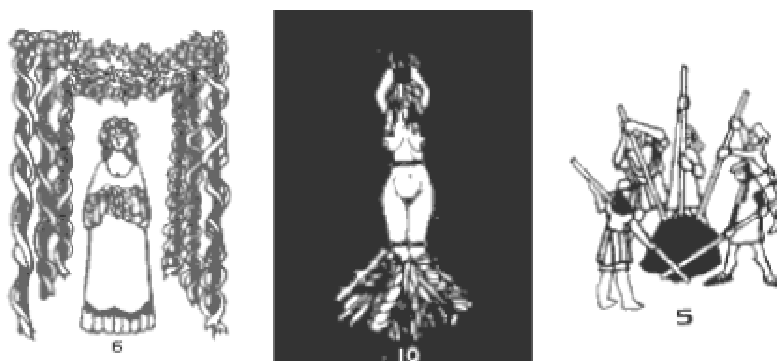
- 1 [Sun] your most important concerns.
- 2 [Moon] something as important as in #1 but more hidden.
- 3 [Earth] your position re #1 and #2. Do you fight, flee, or what?
- 4 [Jupiter] what is beneficial and positive for you.
- 5 [Saturn] what is difficult for you, what you must learn to face.
- 6 [Venus] what for you is a source of love and beauty.
- 7 [Mars] what makes you aggressive and want to act.
- 8 [Mercury] your mind's advice, the solution to your problem.
- 9 [Neptune] your probable future already in your programming.
- 10 [Uranus] changes to counter or realise the future seen in #9.
- 11 [Vesta] factors whose absence led to your problem.
- 12 [Pluto] your future beyond that seen in #9.
- 13 [New Ascendant] forces that will dominate your next cycle.

In other words the client interprets each card according to a particular astrology-based perspective on their personal situation, much as they might do in a birth chart reading. As in a birth chart, the images act as a focus and the creator of new viewpoints. Under the guiding hand of the therapist, the clients see themselves and their problems in a new way. What they don't see can be as meaningful as what they do see. It is here that the psychological tarot provides a useful lesson for astrology.

A lesson for astrology

Unlike astrology, where the birth chart is clearly personal, tarot cards are clearly impersonal -- a point easily demonstrated by their failure to show the same pattern when dealt twice. But the cards seem personal because the tarot symbols are not arbitrary. They were chosen for the responses they evoke, and over the centuries they have gained a huge richness and depth. Consequently almost anyone can look at the cards and find in them a reflection of their own situation. The same with a birth chart. The lesson for astrology is simply this: It is the subject who personalises the otherwise impersonal images and gives them meaning.

For example one of Roussel's clients sees the six of sticks, which shows a girl standing under an arch of flowers (below left). He identifies with the girl, turns the arch into a tunnel, and sees himself as emerging from a tunnel of difficulties that he was experiencing (p.238). But to the objective eye there is nothing in the card to suggest such a situation. The client has been persuaded by the projection process that the cards *know* his situation and can help him improve it. (In a divinatory tarot his *belief* that the cards have this power is a crucial factor, and comes from his trust in the reader and from the centuries-old tradition of the cards themselves, which is impressive to even the most skeptical client.)



Tarot cards from Hurley pack. From left: 6, 10, and 5 of sticks.

This view is confirmed by looking at Roussel's cards with the most responses taken from actual consultations, namely the ten of sticks (5 responses) and the five of sticks (4 responses), see above middle and right. The responses reported by Roussel are as follows:

In the **10 of Sticks** (above, middle)

Suzanne, 35, sees chains everywhere; she must not be a slave to her love life (p.216).

Maurice, 55, sees Joan of Arc. It is him that burns and makes sacrifices (p.235).

Solange, 26, sees risks to her vulnerability, needs to learn martial arts (p.286).

Laurent, estranged from Josie, would like to return her chained body to freedom

(p.290).

Celine sees someone alone, bound, not speaking. Evokes images of her past (p.296).

In the **5 of Sticks** (above, right)

Maurice, 55, sees his employers who ridicule him in front of others. He is despairing (p.234).

Christian, 19, sees himself crushed by the opinions of others. He tries but it hurts (p.249).

Nicole sees collaboration by others as a problem. She may have to start again (p.302).

Raymond sees 4 people seeking something, the 5th (him) thinks of a better way (p.314)

The above examples show how the same card can evoke quite different responses. So it is the subject who personalises the cards and gives them meaning. In other words the whole exercise rests on projection. And projection is a potent process. Thus Roussel comments "After having made more than five hundred psychological tarots, I do not remember a single occasion where a significant and strong bond could not be established between the image presented and the put question" (p.249). Much the same could be said of astrology (and graphology, palmistry, phrenology, tea leaves, etc). Projection certainly works!

Try this for yourself

Although a great diversity of situations can be readily linked to a single image, the reverse process (deciding which image best fits a given situation) is much more difficult. You can try this for yourself. The figure below shows nine rows of tarot images that, according to Roussel, are the best fit to nine TAT themes (pp.116-117). Can you tell which row is which theme?



Nine rows of Hurley tarot images fitted by Roussel to nine TAT themes

The nine TAT themes are basic human needs, namely the need to: **Achieve** and surpass others. **Avoid pain** and suffering. **Be friendly** or aloof. **Be helpful** and protective. **Be independent** and autonomous. **Be organised** and in control. **Comprehend** and understand. **Defend** and justify self. **Seek pleasure** and show off. Which numbered row above best fits each of the nine TAT themes? The answers according to Roussel are given after the references.

What about paranormal influences?

Contrary to the above psychological process, tarot readers generally insist that some paranormal process is involved. This view has been explored by the parapsychologist Susan Blackmore (1986:61-70). At the time of her explorations she had been reading the tarot for eight years and had the reputation of being an excellent tarot reader. "And

time and time again the cards had impressed me. Something interesting was obviously going on. ... the Tarot obviously worked" (p.61). So she set out to test the operation of tarot cards. Her approach has much that is relevant to testing astrology so it is worth quoting in full:

There were many things to control for. In a normal Tarot reading the *querent*, who has come for the readings, sits right in front of the reader and responds to the things the reader says. Obviously the reader can tell immediately the sex, age, and general appearance of the querent and can get a good idea of what kind of person it is. Then she can use all the feedback given. By unconsciously watching the subtle responses to suggestions and any vague comments, the reader can guide her reading toward the right answers. This isn't to say that these processes necessarily play a large role in Tarot readings, only that if you want to find the paranormal element, you have to rule them out. This would mean that the reader and querent had to be separated from each other. On the other hand, that was beginning to destroy the whole feel of doing a Tarot reading. What about the intimate sitting round the table, the ritual shuffling and cutting of the deck, and the slow and thoughtful laying out of the cards? All these had to remain or I felt it wouldn't be a fair test.

Then how was I to assess the outcome to decide whether it was successful or not? Obviously I had to develop some method for statistically evaluating how successful the readings were. There were methods available for doing this. For example, one can get ratings from subjects on how good they think readings are. You can use other people to judge how accurate they are, and you can use the ratings in calculations based on what would be expected by chance. If the scores come out better than chance would predict, and the controls are all good enough, hey presto, you might have psi. I put all this together and concocted a simple experiment to test whether the Tarot cards work normally or paranormally (pp.62-63).

In Blackmore's first experiment she got each of ten students from her parapsychology class to shuffle the cards while thinking about themselves and then to cut them three times with the left hand. An assistant noted the order of the first ten cards and gave the orders without identification to Blackmore, who laid out the corresponding cards and typed up an interpretation. Each student then ranked the ten interpretations in order of accuracy where 1 = best and 10 = worst.

According to chance their own interpretation should show an average rank of 5.5, but if the cards were working paranormally the average rank would be less than this. In fact the average rank was 4 and was statistically significant, but there was a problem -- the students knew each other, so if a reading happened to fit one of them very well, the rest would automatically know it wasn't theirs, which would of course bias the results.

Nothing paranormal in the tarot

In due course Blackmore conducted two more experiments in which this problem was avoided. In both cases the results were at chance level. That is, the subjects were unable to pick their own reading from the others. Despite the excellence of Blackmore's design and the excellence of her tarot readings, there was no evidence that tarot readings had a paranormal component.

Furthermore, the ability of Roussel's clients to see what they want to see, or sometimes don't want to see, shows that we have no need to look beyond projection to explain the outcome of tarot readings, impressive though they can appear (which of course had led Blackmore to believe that something paranormal was happening).

Neher (1990) reports an experiment similar to Blackmore's in which subjects were unable to identify their own tarot readings with better than chance accuracy, and concludes "there is no adequate evidence in support of paranormal processes in [tarot] readings ... However, this does not mean that readings are worthless; ... viewed as tools for the projection and understanding of the content of our own unconscious, readings can be very useful".

Evans (1987:207) comments that Roussel's psychological tarot "is an impressive demonstration, on the one hand, of the mind's *ability* to objectivize its situation by externalizing it, and on the other, of the *need* the mind has to distance itself from its preoccupations, expressing them in this way as a preliminary to understanding and then accepting or resolving them. Projection is yet another example of a process which, though it can take a negative form [as in paranoia] can also serve as a positive and practical function: at critical times in a person's life, it can be an effective way of helping him to tackle the situation".

Of course projection underlies not just the psychological tarot but also the divinatory tarot and any other system of fortune-telling. For example Dobkin (1969) notes that the *naipes*, a card-based fortune-telling system used in Peru and much of Latin America, is essentially a projective technique. It provides "a series of neutral stimuli whose symbols and meanings are shared by both the healer and his patient within a world laden with misfortune ... and magical import". Dobkin shows that at least three misfortune cards will appear 90% of the time in a typical reading, so "the deck is loaded not in the direction of good fortune but rather to highlight stress and conflict", so it is ideal for dealing with problems. Furthermore "The aura of omnipotence the healer is able to maintain ... [contributes] to success in healing."

Astrology as a tarot reading

The psychological tarot rests on its evocative but ambiguous images that match almost any situation (Roussel p.140). The setting should be quiet, comfortable and relaxed, perhaps with candles or flowers. "Prevent intrusions. Protect your door by putting a small sign outside *do not disturb*. Disconnect the telephone, especially at the time of an elaborate tarot" (p.151). The aim is not to tell fortunes but to help clients express their problems and to solve them without necessarily proposing solutions. The reader's job is to help the client through the reading process, to establish links between each card and the client's problem (or the put question), and thus lead the client to propose his own solution. In short, "We have opposed the rules of conduct of a fortune-teller. A psychological tarot puts the client in charge, where understanding the problem leads to its solution" (p.342).

All of which applies equally to an astrology reading. In a birth chart the astrological images are evocative and ambiguous (ambiguous, that is, either in their interpretation or in the inevitable presence of opposing images elsewhere in the chart). The aim is not to tell fortunes but to help clients solve their own problems. And the projection process that works so well for the psychological tarot cannot help but work equally well for astrology including horary astrology. For the psychological tarot deals very well with "the astonishing range of questions that can be put concerning health, relationships, work, choices, actions, etc" (p.153), Indeed, Roussel gives many examples of questions successfully answered by the psychological tarot, all of which would be at home in textbooks of astrology or horary astrology, for example from pp.153-154:

Lisette, 35, will I escape the prison of my hangups?
Fernand, musician, why is my musical expression so difficult?
Claire, wanting to join a political movement, what is best for me?
Louis, ready to make a \$0.25m investment, what will the outcome be?
Jeanne, writer, changing her career, how will it emerge?
Jean, my wife is suicidal, is there anything I can do?
Solange, 32, a divorcee, should I choose solitude or a new change?
Roger, out of control, how can I stop?

Andre, 20, hesitating to wed, do I love Suzanne?
Guy, overwhelmed by three major events at once, how to survive?

If projection alone can deal with such questions, there is clearly no reason to invoke paranormal explanations for horary astrology such as those advanced by Curry and Willis (1999), whose book is reviewed on this website under Book Reviews.

Conclusion

According to the evidence against astrological claims and against other levels of reality, the participants in a chart reading are the victims of something pretending to be something it isn't. And the most likely source of this illusion is projection. Projection is involved in any experience of astrology whether or not the client's interpretation of this experience is correct. Furthermore, projection requires no support from worldviews or belief systems or other levels of reality and is thus the simplest explanation

To view an astrology reading as an exercise in projection may seem to many people inappropriate for what can be a strong emotional experience. It is easy to forget that, for clients, the reading can be of profound importance. In a sense it hardly matters whether it involves truth or other levels of reality or projection or whatever, because for most clients it does its job, and that may be enough. They can proceed in whatever direction the experience suggests, confident that it was meaningful and had changed their lives.

On the other hand, for people to deal with problems better, they need to learn a whole series of coping skills. So we need to ask what type of learning takes place during a chart reading, and whether the astrologer is competent to guide such learning. Therapy is not an *experience* which helps people feel better, gives them more insight, or calms them down. It is a *process* which attempts to show people how to gain more personal responsibility for their thoughts and actions. It teaches them to take risks and to accept that life has no certainties. Self-determination is one of the more important components of well-being. Astrology should not be allowed to suggest there are mysterious forces we can tap into to achieve happiness, for that (like heroin) could be devastatingly harmful.

The many ways in which an astrologer can manipulate a reading and unknowingly help the projection process are vividly described by Jacques Halbronn in his article *Astrologer meets Client: Tricks of the Trade* on this website under Applied Astrology. "Your client needs to feel special. Once his confidence has been obtained by your general attitude, astrology can gradually grow blurred, leaving you to focus on the feedback. Soon you and your client will be closely joined in a dialogue, and astrology can mostly be ignored except as a convenient means of changing the subject."

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Which row best fits which TAT theme?

The answers according to Roussel are:

2. Achieve and surpass others.
7. Avoid pain and suffering.
4. Be friendly or aloof.
5. Be helpful and protective.
1. Be independent and autonomous.
8. Be organised and in control.
9. Comprehend and understand.
6. Defend and justify self.
3. Seek pleasure and show off.

Most people get only two or three hits.

Research results (91 abstracts)

From *Correlation*, *APP*, *AinO*, and *Kosmos*

Abstract -- Contains abstracts of 91 studies, most of them empirical, from four astrological research journals. There are 37 abstracts from *Correlation: Journal of Research into Astrology* 1981-2007 published by the British Astrological Association, 22 from the now defunct *Astro-Psychological Problems* 1982-1995 published by Francoise Gauquelin in France and (in 1989-1990) by the National Council for Geocosmic Research in the USA, 18 from *Astrologie in Onderzoek* [Astrology under Scrutiny] 1986-2003 published by Wout Heukelom in the Netherlands, including its precursors 1977-1985 published by NVWOA the Dutch Society for Scientific Research into Astrology, and 14 from *Kosmos* 1978-1994 published by ISAR, the USA-based International Society for Astrological Research. At the time the first three journals were the world's only peer-review astrological journals devoted to scientific research, whereas *Kosmos* was more an astrological journal than a scientific research journal, hence the fewer abstracts. The abstracts are comprehensive, averaging 270 words (range 80 to 950), and are annotated with later information where necessary. Most are from 1980-2000 when scientific research into astrology was at its peak. There are nine figures. The areas covered are:

- 1 Character** 11 abstracts eg extraversion, harmonics, marriage, murder, Pluto, redheads, terrorism.
- 2 Events** 17 abstracts eg accidents, death, elections, Moon planting, radio, rain, wars, weather.
- 3 Signs** 16 abstracts eg Age of AQ, guessing, patterns, ray theory, self-attribution, sidereal.
- 4 Aspects** 5 abstracts eg graphs of non-uniform occurrence, occurrence in eminent people, validity.
- 5 Houses** 3 abstracts covering house division, rulerships, tests of validity.
- 6 Gauquelin effect** 11 abstracts eg interpretation, replication, unsolved problems, 8000 tests of.
- 7 Tests of astrologers** 12 abstracts eg case histories, death, extraversion, picking own reading.
- 8 Approaches to research** 16 abstracts eg computers, internet, judgement bias, need for science.

These abstracts are the next best thing to being there. They illustrate the topics then being investigated by astrologers and others, the immense labour that could be involved, the results that were invariably incommensurate with astrological claims, and the then intense scientific interest in astrology that (in view of the negative results) will most likely never arise again.

The following abstracts are limited to the journals *Correlation*, *APP*, *AinO*, and *Kosmos* and therefore do not cover research reported in orthodox journals or in the few other

astrological research journals such as the French *Les Cahiers du RAMS* founded 1993 (abstracts in English are at www.ramsfr.org) and the American Federation of Astrologers *Journal of Research* founded 1982 (although by 1995 only seven volumes had been published). Nevertheless they illustrate the wide range of topics being investigated by astrologers and others. Overviews of all studies (not just those abstracted here) relevant to Sun sign self-attribution, tests of astrologers and clients, lunar effects, and Gauquelin's tests of signs, aspects and planets, are given in *Meta-analyses* on this website under Doing Scientific Research.

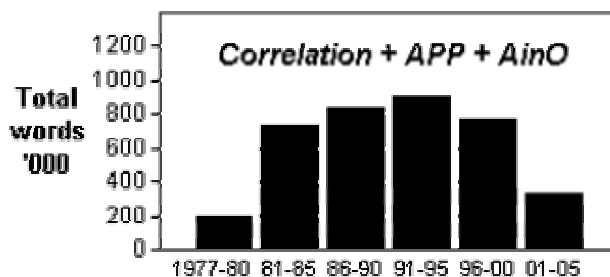
Within each category the abstracts are in date order. Where the original abstracts are inadequate or non-existent (which is most of them) they have been expanded, often very considerably. Average length is 270 words, range 80 to 950. Occasional notes in [] provide later information where relevant such as failure to replicate. The source material is shown in the picture below.



Source material. **Top:** APP 1982-1995 including APP-NCGR, and AinO and precursors 1977-2003. **Bottom:** Correlation 1981-2007 and Kosmos 1978-1995. Altogether about 4.6 million words (Correlation 37%, APP 13%, AinO 30%, Kosmos 20%) occupying 90 cm of shelf space.

Rise and fall of interest in research

Scientific research into astrology became popular during the 1980s due to the advent of personal computers in the late 1970s, which removed the calculation barrier, and the publication in 1977 of *Recent Advances in Natal Astrology*, the first fully-referenced critical review of empirical findings. Within five years there were the three peer-review journals *AinO*, *Correlation* and *APP* that subsequently led the field. But all was not well. Results were invariably incommensurate with astrological claims, and since the 1990s interest has slowly declined, see the plot below. The period's intense scientific interest in astrology will most likely never arise again.



Combined word counts for the three peer-review journals plotted every five years. Total is about 3.7 million words, of which 46% is from *Correlation*, 16% from *APP*, and 38% from *AinO* and its precursors. Some of the decrease in 1996-2000 is due to the demise of *APP* in 1995.

1. Astrology and Character (11 abstracts, see also Signs)

Research on Astrological Factors Between Married Couples

Thomas Shanks *APP* 1983, 2.1, 12-16. Reprinted in *Kosmos* 1985, 14.1, 16-26 but wrongly attributed to Marie Scheider, see 14.2, 14. In 1952 Carl Jung compared astrological factors between 483 married couples divided into three groups. There was a tendency to favour Moon conjunct Moon, which was in agreement with tradition, but it did not replicate, and the underlying statistics (which assumed uniform distributions) were inadequate. The author therefore repeated Jung's experiment with 960 married couples chosen at random from Gauquelin's first heredity experiment, and compared the observed frequencies of conjunctions and oppositions (orb 10 degrees) between all possible pairings of Sun, Moon, Ascendant and MC, with those for the same couples in 199 sets of randomised pairings. According to tradition these factors should be prominent between married couples. But none reached the same prominence as in Jung's results, and none were even marginally significant. There was a fairly uniform distribution of significance levels across the entire range from 0 to 1, which is precisely what would be expected if there were no astrological effects. Conclusion: the frequency of these factors does not differ between married couples and unmarried randomly matched couples.

A Computer Study of Relationships

Gail Guttman *Kosmos* 1985, 14.2, 2-8. Relationship astrology was tested on 106 long-term couples and 145 short-term couples (lasting less than ten years) by a computer program that tallied 17 planets and asteroids, 4 angles (Ascendant, MC, Anti-vertex, East Point), and 16 aspects (all multiples of 30 and 45 degrees, orb 1-3 degrees), making a total of 3360 possible factors. The same couples were mixed and rematched to form a control group. In decreasing order of statistical significance the top seven male-female contacts for the long-term couples were Moon-Moon's mean south node, East Point-Ascendant, Chiron-Saturn, Moon-Moon's true north node, Pluto-MC, Ascendant-Pluto, and Ascendant-Juno. For the short-term couples they were Moon's mean south node-Uranus, Pluto-Chiron, MC-Mars, Ceres-Vesta, Jupiter-Antivertex, Chiron-Pluto, and Neptune-East Point. Of the top 15 contacts none replicated between the two groups, and traditional contacts such as Sun-Moon and Venus-Mars were absent. Obviously there is much here that needs further study. [The calculation of significance is unclear. Since none of the top 15 (somewhat bizarre) contacts replicated, and none were predicted in advance of testing, the results provide no evidence for astrological effects in relationships. All that can be concluded is that in any list of ranked data, even random data, some will come top.]

Sixty-Eight Birth Charts of Terrorists

Luigi Squitieri *APP* 1985, 3.2, 16-21. Definite statistical conclusions can hardly be drawn from a study of 68 cases only. But the author's clear starting hypotheses (eg low frequency of Cancer and 4th house, high frequency of 11th and 12th houses, angular Mars, Uranus and Neptune) are so strongly contradicted by the outcomes that more cases would probably not change the present conclusions: tradition is not confirmed in the case of terrorism. Includes birth data.

Can Astrology Predict E and N? 1: Individual factors

Geoffrey Dean *Correlation* 1985, 5.1, 3-17. To test whether astrology can predict E (extraversion) and N (emotionality) in ordinary people, subjects with extreme scores on the Eysenck Personality Inventory (EPI) were selected from 1198 subjects mostly from the southern hemisphere, all of whom had known birth times. The result was two replicate sets each with 54 extreme subjects for each of E+, E-, N+ and N-. The average pair of opposite extremes was roughly equivalent to the two most extreme persons in a

random sample of 15 adults. The following factors were tested: tropical signs, decans, elements, sidereal signs, aspects, harmonics, hemisphere, Gauquelin plus zones and angularity, both individually and in combination. The latter excluded sidereal signs but included midpoints and Placidus houses. If astrology predicts that factor X indicates, say, E+, then the frequency of X should be higher in extreme E+ subjects than in extreme E- subjects. The results of 132 such tests, and a multiple discriminant analysis, showed that no factor performed consistently above chance level.

The Meaning of Pluto Part 1: Experiment and primary analysis

Terry Dwyer *Correlation* 1987, 7.2, 9-13. A sample of 175 mixed adults completed a 36-item questionnaire addressed to likely Pluto meanings, namely intensification, exaggeration, social power, transformation, and suppression. Answers were on a 7-point scale from 0 disagree to 6 agree. A comparison with the natal charts (divided into those with the relevant Pluto aspects and those without) found no evidence to support any of these meanings. Combining into hard aspects vs soft, or close aspects vs wide, or weighting by aspect strength, produced no improvement. The results were suggestive of no meaningful trend whatever, which does not deny that Pluto may have meanings other than those tested.

The Meaning of Pluto Part 2: Further analyses of Dwyer's data

Geoffrey Dean and Rudolf Smit *Correlation* 1987, 7.2, 14-21. Dwyer's study is one of a mere handful of attempts in the history of astrology to investigate a planetary meaning by direct experiment. Despite his negative results, his sample size was sufficient to detect any useful Pluto effect, provided of course that Pluto's real meanings are among those addressed by his questionnaire. On the other hand, it is possible that his negative results arose because single questions are generally poor measures of what they are supposed to measure, which can be remedied by adding together the answers to questions that relate to the same thing. Our further analysis puts this point to the test.

Factor analysis of the correlations between responses to Dwyer's 30 questions revealed three underlying themes, namely Power (intense, needs to achieve), Suppression (reserved, hides feelings), and Transformation (does own thing, prone to changes and upheavals). The three themes, each based on the seven questions most strongly correlated with them, were then compared with Pluto strength measured in three ways, namely (1) strength by aspect weighted by planet and orb, for aspects that were multiples of 45, 30 and 7.5 degrees, (2) strength by Pluto angularity based on orb, and (3) a measure obtained by multiplying (1) by (2), which approximates what an astrologer does when interpreting a chart. The number of significant correlations between theme and Pluto strength were very close to those expected by chance. No aspect multiple was better than another. Approach (3) showed no improvement over (1) or (2), nor did charts with birth times (N=121) over those without. Results using random numbers were just as good as those using astrology. There was no hint that Pluto by aspect or angularity means Power, Suppression or Transformation. Our improved approach was more than adequate to detect a worthwhile effect but it merely confirmed Dwyer's negative findings. In the hope that others could do better, we offer all data and computer programs free of charge to anyone who is interested. [During twenty years there have been no takers]

More about Uranus and Murderers

Lorna Houston, Francoise Gauquelin, Arno Muller, and Mike O'Neill *APP* 1988, 6.3, 23-25. Lorna Houston having obtained a significant frequency of Uranus retrograde positions in the birth charts of 132 murderers (see *APP* 6.2) she checks on a new sample of 491

murderers to see whether this result is replicable. Her new result is not significant but is in the same direction. So does it confirm the first outcome? Two readers of *APP* (Muller and O'Neill), one of them a university professor, tell us how astronomical and demographic effects could explain the outcomes. This will have to be further investigated. [Follow-up checks on the original data appeared in *APP-NCGR* 1989, 7.2, 27-31 between Pottenger, Muller and O'Neill, but demographic effects proved to be too strong to allow a clear conclusion. Inexplicably an accompanying study 23-25 by Lorna Houston using a new sample of 110 murderers from the Canadian Centre for Justice Statistics did not report the occurrence of retrograde Uranus.]

Mercury stations

Frank Jakubowsky *Kosmos* 1994, 23.1, 38-42. Mercury retrograde has a bad reputation among astrologers, being held to indicate weakness or confusion in areas ruled by Mercury. To test this idea all entries in *Who's Who in US Writers, Editors & Poets 1986-1987* with birth dates in 1900-1949 were analysed, a total of 4997 births. Mercury was retrograde (including the subsequent station) for 1000 births vs 955 expected, a surplus of about 5%, which indicates that, contrary to its reputation, a natal retrograde Mercury is an advantage for writers. However, the distribution of births was uneven over the 50-year period, so the theoretical expectancies could be wrong. The study needs to be replicated. [By chi-squared test the surplus is not significant, $p = 0.11$]

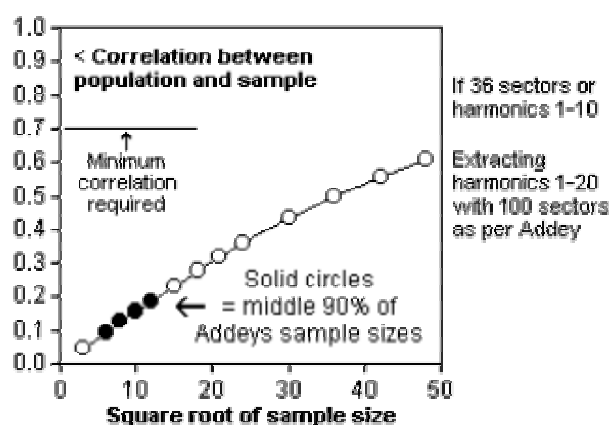
The Mars-Redhead Dilemma

Nick Kollerstrom *Correlation* 1997, 16.1, 19-21. An early study found that redheads tend to be born with Mars within 30 degrees of the natal ascendant at above chance level. Did the Mars-redhead effect replicate? Much controversy was generated by this highly original project, coordinated by Hill & Thompson in the USA. The initial pilot study was gathered in March 1987, then by July of that year another 400 US redheads had been gathered to test the hypothesis. More recently a further 479 were gathered in the USA and Canada, plus 373 UK redheads. In addition there were 100 UK redheads gathered long ago by John Addey, where the birth data are lost and only the Mars equal-house frequencies remain. The results seem to show what could be called beginner's luck, with the percentage excess of Mars in key sectors decreasing with each subsequent sample. There was also a suggestion of a Mars-setting deficit, but this did not show up too well in the replication either.

John Addey's Dream: Planetary Harmonics and Character Traits

Geoffrey Dean *Correlation* 1997, 16.2, 10-39. According to John Addey, harmonic analysis of the Gauquelin trait data reveals the existence of planetary harmonics in the diurnal circle beyond the simple emphasis on key sectors. For example, consider Mars as it moves around the diurnal circle. If the full circle = 12 sectors, then the 3rd harmonic interval = $12/3$ or 4 consecutive sectors, and the 4th harmonic interval = $12/4$ or 3 consecutive sectors. Comparison with the Gauquelin trait data for sports champions seemed to show that those born with Mars in 3rd harmonic intervals tended to be modest while those born with Mars in 4th harmonic intervals tended to be aggressive. Higher harmonics seemed just as meaningful, for example sports champions born with Mars in 15th harmonic intervals tended to be steadfast. Such results became central to Addey's dream of a unified astrology based on harmonics. Earlier findings had so convinced him that in *Astrology Reborn* (1971) he was able to make his now-famous quote about the future of astrology: "From being an outcast from the fraternity of science, it seems destined to assume an almost central role in scientific thought ... its impact will be felt in the next twenty years" (pages 3, 23).

But both Addey's data and procedures are problematic. First, the trait data were not extracted blind and can be shown to contain bias due to Gauquelin's knowledge of planetary positions during the extraction process. Second, Gauquelin's own statistical tests were faulty because they were based on the number of traits when they should have been based on the number of subjects, leading to conclusions that have led everyone astray. Third, the samples were small sub-samples for which Gauquelin had extracted trait data, not his original large samples of births, yet the sampling requirements in harmonic analysis are more stringent than in other types of analysis. My computer simulations show that Addey's sample sizes were too small for his results to be meaningful. That is, the sampling errors across the 100 sectors Addey used for extracting harmonics 1-20 were always high enough to make the obtained harmonics unlike those in the original population. (My analysis simulated Addey taking a sample of births and then analysing their distribution to see what harmonics it contained, but unlike the samples available to him, mine could be of any size and the correct answer was known in advance.) The figure below shows the correlation between synthetic populations containing harmonics 1-20 of equal amplitude and random phase angles, and samples of different sizes picked at random and distributed over 100 sectors. The correlation is a measure of the sample's adequacy for harmonic analysis and should exceed about 0.7 if the results are to be meaningful. Each point is the mean of 100,000 replications.



The correlations between population and sample attained by Addey's sample sizes (median = 65) are mostly negligible, showing that sampling errors have made Addey's samples too unlike the population to allow a meaningful harmonic analysis. If the number of sectors is reduced from 100 to 36, the sampling errors per sector are reduced, which increases the correlations as shown by the dotted line. Approximately the same increase is obtained if the harmonics extracted are reduced from 1-20 to 1-10.

Other weaknesses are ineffective criteria for selecting amplitudes (which led to amplitudes that were mostly noise being accepted as meaningful), non-independence of traits, sector bias (which created spurious odd-numbered harmonics), incorrect expectancies, non-uniform expectancies, and subjective follow up. Collectively these weaknesses are fatal. Despite Addey's inspiring vision and astonishing labour, it seems that most of his results can reasonably be attributed to artifacts and the rest to Gauquelin bias in trait extraction. The sad but safest conclusion is that planetary harmonics do not exist beyond the emphasis on key sectors. The same procedural weaknesses apply to Addey's harmonic work in general, which leaves his harmonic theory of astrology with no secure basis. His dream remains so far only a dream.

Meaningful Coincidences: Parallels between Phrenology and Astrology

Geoffrey Dean *Correlation* 1998, 17.1, 9-40. Phrenology (a system of reading character

from brain development as shown by head shape) is now effectively dead but in the 1830s it was more popular than astrology is today. The story of phrenology is rich in lessons for astrology. But its literature is so huge, so clogged with side issues (of philosophy, of politics, of religion, of morality, of society in general), so often tedious to read (wordiness being the style of the day), and so difficult to find except in specialised libraries, that these lessons have gone largely unrecognised. Like astrology, phrenology encourages you to assess yourself and act on its findings to achieve harmony with the world. Like astrology, it flourished because practitioners and clients saw that it worked. It was claimed to be "so plainly demonstrated that the non-acceptance of phrenology is next to impossible". But the experience-based claims of phrenologists were completely wrong. We now know that a certain head shape cannot possibly mean what it is supposed to mean, even though the underlying philosophy of "know thyself" has undeniable appeal. Millions of people, unaware of the many ways their judgements could be led astray, had been seduced by phrenology's appeal into believing untruths. Could the same apply to the experience-based claims of astrologers? To answer this question I look at phrenology's social context, history, literature, testimonials, stock objections, and experimental tests, all of which have parallels in astrology. Until astrologers can demonstrate otherwise, the answer would seem to be yes. Whether the price paid for believing untruths is worth whatever satisfaction it brings, including keeping people from worse mischiefs, is a topic we might like to ponder.

2. Astrology and Events (17 abstracts, see also Signs)

A Lunar Sidereal Rhythm in Crop Yield and its Phasing

Nicholas Kollerstrom *Correlation* 1981, 1.1, 44-53. All Moon-gardening calendars agree that some kind of Moon sign effect at the time of sowing is important for maximising yield, but they do not agree on which zodiac should be used (tropical or sidereal) or on the zodiac signs which produce the best effect. Here experimental work will be used to examine these different possibilities. The crop yields vs Moon's position at sowing in experiments performed by Colin Bishop in Wales in 1976, 1977 and 1978 show that 27.3 day sidereal rhythms may be present. A wave-harmonic approach to such rhythms in three years of sowing data showed that lettuce maximum yield occurred in sidereal Water signs, and radish maximum yield occurred in sidereal Earth signs, the mean increase in yield being around 30-40%. Moon phase had no effect. The results can be criticised on account of the consistent small yields due to poor soil and sometimes drought conditions, and it is hoped that similar experiments will be performed under better conditions.

Bradley's Jupiter Pluvius Rainfall Study

Colin James III *Correlation* 1981, 1.2, 19-23. One of Jupiter's classical names is Jupiter Pluvius (Jupiter the Rainmaker). In the late 1950s the US astrologer Donald Bradley (1925-1974) found that heavy rainfall tended to occur when Jupiter was conjunct, square or opposite the local meridian at the moment of the Moon's entry into sidereal Capricorn prior to the rainfall. Bradley suggested that this supported an effect of both Jupiter Pluvius and a sidereal zodiac. Other than the work of John Nelson in radio disturbance [see next abstract], only Bradley's study provides hard geophysical support for an astrological theory. Previously unpublished data has aided my analysis of Bradley's Jupiter-rainfall study, and the results show that Bradley's findings are spurious due to the Moon's sidereal period being nearly commensurable with the Earth's rotation. The average time between the Moon's successive entries into sidereal Capricorn is 27.32 days, during which time the Earth rotates 27 full circles plus 89 degrees, while Jupiter moves about 2 degrees. The difference is close to 90 degrees, and it is this,

compounded by Bradley's use of a wide moving total, that explains his findings. Consequently they provide no support for either a connection between Jupiter and rainfall or the existence of sidereal effects.

Shortwave Radio Propagation: Analysis of the Forecasts of John Nelson

Geoffrey Dean *Correlation* 1983, 3.1, 4-37. This study examines Nelson's claims that heliocentric planetary aspects correlate with shortwave radio quality (hard aspects make it worse) and that they can be used to improve the accuracy of forecasts. Computer analysis of 2006 half-day or quarter-day quality forecasts (based on planetary positions) made by Nelson for RCA during 1964-5, and 4960 daily forecasts made for *73 Magazine* during 1966-82, failed to find support for his claims. There was no significant correlation between forecast and outcome (mean $r = 0.01$), and the outcome on days forecast as poor was not significantly different from that on days forecast as good. Nelson's forecasts performed considerably worse than US Government forecasts and a control forecast based on the quality one solar rotation before. The accuracy of 105 forecasts of solar flares was not significantly better than chance. To increase the sensitivity of the analysis a daily planetary index based on Nelson's rules was compared with observed radio qualities and geomagnetic indices. No planetary effect was detectable, nor was the alleged effect of nodes and perihelia. In disagreement with Nelson's claims, hard aspects and associated harmonic aspects were not consistently more numerous on the most disturbed 3% of days during 1969-80 than on the least disturbed 3% of days. In particular the 12 days with the most adverse planetary configurations during 25 years were not significantly different from those with the least adverse. Nelson's claims are incompatible with the physical processes involved and are shown to rest upon three things: (1) A statistical artifact due to the close but unequal spacing of aspect days, which means that small differences from radio days are more likely than large differences. (2) A calculation artifact due to counting forecasts as hits if they are within one unit of the observed quality, yet around 90% of all observed qualities fall within a range of one unit, so a hit rate of 90% (his claimed accuracy rate) is unremarkable. (3) Selection of data to fit the case. The results do not deny that the planets could affect the Sun in other ways.

Planetary Motions and the Occurrence of Earthquakes

Scott G Vail *Kosmos* 1985, 14.1, 2-10. Charts of the largest earthquake disasters seem to support every conceivable astrological factor yet no two are much alike. So it is obvious that statistical methods are necessary. The charts of 238 major earthquakes of magnitude 7.5 or more during 1930-1980 revealed no particular sign, house, or aspect preferences except (1) Saturn tended to cluster around the MC (52 cases vs 39 expected), and (2) for heliocentric planetary pairs excluding Uranus-Pluto there were 9% more applying (getting closer to exactness) multiple-of-45-degree aspects of orb 4 degrees than expected (assuming uniform planetary motion) and 8% fewer separating aspects than expected. These analyses were not subjected to statistical tests nor were there any controls, so the results are tentative. In any case, they do not indicate where earthquakes may occur. [No hypotheses were framed in advance, so the results may illustrate only after-the-event selection from many possibilities.]

Election to Government Ministries and Jupiter Transits

Grazia Bordoni, Ciro Discepolo, Vincent Grilli *APP* 1986, 4.3, 22-23. Statistical investigation of 834 elections of politicians to the Italian Government were carefully conducted by a group of astrologers from the South of Italy. Bias was avoided by taking *all* the representatives of all the 44 successive governments of the Italian Republic from the date of its creation to the date of our study. The hypothesis (consistent with

tradition) was that there would be more transits (conjunctions and trines) by Jupiter to the natal Sun, Moon, Ascendant and MC on the day of their election than in a control sample of the same subjects with election dates randomly generated within three years (before or after) of the actual election date. The average frequency of Jupiter transits was slightly higher in the experimental group (0.399 vs 0.355) but the difference by t-test was not significant ($p = 0.14$). We had also planned to test transits by Venus, Saturn, Uranus, Neptune and Pluto, but the disappointing results for Jupiter (traditionally the most relevant planet) did not encourage us to do so. They require too much work.

Transits and Abduction of Children

David Peter Valentiner 1987, *APP* 5.3, 27-31. The author notes that empirical studies of transits have been generally negative. For example Ulrich Mees in *APP* 2.3 examined Sun and Moon transits (including the first twenty harmonic aspects) to natal Sun and Moon in 3045 deaths but found nothing significant. Nevertheless transits hold a prominent place in astrology. So the author attempts a more thorough conclusion by examining all hard transits (conjunction, square, opposition, orb one degree) between Mars and Saturn for 431 cases of child abduction supplied by the US National Center for Missing and Exploited Children. According to various textbooks, Mars-Saturn symbolism is consistent with abduction. For example in her 1976 book *Saturn: A New Look at an Old Devil* Liz Greene says "Actual physical maltreatment in childhood sometimes occurs with Mars-Saturn aspects" (page 116). The hypothesis was that Mars-Saturn and Saturn-Mars transits would be found more frequently than expected in the charts of these children on the day they were last seen. Expected frequencies were calculated by mixing each birth date with the abduction date of the next 100 records. The observed total (25 occurrences) was slightly higher than the expected total (19.3 occurrences), but not significantly so. The remaining 406 abductions (94%) occurred despite having no transit. The most significant transit was Mars conjunct Saturn, but even this was only marginally significant ($p=0.10$). Conclusion: the hypothesis is not supported. Alternative explanations, such as astronomical biases or chance fluctuations, cannot be safely dismissed.

Traffic Accident Victims and Pluto squares

Francoise Gauquelin *APP* 1988, 6.1, 26-27. In a 1985 *APP* article Dr Kuypers studied a sample of 72 traffic accident victims and found a general excess of squares in keeping with tradition. In particular 11 had Ascendant-Pluto squares (orb 7.5 degrees) vs 6 expected ($p = 0.05$). But some of the cases had been taken from the astrological literature, where selective publication in favour of tradition is normal, thus introducing a positive bias. A check against a new sample of 30 traffic accident victims taken mainly from newspapers did not show the same general excess of squares, but Ascendant-Pluto was still high (6 vs 2.5 expected, almost significant). A computerised check of the expectancies showed that they were slightly low, which reduced the observed significance, but Dr Kuypers can still argue that Ascendant-Pluto squares have held their promise. But for a skeptic, with the failure of other squares to give replicable results, and the precarious significance, the whole outcome has no convincing power that accidents and squares in the natal chart have any connection.

Horary Astrology is Unreliable

Martin Boot *AinO* 1989, 3.2, 2-12. In *AinO* 2.2 the author showed that, when applied by precise textbook rules, precise predictions by horary astrology are not possible. In *AinO* 3.2 Corry Sietsma argued that Boot was mistaken. She reads in his two example charts the exact events in question. In the present article Sietsma's reasoning is rebutted. She is not correctly applying the rules of horary astrology, which is why she can read

anything she likes in the two charts. Thus Sietsma joins the multitude of astrologers who afterwards fit the chart to the event. [For a follow-up see the 1996 abstract under Tests of Astrologers]

Planetary Aspects at 500 Violent Deaths

Geert Thomassen and H.J.van Roekel *AinO* 1990, 5.2, 24-29, with a critique by Bert Terpstra *AinO* 1991, 6.1, 22-28. This abstract combines both. Thomassen collected birth and death dates from newspapers and graveyards for 500 persons who had died a violent death, usually in a traffic accident. By computer Van Roekel counted aspects between natal (at noon) and transitting (at death) planets except Moon. Harmonious aspects were defined as 30, 60, 120, 180 degrees, inharmonious as 0, 45, 90, 150 degrees. (Tradition would swap 0 and 180, but the allocation was based on earlier research; 135 was omitted to equalise the expected aspect numbers.) The total number of observed aspects was as follows:

0-1	1-2	2-3	Orb
1291	1285	1279	Inharmonious aspects
1170	1265	1243	Harmonious aspects
121	20	36	Difference

The differences are very small but in the right direction. However, contrary to tradition, the numbers do not decrease with increasing orb, and the outer planets Jupiter through Pluto showed the least effect. Conclusion: the outcome is unclear, but if there is an effect it is very small. The study needs to be repeated with clearer hypotheses, but it will not be easy to collect another sample in the short term.

1500 cases of death

Geert Thomassen and H.J.van Roekel *AinO* 1991, 6.1, 58. Thomassen visited several cemeteries and recorded a total of 1500 birth dates and their death dates. By computer Van Roekel counted aspects as in the previous abstract. According to tradition there should be significantly more inharmonious aspects at death than harmonious aspects. For three replicate groups of N=500 the transitting planets Jupiter through Pluto showed no clear effect. The rest (Sun, Mercury, Venus, Mars) showed a small excess of harmonious vs inharmonious aspects (average 721 vs 681), which was in the opposite direction to that predicted even though omitting Jupiter through Pluto after their results were known should have inflated any effect. The counts were also little different from the counts for three control groups of the same birth dates with random death dates (average 722 vs 706). Increasing the orb to two degrees did not affect the outcome. Conclusion: contrary to traditional claims there is no significant correlation between transits and death.

Birth Time Reconstruction

Bert Terpstra *AinO* 1992, 7.1, 7-9 and 1991, 6.1, 55-58 and 1990, 5.2, 20-23 and 1990, 5.1, 19-29. [This study of chart rectification took the author, an expert computer programmer, several years to complete and is perhaps the most meticulous ever conducted.] In four articles the author describes a computerised method for reconstructing the correct birth time based on the traditional claim that no important event in life occurs unless a progression involving a chart angle (ie Ascendant or MC) is in force at the time. It is hard to imagine that a newly born child could record the movement of planets and angles in the hours after birth and then replay them in a way that would indicate external events. Nevertheless if progressions do work then the implications are tremendous, perhaps requiring the acceptance of analogy as an active

principle, and it would pose a huge challenge to science. Not all primary and secondary progressions can be used in birth time reconstruction, only those that coincide with an event for one birth time and not another. This is true for primary progressions of the angles to natal planets, and for secondary progressions of planets to natal angles.

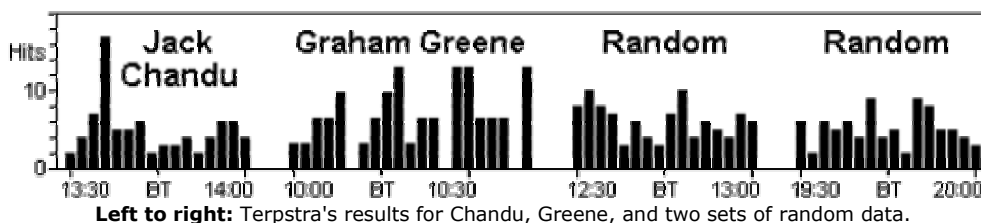
The starting point is (1) the subject's birth chart, (2) birth times at intervals of two minutes during say a quarter hour either side of the nominal birth time, and (3) a number of major events such as accidents. For the first event and each birth time the natal planets and angles are progressed at the rate to be tested (eg 1 day = 1 year in life, as here), and the date corresponding to each exact aspect to or from the angles is calculated for each birthtime. Contacts between angles are not counted. Within each 2-minute interval the number of hits between aspects and event are counted. To be a hit the aspect has to involve the right angle (Ascendant for physical events such as accidents, MC for social events such as marriage), the right aspect (hard for difficult events such as accidents, soft for easy events such as business success), and the right planet as defined by tradition (eg Jupiter for a promotion). If the same aspects fits several events occurring close together, only one hit is counted to avoid biasing the results -- the aim is to count aspects that match events, not events that match aspects. The small size of the interval (only two minutes) requires very high accuracy in the computed positions, which were computed with full astronomical accuracy, ie within 0.1 second of arc for the lights, angles and inner planets, and within 1 second of arc for the rest.

Finally the number of hits are plotted as a histogram vs birth time. Peaks in this plot identify the times that provide the best fit between chart and events. According to the traditional claim there should be a single pronounced peak at the true astrological birth time that accounts for all significant events. But this was never observed. For example, in his book on birth time reconstruction *Horoscoopcorrectie in der praktijk* (Ankh-Hermes, Deventer, 1985), the eminent Dutch astrologer Jack Chandu gives a detailed list of 179 dated events in his life, of which 17 are found in a pronounced peak in the histogram (see plot below), but not at the time of the first cry recorded to the second by Chandu's astrologer father using a watch synchronised to the radio time signal. (Chandu writes "I possess twelve birth times of myself, corrected to the second by well-known astrologers, none of which agree with each other. They [also] deviate many minutes from my actual birth time.") [Such disagreement is usual. For example various astrologers have worked backwards from the life events of Ronald Reagan to produce over 30 different birth times spanning 15 hours, each one said to be accurate by the astrologer concerned.]

Also, if progressions indicate events, important events should feature more prominently than unimportant events. To allow the author to make this check, Chandu selected 41 of his events as being the most important. But no peak contained all 41 events even when the method was applied to all 24 hours of the birth date, so the traditional claim (that no important event in life occurs unless a progression involving a chart angle is in force at the time) is wrong. Also only 4 of the 17 events in the peak were important vs $17 \times 41/179 = 3.9$ expected by chance, which implies that the peak is meaningless because it does not reflect importance. So there is no reason to assume it has anything to do with Chandu's birth time.

Furthermore, very little bias is needed in the selection of events to produce a peak in the histogram. For example if Chandu had included only 12 events in his list of 179 just because they fitted his progressions, it would have been enough to raise the average

peak height of 5 hits (measured over 24 hours) to the 17 observed. So as a check the method was applied to the life of the author Graham Greene, for which 251 accurately dated events are listed in his biography *The Life of Graham Greene* by Norman Sherry, because from the biography it seems that neither Greene nor Sherry had ever been interested in astrology. After discarding 64 trivial events from the 251, no single peak was found, and no peak was observed at the 10:20 am birth time recorded by his mother. Weighting the important events made no difference, nor did changing the rules for selecting hits. Tests with other subjects gave similar results. Worse, charts and events generated at random gave peaks (which are necessarily meaningless) just like real data, see the plots below.



Conclusion: birth-time reconstruction based on progressions does not work in general, and consequently those progressions themselves do not work.

A Prediction based on Uranus-Neptune Conjunctions

Sietze van der Tuin *AinO* 1992, 7.2, 42-45. Uranus is said to indicate change and revolution. Neptune is said to indicate fantasy and idealism. A conjunction occurred in 1820, characterised by technological changes (eg industrial revolution) and political upheavals (eg death of Napoleon), which matches Uranus and Neptune taken together. In 1819 Mars was in opposition to the Uranus-Neptune conjunction, and in the same year panic broke out in financial markets leading to the worst economic depression of the 19th century. We might therefore predict a similar situation for the next conjunction, which occurred in 1990, and for 1992 when Mars is again in opposition. And indeed there was panic and despondency in the money markets in 1992. **Critique** by Bert Terpstra on page 45: In fact there was only currency speculation in 1992, where speculators exploited EEC rules that force central banks to purchase any EEC currency that is threatened. The speculators made billions in profits, so they were anything but despondent. In any case, currency speculation and depression are not the same.

Saturn-Uranus and the Weather

Marvin V Layman *Kosmos* 1992, 21.3, 4-8. During 1975-1978 I followed weather records to see what effect the Saturn-Uranus square might have. There seemed to be no correlation, which was surprising because tradition suggests it would consistently bring colder, wetter weather. During 1988 these two planets were conjunct on three occasions, mostly staying within two degrees, but the weather in Oklahoma (where I live) was not consistently cold and wet. In fact the city of Tulsa had the driest year since 1907. **Postscript** by the editor Susie Porter on pages 9-10: Most astrologers would associate Uranus with drought and wind. [She says nothing about Saturn, traditionally associated with cold and damp.] The Aries Ingress of 1988 for Tulsa would at first glance not suggest drought, but on adding planetary nodes, helio positions, midpoints, asteroids and Arabic Parts the pictures changes. [Keep firing arrows and eventually we will hit the target.] The more we work with astrology the more we realise that its principles show issues but predicting details can be difficult.

Waves and Wars 1700-1992

Robert D. Doolgaard *AinO* 1993, 8.1, 15-22. (An earlier unrefereed version of this article was published in the *Astrological Journal* of September/October 1993 pages 268-279. It was subsequently refereed by *AinO* and an improved version appears in this issue along with an editorial comment. - Ed.) During the Second World War the French astrologer Henri Gouchon had the idea of calculating the ten angular separations between the outer five planets (Jupiter through Pluto) on March 21 for each year. He then added up these ten angular separations and plotted the results on a graph, which he called "the cyclic index" or Jupiter wave. For this research I have included the Saturn wave and the Uranus wave, calculated in the same way for Saturn through Pluto and Uranus through Pluto, respectively. My intention is to compare the cyclic index of the last three centuries with the wars occurring during that period. The question is whether more wars, or more serious wars, break out during the downwards phase than during the upwards phase of the wave. Of 22 mega wars, 20 occurred in the downwards phase of the Jupiter wave and only 2 in the upwards phase. A similar but less marked difference was observed for the Saturn and Uranus waves. **Editorial comment:** In this study no hypothesis has been formulated in advance and hence none has been verified. The obtained results are dominated by 22 mega wars. This number and the number of cycles are too small for a statistical assessment. Nevertheless, the obtained results are remarkable. Only time will tell whether future big wars will begin more often during downward phases than during upward phases. [As noted by the author, the cyclic index and variations have been much studied by others such as Andre Barbault in *L'Astrologie Mondiale* 1979 and Charles Harvey in Baigent, Campion and Harvey's *Mundane Astrology* 1984 and 1992. A diagram and further comments appear after the next abstract but one.]

King George III and Samuel Hemmings

Geoffrey Dean *Correlation* 1994, 13.2, 17-30. The famous story of time twins Samuel Hemmings and King George III made its first appearance in 1822, two years after their death, in a footnote on page 10 of Ashmand's translation of *Ptolemy's Tetrabiblos*, which was subsequently quoted without acknowledgement in Raphael's *A Manual of Astrology* 1828, where it reads as follows (Raphael's italics and query):

In the newspapers of February 1820, the death of a Mr. Samuel Hemmings was noticed. It was stated, that he had been an ironmonger and prosperous in trade -- that he was born on the 4th of June 1738, *at nearly the same moment as his late majesty George III*, and in the same parish of St. Martin's in the fields; -- that he went into business for himself in October 1760, *when his late majesty came to the throne*; -- that he married on (the 8th of September 1761,) *the same day as the king*; and finally, after other events of his life had resembled those which happened to the late king, *that he died on Saturday, January 29th 1820, on the same day, and nearly at the same hour as his late majesty!* QUERY. After such an authenticated and luminous instance as the foregoing, where the lives of two individuals born at the same moment, corresponded in every remarkable particular, *even in life and death*; can the Astrologer be justly accused of superstition or absurdity, should he pronounce the *fates* of mankind to be subject to planetary influence? Or can any rational mind, *upon mature and sober reflection*, attribute the foregoing most pointed agreement in their destinies -- to mere chance?"

A careful search of the main London newspapers for the two weeks following the King's death failed to uncover the alleged notice. However, three of them did contain the following obituary:

DIED,

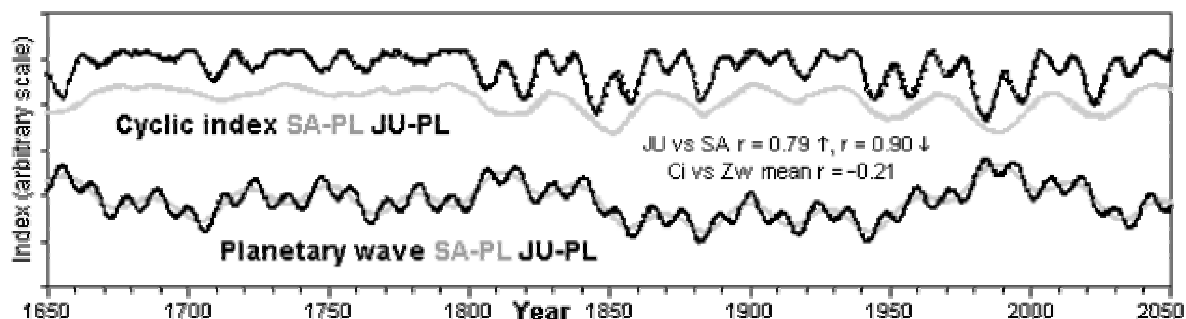
On Saturday, the 29th ult. Mr. Richard Speer, in the 82d year of his age, many years a respectable furnishing iron-monger, and one of the oldest inhabitants in Hammersmith.— It is a curious coincidence that Mr. Speer was born the same year, on the same day, and at the same hour, as his late Majesty, and expired on Saturday evening last, about nine o'clock, being near the precise time when our late revered Monarch breathed his last: and it may not be altogether uninteresting to add, that Mr. Speer, who, from early life, was a most loyal subject, being about the same period on the eve of wedlock, was actually married on the same day as their late Majesties, having fixed upon that particular day for the purpose.

Obituary from *The Morning Advertiser*, London, 2 February 1820, page 3 last column.

Ashmand's mention of "in the newspapers [plural] of the month of February 1820" exactly matches the above, but for some reason he and Raphael (and countless subsequent copyists) have the name wrong, and have added things not in the original, namely the birthplace, being prosperous, and the simultaneity of events including going into business. In short, the story seem to be a fabrication. Furthermore, if we consider not just *this* king and *this* city but also *other* notables and *other* cities, then for the then population of England and Wales (13 million) the probability of such a birth-and-death twin occurring by chance is unremarkable. The answer to Raphael's query is clearly Yes. **Follow-up** by the same author in *Correlation* 1995, 14.2, 23-27. There is no mention of Samuel Hemmings or Richard Speer in the baptism and marriage records for London in the International Genealogical Index, or in the parish registers for Westminster (where Samuel Hemmings was supposedly born) or Hammersmith (where Richard Speer lived). They record no marriage on the same day as the King, and the only births on the same day as the King were those of the twins Henry and Thomas Wallington. Other parish registers may solve the mystery, but without knowing where to look, and with no guarantee of success, the task is hardly attractive.

War, prosperity, and the 500-year outer planetary cycle

Rudy Bes *Correlation* 2001, 20.1, 4-27 and 2004, 22.1, 38-51. Evidence is presented that warfare and economic growth are correlated with an outer planetary wave obtained by adding together the sine of the zodiacal longitude of Jupiter, Saturn, Uranus, Neptune, and Pluto, and then reversing the sign, so eg +2.0 becomes -2.0 [the reason for this reversal is not explained]. During 1500-1950 the correlation with an independent warfare index for 116 global wars was -0.34 ($p = 0.01$ when corrected for number of tests) for both geocentric and heliocentric waves, and -0.11 (nonsignificant) for 335 international wars. The negative sign indicates that wars are associated with troughs in the planetary wave. Global warfare is predicted beginning in 2032. Individually significant correlations with economic growth indicators since 1750 for Canada, France, Italy, Japan, and the USA averaged 0.22 (not significant when corrected for number of tests). Correlations with Germany or the UK were not individually significant. Graphs of outer planetary fundamental waves from 1450 to 2050 are presented, and general comparisons are drawn between the Renaissance and New Age periods. [Bes's planetary wave predictor and Doolard's cyclic index predictor described two abstracts earlier are shown below for 1650-2050 together with the same predictors minus Jupiter for comparison. The scale for each predictor has been adjusted to make them similar in amplitude:



Behaviour of the cyclic index and planetary wave predictors 1650-2050

The predictors are based on different measures (zodiacal longitudes vs angular separation) used in ways that do not occur in a traditional chart reading. If wars really do relate to downwards phases of the cyclic index and troughs in the planetary wave, the mean value of the planetary wave during downwards phases should be less than the mean value during upwards phases, but the reverse is true for the above plots (0.25 vs 0.10, mean sd 1.63). Which, together with the negative correlation between predictors (-0.21 over 800 data points), indicates that at least one of the predictors is suspect. But all that the authors have observed is a correlation, which does not imply a real link. We know that wars and economic crises occur at erratic intervals, and that combinations of planets can match almost any frequency, especially when the combination and phase are not specified in advance and there is no reason to suspect a link in the first place. So apparently positive results that are actually meaningless are more or less guaranteed. Neither author fits a wave to actual wars to see how it performs compared with planets.]

Astrology and the Sex-Trafficking of Girls in Nepal

Padam Simkhada and Dhruva Simkhada *Correlation* 2004, 22.1, 52-62. Over 5000 Nepali girls are trafficked for prostitution each year. The business is highly profitable because there is a strong demand for Nepali sex workers in Indian brothels. Many Nepali astrologers believe that some parents will have surrendered their daughter on the basis of astrological indicators. But a sample of 100 Nepali sex workers and trafficked girls showed no links with astrological factors, which therefore cannot be used to identify why some parents give up their daughters into prostitution.

3. Signs (16 abstracts)

Results of Research on Marriage Partners

H.Boning, W van Dam, R.M.M.Hepp, A.Kattenburg, C.Kuypers, and R.H.Smit *Tijdschrift Astrologie* 1978, 2.2, 2. Harmonious links between the Sun sign of one partner and Moon sign of the other partner are traditionally said to indicate compatibility, and the opposite for inharmonious links. Our research group investigated this claim with a sample of 736 married couples as a check on Kuypers' results with 438 married couples that were given in Rudolf Smit's *De Planeten Spreken* (Fidessa, Bussum, 1976, page 271). For each angle between tropical signs the total observed counts minus total expected counts (146 or 245) were as follows:

0	30	60	90	120	150	180	Angle between signs
36	-11	-4	13	03	-23	8	Diff from 146 exp (Kuypers)
-9	0	10	15	-9	-14	9	Diff from 245 exp (our check)

The aspects 0 and 180 occur only once in the circle whereas the other aspects occur twice, so the former counts have been doubled to facilitate comparison. In both cases the results for the square (90) are opposite in direction to tradition. For three angles (especially 0, 60, 120, supposedly the most important) the direction does not replicate. The correlation between observed counts is only 0.15 ($p = 0.75$). When Sun-Sun and Moon-Moon signs included the outcome was unchanged with a correlation of 0.16 between observed counts ($p = 0.73$). Astrological tradition was not supported.

Role of Venus and Mars in choice of marriage partners

Cornelis Kuypers *Wetenschap & Astrologie* 1983, 7.1&2, 16-17. Links between the Venus sign of one partner and Mars sign of the other partner are said to be important for sexual relationships. For each angle between tropical signs in 450 married couples, the total observed counts minus total expected counts (150) were as follows:

0	30	60	90	120	150	180	Angle between signs
-24	-2	9	-2	3	-5	18	Diff from 150 expected

Counts for 0 and 180 have been doubled to facilitate comparison with the others. For 60, 90, 120 the differences are very small but in agreement with tradition. For 0, 180 the differences are larger but contrary to tradition. There is no clear support for the astrological claim.

Can Self-Attribution Explain Sun-Sign Guessing?

Geoffrey Dean *Correlation* 1983, 3.2, 22-27. In a test conducted in 1975 by the UK Sunday newspaper *News of the World*, a panel of four astrologers were able to guess the Sun signs of 8 out of 12 subjects (one for each sign) following one or two interviews lasting no more than five minutes each, vs 1 expected by chance. The test was repeated in 1981 and again the panel got 8 out of 12 right. The subjects were friends of the reporter, who had a great interest in astrology. The panel sat around a table downstairs in the presence of the reporter, and the subjects were brought in one at a time in random order. The subjects not being interviewed sat upstairs and talked. Alcohol flowed freely and the atmosphere, including that of the interviews, was most convivial. The panel could ask what questions they liked but could not mention birthdays. The panel were not told the results until the entire test was finished. On both occasions the panel included Julia Parker and John Naylor, two of the UK's leading sun sign astrologers.

So how did they do it? I was present during the second test and was able to tape the panel questions and talk to the subjects. I found they had an above-average knowledge of Sun signs (for example half had read Linda Goodman's *Sun Signs*), and several mentioned that it was generally easy to see what the panel questions were getting at. For example: Are you energetic? (Aries). Do you like good food? (Taurus). Are you generous? (Leo). Do you love jewellery? (Libra). Are you ambitious? (Capricorn). Do you have foot problems? (Pisces). The questions necessarily involved topics that feature in Sun sign descriptions, so subjects who knew their own sign details could hardly fail to guide the panel to the right answer. Furthermore, when invited to describe their interests, they could reply at length, when only a small amount of astrological role-playing was needed to provide good clues. For example: "Anything physical attracts me" (Aries). "The most important thing in my life is being a mother" (Cancer). "I like a neat and clean home" (Virgo). "I'd rather not wear a tie" (Sagittarius).

In short, the results seem to rely on self-attribution, the tendency for people who believe in sun signs to shift their self-image in the corresponding direction [see next abstract],

which can then be picked up by artful questioning. Indeed, the level of self-attribution, determined by my own questions under less than ideal conditions, successfully predicted the test's outcome for 6 out of 8 hits and 3 out of 4 misses. Sun-sign guessing can be explained by subject selection, self-attribution, and body language.

Self-Attribution as a Moderator Variable in Differential Psychology

Kurt Pawlik and Lothar Buse *Correlation* 1984, 4.2, 14-30. An English translation by Eve Jackson and Dave Stevens of the original German in *Zeitschrift für Sozialpsychologie* 1979, 10, 54-59. A test is presented of the hypothesis that the relationship between astrological birth sign and personality differences in extraversion and neuroticism (as reported by Mayo, White and Eysenck) can be explained in terms of self-attribution of personality. Responses of N=799 adult subjects to two questionnaires (German version of the Eysenck Personality Inventory, and Belief in and Familiarity with Astrology) were analysed in several analyses of variance, with belief in astrology being one of the independent variables. An explanation of the Mayo-White-Eysenck results in terms of attribution theory was essentially verified.

A New Test of the Zodiac Signs

Brian Riley *APP* 1984, 2.2, 11-14. One of the most frequent objections raised against statistical research into signs is that only single factors are studied and the numerous other factors allegedly influencing a particular trait are ignored. The present experiment was designed to meet this objection by taking account of the sign position of Ascendant, Sun, Moon, Mercury, Venus, and Mars. The polarity and element scores of 24 subjects with extreme scores on the Eysenck Personality Inventory were compared with their E and N scores. The observed correlations were $r = 0.02$ for E and $r = -0.02$ for N, which indicate that the traditional claims of links between personality and signs of the zodiac are unfounded.

A Test of Sidereal Sign Delineations

Arthur Blackwell *APP* 1986, 4.3, 18-21. The Gauquelins applied statistical tests to tropical sign keywords but found nothing that was significant. The author was familiar with the work of two siderealists of renown, Fagaa and Gleadow, so he decided to test their sidereal sign keywords against the Gauquelin trait word list. Sidereal signs are a more ancient idea than tropical signs and are still in use in the East. Nevertheless their results weren't positive either. In the author's opinion the keywords ascribed to the sidereal signs by Fagan and Gleadow are useless and should be abandoned by any siderealist still using them.

A Sun/Moon sign analysis of football notables

Don Woolson *Kosmos* 1988, 17.4, 15-17. In a previous study of 359 famous athletes I found a significant deficit of Moon in Pisces (16 observed vs 30 expected, $p = 0.05$), which led me to predict that a similar deficit would be found among professional footballers. But 1210 football players from Ronald Medell's *Who's Who in Football* failed to confirm it (99 observed vs 101 expected, $p = 0.84$), and no Sun or Moon sign was significantly high or low, which led me to question my previous findings. Significant findings clearly do not "prove" anything, they can only add support to a particular hypothesis. [In the following issue, a letter from Dr Alan Richter issue complained that no data was presented in the above article as would be required in any scientific journal, to which the editor replied that the author did not submit any data, and in any case *Kosmos* was not a scientific journal.]

Sun Sign Patterns of 572 Nobel Laureates

Roy Tate *APP-NCGR* 1989, 7.2, 38-39. I have recently reissued the 4th edition of my book *The Astrology of Genius* based on 20 years of research. The chi-square test reveals that the odds of this distribution of Sun signs for 572 Nobel laureates is less than 1:500.

Francoise Gauquelin's response: Sorry to disappoint you, dear Roy, but your book does not reveal a new astrological law. It describes via Nobel laureates a well-known demographic law affecting anybody in Europe, high-level scientists as well as ordinary people, that results in some months having more births than others. The best way to eliminate demographic artifacts consists in comparing the target sample with a sample of ordinary people born in similar economic conditions, geographical area and period of time. Maybe you will want to do this control without my interference. I would be ready to publish the outcomes of such a control if you take charge of it. [There was no response]

Sun Sign at Birth versus Life Span for 7136 people

Frans Vermeer *AinO* 1992, 7.1, 10-11. In this study I investigated whether there is a correlation between the Sun sign at birth and the life span of humans. Special attention was given to the astrological postulation that people born under the sign of Capricorn live markedly longer than people born under the other signs. To that end the required data were collected from all tombstones of seven cemeteries in the South of the Netherlands. The dates of birth and death of 7136 people were transcribed. Infants that died within half a year after their birth were excluded. All these data were then run through a statistical computer program. One-way analysis of variance revealed no correlation between life span and birth sign ($p = 0.15$). The life span of Capricorns scored below the mean, so the astrological postulation that Capricorns live longest was not supported.

Sign and Branch of Study for 8379 University Students

Jan van Rooij *AinO* 1992, 7.2, 8-13. In this study the sign positions of the Sun, Mercury, Venus and Mars were compared between 5147 psychology students and 3232 engineering students. According to Jungian theory psychology students should be high on Intuition and Feeling (Fire and Water signs) whereas engineering students should be high on Thinking and Sensing (Air and Earth signs). Expectancies were calculated using birth rates per month for the years 1952-1973 (all students had been born within that period) provided by the Central Bureau of Statistics of the Netherlands. No result was significant. So psychology and engineering students could not be differentiated by their planetary sign positions. Of course any division of frequencies for the twelve signs will show higher and lower values, and astrologers (like most people) tend to assign meaning to such appealing figures, which in this case are at chance level. This may explain the discrepancy between astrologers who insist that astrology works and researchers who consistently find that it does not.

Guessing Sun, Moon, and Ascending signs

Wim Heideman *AinO* 1992, 7.2, 36-41. Guesses were made of the Sun, Moon, and Ascending sign of a large number of people encountered in everyday life, eg in bars, without any research plan or controls. The guesses were afterwards compared to the actual sign as given by the subject. The guesses were based on the overall likeness between sign and the person's general appearance and behaviour and were not specifically aimed at Sun, Moon or Ascendant. Usually several guesses were made without being told the answer until the end. But sometimes the response was "all wrong, try again", in which case the author kept guessing until he either guessed correctly or gave up. The results were as follows:

Sign	Subjects	Guesses	Hits	Mean guesses per subject	Mean hits per guess
Sun	728	1783	178	2.45	0.100
Asc	254	775	79	3.05	0.102
Moon	81	287	32	3.54	0.111

The number of subjects is smallest for the Moon because people knew their Moon sign less often than the other two signs. Expectancies were estimated by making a random guess by computer for each subject and then repeating it 3000 times. This gave hit rates of 0.0833, 0.0848, and 0.0861, all close to the theoretical expectancy of $1/12 = 0.0833$ for a single guess assuming signs are equally probable, and all less than the above observed hit rates. The author briefly considers the effect of self-attribution, unintentional help from the subject's reactions, and recording errors even though he had carefully noted all misses. He concludes that there is a small but significant surplus of hits due to a real capacity to recognise some elements in the horoscope.

[However his expectancies are invalid. (1) No allowance is made for demography (some months have more births than others) and astronomy (some signs have more days than others due to the Earth's elliptical orbit) that can vary Sun sign expectancies by more than 10% (Moon signs are hardly affected), or for differences in ascension time that can vary Ascendant expectancies by more than 50%. In other words Sun and Ascending signs are not equally probable, and inflated hit rates could be obtained simply by substituting the most frequent signs for each guess. (2) If the 12 signs are equally probable and guesses are made without stopping, the probability that one will be a hit is $1/12$. But if we stop after N guesses (as in "all wrong, try again"), the probability of a hit among the remaining $12-N$ signs is not $1/12$ but $1/(12-N)$, which for $N = 1, 2, 3, 4$ is 9, 20, 33, 50% higher. That the observed hit rates exceed $1/12$ is therefore unremarkable. Unfortunately the author ignores these problems, nor did he record the guessing procedure in each case, so his results cannot be evaluated. Nevertheless if the claimed positive result is due to more guesses (therefore more stops and higher expectancies) as opposed to fewer guesses, the observed hit rate should increase as the mean guesses per subject increases, and it does ($r = 0.92$). Finally a skilled cold reader could pick the correct sign simply by reciting the signs and watching body language. In short, the results do not support the author's conclusion.]

Astrologically Predictable Patterns in Work-Related Injuries

Sara Klein *Kosmos* 1993, 22.1, 2-4 and 22.3, 21-30. Study was her doctoral dissertation in psychology, University for Humanistic Studies, Del Mar CA, 1992, with 120 references. In 1988 nearly two million people in the USA suffered disabling injuries at work compared with more than 50 million disabling injuries from all causes (car accidents, falls, firearms, poisoning, burns, etc). There is no specific astrological factor related to accidents, only a general one involving hard aspects from transitting planets to natal planets, the generally accepted order of decreasing severity being 90, 180, 0. The only astrological work dealing with accidents is Charles Carter's *The Astrology of Accidents* (1932), which looked only at natal planets in 168 cases of accident and ignored transitting planets. In my study the experimental data consisted of the birth dates and accident dates of 1023 people in California who had been disabled for at least three months in an accident at work during 1983-1991 and had filed a Workers' Compensation claim. The data was copied at my request from the reports of doctors to whom they had been referred by lawyers presenting their claim. The copyists were told only that it was needed for a statistical study of injury patterns. Cases were excluded if any date was uncertain, if there was more than one injury date, or if the injury was predominantly psychological (eg stress) or had no definite onset (eg lung disease). The sample

consisted of 414 English-speaking cases from three independent sources and 609 Spanish-speaking cases (mostly Mexicans) from a Los Angeles clinic that dealt with Hispanics. In both groups the accidents showed a marked tendency to occur when transitting Sun was 0, 90, or 180 to the natal Sun regardless of orb (between groups $r = 0.82$, $df = 10$, $p = 0.001$). If the expectancy is assumed to be $N \times (\text{total orb})/360$, the observed and expected number of such aspects for $N=1023$ are as follows:

Orb	Obs	Exp	Obs/Exp
15	471	341	1.38
10	330	227	1.45
5	189	114	1.66

By chi-squared test the excess is very highly significant, p being typically $<10^{-8}$. The excess was about 20% larger for the conjunction than for the rest, showing that the peak time for accidents was around the victim's birthday, suggesting an effect from too many parties or from depression at the thought of getting older. But only astrology seems able to explain why accidents should also peak around 3, 6 and 9 months from the victim's birthday.

[But if accidents are less frequent at weekends, the assumed expectancy may be invalid. Also the birth and accident dates were reported to the doctor presumably some time after the accident and may therefore be less than accurate. Similarly the minimum 3-month period off work required for data to be included is suspiciously close to the period between hard aspects. These points were covered in a follow-up study briefly reported by Zip Dobyns and Mark Pottenger in their house journal *Mutable Dilemma* 1996, 19.3, 2 and 1997, 20.2, 2, and even more briefly in 1997, 20.4, 2 and 1999, 22.3, 2, in which they tested a large Swedish database of 2865 persons who had suffered critical work-related accidents in 1993. (Further US data could not be obtained due to new privacy laws.) The Swedish data gave "total non-significance" for aspects between natal and transitting Suns on the day of the accident, although the conjunction was again the strongest. Furthermore in Sweden medical needs are met without having to file a claim, and all but 413 of the accidents were timed, indicating careful reporting. "Sara suspects that some of the claims by younger individuals in California may have been fraudulent."]

Jungian Typology and Astrology: an Empirical Test

Jan van Rooij *AinO* 1993, 8.1, 12-14. We tested the claim that the Sun's element at birth is related to the psychological functions in Carl Jung's typology, specifically whether the Sun in a Fire sign is related to a dominant Intuition function, Earth to Sensing, Air to Thinking, and Water to Feeling. Birth dates and scores on the Myers-Briggs Type Indicator (a personality test that is the standard way to measure the four Jungian functions) were available for 370 subjects (168 males, 202 females). The dominant psychological function showed no significant relation to element ($p = 0.34$). When the 370 cases were divided into Intuition vs Sensing, or into Thinking vs Feeling, the relation with element was again non-significant ($p = 0.36$ and $p = 0.03$ respectively, among three tests the last is not significant), the strongest but still very weak relationship being between Feeling and Water. A relationship between Jungian typology and astrological elements was therefore not supported.

A Test of Alice Bailey's Ray Theory of Sun Signs

Peter Niehenke *Correlation* 1997, 16.1, 29-31. Last year I learned about a study by James David based on Alice Bailey's theory of "Seven Rays". He claimed that, using this theory, photographs of people could be accurately matched to their Sun sign. I had

tested similar Sun sign claims before, with negative results, so his claim was hard to believe. I decided to test his claim with about 200 photographs, of which 70% were rejected as too indefinite. The results were almost exactly at chance level. The hit rate showed no tendency to increase with judgement certainty. These results indicate that the theory as applied by James David has no validity. There seems to be no justification for conducting a more elaborate test.

Astrology: is This the Proof?

Geoffrey Dean *Correlation* 1997, 16.2, 63-66. The above words headlined a two-page article in the UK *Daily Mail* of 3 February 1998 presenting "the results of an exclusive study that appears to prove your star sign is an accurate indicator of your character". A representative sample of 1092 adults had to say which of 12 unidentified personality profiles (which were actually Sun sign profiles) applied to them. Six signs chose their own profile more frequently than the other signs chose it. The article suggested this was proof of astrology, but it was wrong because although Scorpios (for example) chose their profile more frequently than did the other signs, they also chose 9 other profiles as equal to or ahead of Scorpio. Indeed, only Aquarians put their profile in 1st position, which (1 hit in 12) is what we would expect by chance. But even that solitary hit is dubious because Aquarius was rated first by *all* signs except Taureans, who rated it second. In the other direction, Gemini was rated last or second-last by ten signs, and even Geminians rated it no higher than sixth. Furthermore, 53% of the women and 26% of the men consulted their horoscope column very or quite often, so many of them were familiar with their Sun sign profiles. Therefore the hit rate should increase as the *Daily Mail* profiles got closer to the traditional profiles, which proved to be broadly the case. So the *Daily Mail* results confirm what critics have long been saying, and astrologers have long been denying, namely that the reason Sun sign profiles are accepted has nothing to do with astrology and everything to do with social desirability, self-attribution, and other effects. Which did not stop the newspaper's resident astrologer Jonathan Cainer claiming that the study "confirms the relevance of astrology at a time when some folk are a little too keen to dismiss it as an ancient superstition."

The Start of the Age of Aquarius

Nick Campion *Correlation* 2000, 19.1, 7-16. The notion that the Age of Aquarius is either beginning or is imminent is frequently found in astrological literature. However, there is no agreement on when it begins or how its inauguration is to be calculated. By the normally accepted definition the Age begins when the First Point of Aries in the tropical zodiac precesses either into the equal thirty degree division of the sidereal sign of Aquarius or into the unequal sidereal constellation of Aquarius. The moment this occurs will depend on exactly where the boundary of this sign or constellation is fixed. Opinion varies considerably from school to school and astrologer to astrologer, as witnessed by the wide variations in Ayanamshas (the difference between 0 degrees Aries in the tropical and sidereal zodiacs) in use in India and elsewhere. In addition, western astrologers increasingly point to planetary movements in the tropical zodiac to define the beginning of the Age. Includes a referenced list of nearly 100 dates between 1457 and 3550 that have been proposed (mostly by believers) for the beginning of the Age of Aquarius.

4. Aspects (5 abstracts)

The Validity of Astrological Aspects

Peter Niehenke *APP* 1984, 2.3, 9-15. As part of the author's PhD thesis, a sample of nearly 3500 persons (obtained by advertisements in a magazine and two newspapers)

completed the Freiburg Personality Inventory (12 scales) and a 479-item questionnaire aimed at verifying astrological claims. The result was 3150 usable responses. The questionnaire included items aimed at verifying aspect meanings given in textbooks. For example, in response to the item "I am really not lucky in love", people with Venus-Saturn aspects should tend to say Yes more than those with Venus-Jupiter aspects. It was not possible to investigate all aspect pairs, so my items were limited to aspects between the outer planets Jupiter through Neptune and the personal planets Sun through Mars including Ascendant and MC, and to aspects between Sun, Moon, Venus and Mars. The results were uniformly inconsistent. There were no significant differences in unluckiness in love between people with Venus-Saturn and Venus-Jupiter aspects regardless of orb (1-9 degrees). Nor was there any consistent link with Saturn and Jupiter positions in 5th house (love, sexuality) or 7th house (partners). Contrary to what the textbooks say, people with Saturn aspects did not feel more lonely, unfortunate, skeptical, unhappy, exploited, or cautious than those without Saturn aspects, even when they had up to four Saturn aspects. Nor was there any link with scores on relevant scales such as Depression on the personality inventory. When the sample was divided in half, responses in the first half that seemed to support Saturn tradition did not replicate in the second half more than expected by chance. The results for the other planets were just as negative. Conclusion: the self-descriptions of my subjects do not fit the teachings of astrological textbooks. Even with good Jupiter trines they do not feel more sunny than others. Even with bad Saturn squares they do not feel more depressed than others. As a professional astrologer, I recognise that the negative results are a reality. But the evidence of my success in counselling is also a reality. A world in which astrology exists is surely more enjoyable than one without it. This remains for the moment even true for me!

Astrological Aspects at the Birth of Eminent People

Michel Gauquelin *Correlation* 1985, 5.1, 25-35. The occurrence of five major aspects (conjunction, opposition, square, trine and sextile) of orb 5 degrees between Sun, Moon, Venus, Mars, Jupiter and Saturn was examined for several groups of eminent professionals totalling 15,334 cases. When all five aspects were combined the mean excess or deficit of aspects involving planets significant in key sectors was 1.4%, less than one-tenth of the mean excess or deficit of their frequencies in key sectors. Overall the occurrence of individually significant results was at chance level. There was no significant correlation ($r = 0.19$, $p = 0.50$) with the effect of the same planets in key sectors. Nor do my results agree with the results of an 1977 unpublished study by Dieschbourg.

[Dieschborg looked at multiple-of-30-degree aspects among groups of eminent professionals totalling nearly 12,000 cases with apparently no overlap with Gauquelin's data vs control groups of roughly the same size born in the same period, and seemed to find a weak effect. Thus 6% of comparisons gave significant results for which the mean excess or deficit of aspects between personal planets (Sun-Mars) and outer planets (Jupiter-Pluto) was about 10% of expectancy, albeit inflated by selection. The orb had been adjusted according to aspect to make the overall probability of an aspect = 0.5, and was typically 10 degrees.]

Thus for six mutual groups (military leaders, painters & sculptors, musicians, physicians, scientists) Dieschbourg's mean excess or deficit was about five times larger than mine, but tended to be opposite in direction ($r = -0.20$, $p = 0.70$). These results, and the negligible agreement between key sector effects and aspect effects, seems to be precisely what would be expected if aspects are without effect. My results do not seem

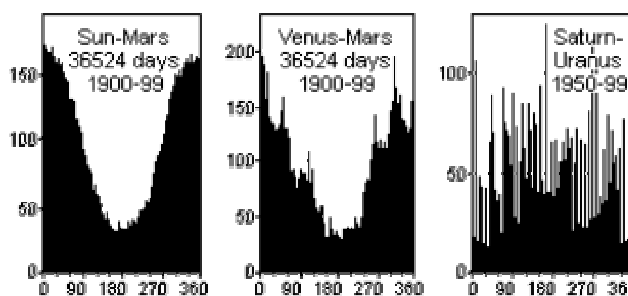
to support the traditional meanings generally attributed to these aspects by astrological textbooks.

Planetary Aspects: Improved Method Yields Negative Results

Suitbert Ertel *Correlation* 1988, 8.1, 5-21. An attempt was made to find evidence for relations between traditional aspects and human birth. Gauquelin data on 20,528 eminent individuals representing 11 professions were subjected to time series analysis, segmenting periods of hypothetical aspect influence together with three preceding and three succeeding time periods of equal duration. The frequencies of births within each time segment were superimposed for each profession and for each of 15 aspects (conjunctions, squares and oppositions between Venus, Mars, Jupiter, Saturn). Mean time series obtained for empirical aspect occurrences were compared with mean time series for equivalent random segments as controls. No indication of an aspect influence was found.

Going a Step FARther

Mark Pottenger *Kosmos* 1989, 18.2, 20-39 and 18.3, 15-30 and 18.4, 15-34. The author describes the development of his FAR (Frequencies for Aspect Research) computer program, which draws graphs showing how the angular separation varies between any two bodies (including ascendant, MC, and nodes) for any time interval. Despite having worked for many years with planet and house formulas, he was unprepared for the extreme non-uniformity (and thus extreme research hazard) that his graphs revealed. Assumptions of uniform motion, even as a first approximation, are on very shaky grounds. Three of his 36 examples are shown below.



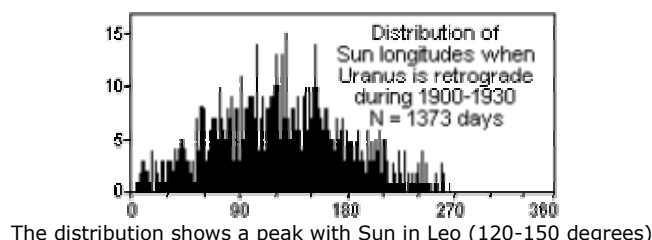
Distribution of geocentric angular separations measured daily. **Left:** Mars conjunct Sun is roughly five times more frequent than Mars opposition Sun. In samples without controls this could be (and has been) mistaken for an astrological effect. **Centre:** Venus stays close to the Sun, so Venus-Mars is broadly similar to Sun-Mars but with large additional fluctuations. **Right:** Abrupt changes in frequency will occur over a small range in angular separation if the sample period is short compared to the period of the planetary pair, as here for Saturn-Uranus.

The FAR program provides a visual picture of the non-uniform contacts that can occur between planets and which researchers need to be aware of. It illustrates one of the many ways in which computers have revolutionised the approach to astrological research by eliminating the need for manual calculations. Graphs like the ones above would have been unthinkable in the 1970s. [[Mark Pottenger's virtuoso plots can also be found in the ISAR Anthology *Astrological Research Methods* 1995. Another example appears in the next abstract]

Sun, Uranus and Demographics

Mark Pottenger *APP-NCGR* 1989, 7.2, 27-30. The author examines whether the angular separations between the Sun and Uranus could be related to yearly distributions of birth in a way that could bias results. He calculates by computer the distribution of Sun longitudes for the period 1900-1930 when Uranus is retrograde. During this period the

only time when Uranus is retrograde is during July-August when the Sun is in Leo, and his plotted numbers confirm that there is indeed a peak around Sun in Leo with a tapering off on both sides. The figure below illustrates the effect for the 1373 Gauquelin professionals born during 1900-1930 with Uranus retrograde.



5. Houses (3 abstracts)

A Test of House Systems

Richard Nolle *Kosmos* 1987, 16.1, 25-27. The question of the best house system has plagued astrologers for centuries. My study used 375 notable athletes (most of them from the *Gauquelin Book of American Charts*) with 468 non-athletes as controls, all with timed births, whose charts were computer-calculated using Placidus, Koch, and Equal house systems. None showed a significant relationship between athletic achievement and house position, although Placidus did best followed very closely by Koch. In contrast, Mars conjunct ascendant or MC with a five-degree orb showed a significant relationship ($p = 0.03$) consistent with Gauquelin's Mars effect. Further tests are needed, but as they stand the results indicate that house placement is not a significant chart factor.

Testing for 7th House Rulership

Margot Tollefson *APP* 1995, 11.1, 18-19. Among married couples, do any of the astrological placements of one look like they rule the 7th house of the other? This idea was tested on 2825 couples from the second Gauquelin heredity study made in 1976. A total of 18 placements were tested, eg Sun sign of one = 7th house sign of the other, sign of the Sun's house of one = sign of the ruler of the 7th house of the other. In each case the observed frequency (typically 0.1 per couple) was compared with the frequency in a sample of 2825 randomly matched pairs. None were significant at the $p = 0.05$ level. Confining the sample to couples with 3+ children made no difference. Answer to opening question: No.

Global Horoscopes

Michael Wackford *Correlation* 2005, 23.1, 45-64. This paper concludes a 5-part review of horoscopy in the Polar Regions whose aim was to clear away some of the many misconceptions of circumpolar horoscopy, to examine the nature and viability of a number of house systems, and to establish which methods of house division can be successfully applied in the Polar Regions and therefore across the entire planet. Only Equal, Campanus and Placidus deserve consideration. The first presents difficulties when the circumpolar ascendant reverses, the second pretends that all skies are as witnessed at the equator, the last is the only quadrant system that can be applied in polar regions without sacrificing astronomical and astrological integrity. But it can still fail to give twelve unambiguous cusps.

6. Gauquelin effect (11 abstracts)

A Response to Eysenck's Evaluation of the Mars Effect

Prof Marcello Truzzi *APP* 1984, 2.2, 27. The case for neo-astrological causalities being present in the Gauquelins' work is greatly strengthened' by consideration of the total corpus of their researches. And this context increases the scientific importance and priority their work should be accorded, while also adding to the over-all extraordinariness of their anomalies. On the other hand, the Gauquelin and Eysenck work (though presenting, I think, real and important anomalies) still represents an extraordinary set of claims for which commensurate proof has not yet been obtained. The work is important and should be encouraged. But we need independent replications and the elimination of more "normal" alternative explanations, before neoastrology can gain scientific acceptance. And that is as it should be. True or false, the answer lies in continued investigation and more studies.

Profession and Heredity: Computer Re-analysis and New Investigations

Michel Gauquelin *Correlation* 1984, 4.1, 8-24. The present study re-analyses by computer all the profession and heredity data published in 12 volumes by the Gauquelin laboratory during 1970-1971. The computer results confirmed the original Gauquelin results, which were based on hand calculations done years ago, but were somewhat lower in significance due to inadvertent bias in the hand calculations when interpolating from tables. Again, only the Moon, Venus, Mars, Jupiter and Saturn were found to have a significant effect, the average excess or deficit in the rising and culminating sectors 1 and 4 for famous professionals being 14% (range 9-28%). Several new analyses are described which lead to a better understanding of planetary effects, as follows. For famous professionals the use of Placidus sectors, and two-hour sectors measured from the rising and culminating points, produced results little different from those using individual rise/set sectors. The area of maximum influence existed almost uniformly throughout sectors 1 and 4 with a fairly marked decrease beyond both boundaries; by comparison the influence of the opposite sectors seems very small. Sectors 1 and 4 were found to be independent and not harmonics of each other. For the heredity data the zone size for maximum effect was found to be that of the plus zones previously used. If a parent was born with one planet in plus zones there was no significant tendency for the child to be born with another planet in or out of plus zones. Overall the study demonstrates that computers are necessary to avoid human bias and to perform investigations far too complex to be undertaken by hand.

How Strong are Planetary Effects for Ordinary People?

Franz Stark *APP* 1986, 4.3, 12-17 and 1987, 5.2, 15-22, with comments from Suitbert Ertel in 1987, 5.1, 40-42 and an independent replication by Francoise Gauquelin in 1988, 6.1, 19-25. A questionnaire listing five character types was completed by 106 persons obtained via an astrology magazine, friends, and addresses chosen at random from the telephone directory. The respondent had to give their birth data and say if they knew their horoscope, and with another person they each had to tick which types the respondent belonged to. Each type was described by eight Gauquelin planetary trait words. For example Type 2 was "agreeable, compromising, good taste, charming, tries to please, flexible, diplomatic, evasive" (Venus), and Type 3 was "active, impatient, combative, passionate, energetic, direct, self-willed, indefatigable" (Mars). By 2x2 tests (type yes/no vs planet-in-plus-zones yes/no) all correlations (as phi) between type and relevant planet were positive, being generally between 0.3 and 0.4 regardless of knowledge of horoscope and whether the type was indicated by the respondent or another person, and most were significant. Compared with the typical correlation of 0.04 between planet and profession, these correlations are astonishingly high. **Comment:** In *APP* 5.1 Suitbert Ertel points out that the results conflict with those of Gauquelin's much

larger samples of ordinary people (eg 16,700) which showed no links above chance between character traits and planet, and that self-attribution was not adequately controlled, to which Stark replies that he has started a replication using the same questionnaire but with better controls. **Replication:** In *APP* 5.2 Franz Stark presents its results. This time the sample size was 100 persons. The results were less consistent than before (two were negative), and fewer were significant. Nevertheless the Gauquelin effect continues to show up. **Replication:** In *APP* 6.1 Francoise Gauquelin repeats Stark's study on a sample of 227 persons (mostly from the USA and Brazil) obtained via publication of Stark's questionnaire in *APP* and by handing it out during her lectures. When an allowance was made for the number of tests, no result was significant (the highest correlation was 0.2 for Saturn), nor were they always positive. When respondents were allowed to select individual traits as well as whole types, they often ticked only flattering traits and avoided ticking any type, or they ticked all five types. Conclusion: the questionnaire was not good enough. It needed improvement and then much validation with various groups of people. This will be a slow process, but if we want an efficient tool for testing Gauquelin effects, it has to be done. [There were no subsequent studies with an improved questionnaire.]

Planetary Effects Defy Physical Interpretation

Suitbert Ertel *Correlation* 1989, 9.1, 5-23. The author's previous research with Gauquelin data confirmed the existence of planetary effects for eminent professionals. However, the present research casts doubt on Gauquelin's physical explanation. (1) For sports champions the planetary effect was unrelated to astronomical variables (distance of Mars from Earth, its angular size, apparent magnitude, declination, right ascension, solar elongation, and radius vector). Furthermore the effect did not diminish during Mars-Sun conjunctions. (2) For ordinary people, Gauquelin's claim that geomagnetic activity enhanced the planetary correspondence between children and parents was not supported. Nor did the planetary effect for eminent professionals correlate with geomagnetic activity. It seems that Gauquelin's positive results with geomagnetism are due to random oscillations. (3) Gauquelin's claim that planetary effects decrease after 1950 -- a presumed side-effect of applying obstetric drugs -- could not be verified with professionals' data. However, the number of post-1950 births was insufficient for a definite conclusion. (4) The accuracy of birth-times on official documents increased markedly through decades 1830-1950 but produced no corresponding increase in planetary birth frequencies. In the light of these results, Gauquelin's midwife hypothesis seems to be untenable, in which case an interpretation of planetary effects in terms of physics and physiology must be replaced by something else.

Confirmation of Gauquelin Effects in 1288 Eminent Physicians

Arno Muller *APP-NCGR* 1989, 7.2, 17-20. Using the official birth-time records of 1288 eminent physicians, the author has tried to replicate the Gauquelin effect. As one of the data sources for the present study had already been used by the Gauquelins themselves, comparisons could be made during the gathering and the data processing for ensuring a correct replication study. The initial Gauquelin data were also rechecked and corrected when necessary, but essentially their degree of significance remained the same. The new Muller data showed results in the expected direction for Mars, but not for Jupiter and Saturn. A subsample of 452 particularly renowned physicians increased the significance of the Mars result. For Saturn, the highest result was observed with French physicians. Therefore overall the present study confirms the Gauquelin observations.

Unresolved Problems (Heredity, Character Traits, Aspects, Signs)

Francoise Gauquelin *APP* 1992, 8.2, 15-16. Michel's passing away left many problems

unresolved. They need adequate scrutiny now if we want to do justice to his remarkable experimental intuition. They are the Heredity Hypothesis (why did a larger sample fail to bring forth the previously obtained results), the Character Traits Hypothesis (why did Michel's and Suitbert's results disagree), and aspect and zodiac sign investigations (new tests by computer-wise astrologers seem positive but erroneous statistics and astronomical and demographic artifacts explain fully the assumed astrological results). [Today, more than 15 years later, these problems are no longer unresolved]

8000 Chart Factors Tested on the Gauquelin Professional Data

Mike O'Neill *APP* 1994, 10.2, 8-22. The Gauquelin timed birth data for eminent professionals (N=15,942) divided into 11 professional groups (actors, doctors, etc) and 3 combined groups (writers and journalist combined, all data combined, all data combined after weighting according to the hard-evidence-based nature of the profession as revealed by Ertel's cluster analysis) was tested for 7868 astrological factors, or $14 \times 7868 = 110,152$ tests in all. The factors tested were planets in signs (696 factors), planets in houses (576 factors), aspects (1960 factors), three-planet formations (2478 factors), harmonic aspects (340 factors), midpoints (1716 factors), and planetary qualities (102 factors such as speed, retrogradation, and distance). The statistical significance of each result was determined by a z-test using expected values based on at least four control charts generated within 2.5 years of every tested chart.

Despite the large number of factors only one replicated sufficiently to suggest a testable hypothesis, namely that eminent professionals will have an excess of easy oppositions and kites involving the ascendant and any of the planets. The pilot results suggested that the excess should be about 5% more than expected, but a replication on untested data found a deficit of 2%, so the hypothesis was not confirmed. Interestingly, although the Gauquelin effect in key sectors was included with the relevant factors, the Gauquelin effect did not emerge as strongly as I had expected (although it did emerge), no doubt because the effect is very specific to certain planet and profession combinations that would not have been singled out in my approach. This suggests that the Gauquelin effect may not be more dramatic than anything else, but came about because it was spotted early and then pursued relentlessly. Nevertheless, if some of the other factors involve effects similar in magnitude to the Gauquelin effect, it seems unlikely that they would all escape detection in my tests.

Planets in Semantic Space

Graham Douglas *APP* 1995, 11.1, 20-31. I believe there is a need for more study of the structure of the Gauquelin results and their implications for astrology. Although M. Gauquelin described inter-relations between the planets Mars, Jupiter and Saturn deduced from trait-word analysis, it never became a central part of his theory. Here I want to make this inter planetary structure [ie the similarities and differences between planetary trait words] the starting point of speculations instead of marginalizing it as at present. [Then follow 17 pages of speculations such as placing the planets in the four quadrants formed by good-bad and hard-soft.] **Discussion** by Francoise Gauquelin *APP* 1995, 11.1, 32-33. In previous issues of this journal, I have expressed my regret that Graham Douglas does not go on to prove the various hypotheses he likes to formulate. Without any confrontation with external realities, his idea of "semantic space" and of "inter-planetary structure" risks to remain sterile. Piling up a succession of brilliant ideas on these never verified hypotheses is like building castles in the sand or houses of cards. Did you ever hear about the historical discussion that kept the best theologians in France occupied for months around the abstract problem: To what gender do angels belong ? The final answer to this problem is said to have been: Angels belong to the male gender,

the better one of course! But then the unsolvable objection arose: Why do the most respectable religious painters represent angels with the face and the garb of a woman? A quite unanswerable objection! That's what you risk when you rely on theories and never on tangible facts for confirming their adequacy.

Birth Time Precision and the Gauquelin Effect

Suibert Ertel *Correlation* 1995, 14.1, 30-37. The Gauquelin effect should increase with increased birth time precision. The data, however, do not bear this out, on the contrary, the effect even tends to diminish with better birth time recordings, at least from AD 1880 onwards. The expected positive effect might have been overridden by psychological-sociological variables depressing the effect and enhancing birth record precision at the same time. Until now, however, such intervening variables remain enigmatic. [But see next abstract]

Attribution: A Pervasive New Artifact in the Gauquelin Data

Geoffrey Dean *AinO* 2000, 13.1&2, 1-72. The Gauquelin findings are just as puzzling for astrology (eg no link with the Sun) as they are for science (eg no link with physical variables). But they are consistent with artifacts due to attribution (social effects). Thus for Gauquelin's ten professional groups (N=15942), the births on desirable and undesirable days show significant ($p < 0.01$) surpluses and deficits that are generally consistent across professional groups. The mean planetary effect size is larger on desirable days (easily obtained by faking) than on undesirable days (nobody would fake to get one), 0.029 vs 0.012, which should not be if planetary effects are unrelated to social effects. Faked times do not need to be precise, which explains why, contrary to expectation, effect sizes increase with decreasing birth time precision. The 12398 parents and 12550 children from the first Gauquelin heredity experiment show heredity effect sizes for children that are greater for same-sex parents (mean 0.022) than for opposite-sex parents (0.012), which should not be if heredity effects are unrelated to social effects. Social effects also explain why planetary effects seem to disappear in births after 1950. Gauquelin suggested this was because the births had been upset by medical intervention. But the modern demand for official documentation would necessarily prevent faking. The idea that faking is being prevented is more plausible than the idea that all hospitals, all doctors and all midwives are intervening in all births. Nevertheless we cannot conclude that social effects explain Gauquelin's puzzling findings. We can do this only if planetary effects disappear under conditions where social effects are absent, as when parents are excluded from the birth reporting process and the child is ignorant of its birth planets.

Planetary Effects Brought Down to Earth

Suibert Ertel *Correlation* 2001, 19.2, 37-46 and 2001, 20.1, 30-41 and 2002, 20.2, 39-48 and 2002, 21.1, 35-39 and 2003, 21.2, 11-21. Dean's requirement that superstitious beliefs be stronger in rural areas is not supported by the results for 7,952 French professionals. On Christian feast days the excess births for 2,390 priests and monks was not significantly more than for 15,942 professionals. Superstition declined steadily from 1800 to 1950 but the avoidance of unlucky days etc did not, nor did planetary effects, therefore avoidance is not a valid measure of belief. A total of 320,817 hospital births in 1987-1994 showed a strong midnight avoidance, disconfirming any link with witches. Faking dates and faking astrology seems more evil and more difficult than faking just one, so planetary effects should be weaker on faked days, not stronger. Adding other planets should increase the correlation with avoidances due to the extra information but it does not. We now know that Dean-type explanations of planetary effects are untenable. **Reply** by Dean in *Correlation* 2006, 23.2, 53-57 points out that there is no

requirement that superstitious beliefs be stronger in rural areas. The excess births of priests and monks on Christian feast days was 39% and 13%, both in the expected direction. Astrological beliefs were once regarded by the elite as part of science and do not qualify as superstition. The avoidance was only of the witching minute 0:00, not the witching hour, so it was to avoid ambiguity, not witches. To say more faking = less effect does not make sense. Why should adding non-relevant planets provide extra information? Ertel's points ignore crucial results such as my heredity findings, my cluster analyses, and the astonishingly close match to every one of the many Gauquelin puzzles. **Counter-reply** by Ertel in the same issue pages 58-61 concludes that Dean continues "to propagate views ... despite ... factual contradictions". [For more on this interchange see *The Gauquelin work 3* on this website under Gauquelin.]

7. Tests of astrologers (12 abstracts)

Chart Interpretation: An Alternative Strategy for Counseling

Mary Cummings, Melinda Smith, Kristi Lovick, and Paul Crosbie *Kosmos* 1978, 8.2, 5-26.

This study from the University of Montana explores the public acceptance of astrology, and tests the validity and usefulness of chart interpretations. In **Part 1** a questionnaire survey of 220 university students showed that 91% had been exposed to astrology (eg through newspapers and books), 64% knew one or more characteristics of their Sun sign, 56% felt that astrology had some validity, and 36% would visit an astrologer if one was available. The students most receptive to astrology were those not majoring in science or business, who agreed that traditional counselling was valid, and whose parents and friends were receptive to astrology. In **Part 2** twelve subjects working blind had to pick their own from three chart interpretations based on date, time, and place of birth. The authentic chart interpretation was rated 1st, 2nd, 3rd by 4, 6, 2 subjects vs 4, 4, 4 expected by chance. [In the table of results 6 is given as 7, but the text suggests it should be 6.] The mean rating on a six-point scale (1 Extremely descriptive through 6 Extremely non-descriptive) was 2.46 for authentic charts and 2.56 for the controls. Neither difference was significant although slightly in the right direction. In **Part 3** each of the twelve subjects was given a one-hour oral reading of their own chart followed by a questionnaire to determine its usefulness. Nine subjects rated the reading as very accurate, increasing their confidence in the validity of astrology, and rated chart interpretation as very useful in counselling. The other three rated the reading as moderately accurate and chart interpretation as moderately useful in counselling. The researchers noted that the reading was highly effective in eliciting personal and other information from the subject, more than could be obtained in a conventional interview. Conclusion: chart readings are a useful but not necessarily accurate counselling tool. Most important, the counselling relationship rests not on the accuracy of the reading but on the counselling skill of the person doing the reading.

Two Tests of Astrologers

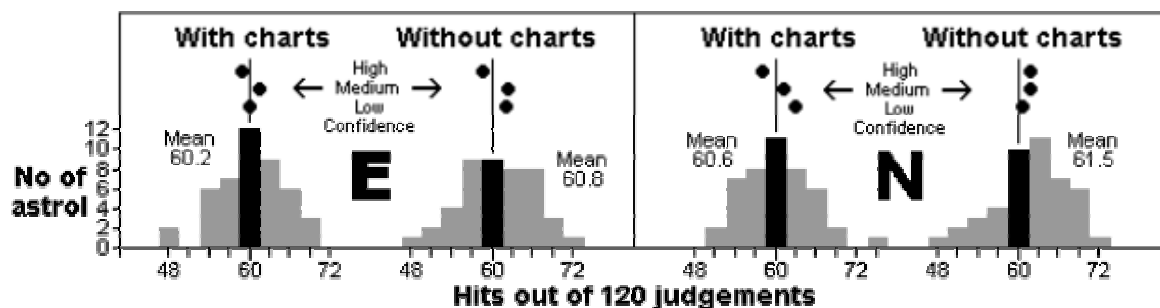
Wout Heukelom *Tidschrift Astrologie* 1978, 2.2, 12 and 1979, 3.1, 24-25. Four horoscopes (dentist, businessman, painter, engineer) were matched to their owner's profession by 19 members of the NGPA, the Dutch Society of Practising Astrologers. Of the 19 responses, 7 had all 4 correct vs 0.8 expected by chance, 8 had 2 correct vs 4.8 expected, 2 had 1 correct vs 6.3 expected, and only 2 had 0 correct vs 7.1 expected. However, the horoscopes had been provided some years previously by a professional astrologer, and it was suspected that they had been selected because they closely fitted what the average textbook said. For example the businessman had Sun and Mercury in 2nd house, indicating a life dealing with money. So it was decided to repeat the test with the same NGPA members using a new unselected horoscope for each of the four

professions. 17 members responded. This time nobody had 4 correct matches, and not many had 2 correct. Indeed, the outcome was so disappointing that the exact numbers were not recorded. The result illustrates the need to avoid bias due to prior selection.

Can Astrology Predict E and N? 2. The Whole Chart

Geoffrey Dean *Correlation* 1985, 5.2, 2-24. To test whether astrologers using the whole chart can predict E (extraversion) and N (emotionality) in ordinary people, the charts of 160 subjects with extreme scores on the Eysenck Personality Inventory were judged by 45 astrologers from beginners to recognised experts. The subjects had been selected from a parent sample of 1198 subjects to give the 20 most extreme subjects in each of the 8 categories E+, E-, N+, N-, E+N+, E+N-, E-N+, and E-N-, all with birth times generally given to better than half an hour, which allowed a total of 120 E judgements and 120 N judgements, both much larger than the 10 judgements typical of most previous studies. The average pair of opposite extremes was equivalent to the two most extreme persons in a random sample of fifteen adults. This compares with the usual approach in experimental psychology which at best is to take the two most extreme persons in a random sample of three. Allowing 5 minutes per judgement the test required a whole week of evenings to complete and was thus the largest that astrologers were likely to tolerate. All charts were computer calculated by ACS in the style preferred by each astrologer with a choice of several house systems, midpoints, asteroids, and Hindu sidereal with navamsa.

The astrologers judged the direction (high + or low -) of E and N, and indicated how confident they were in each judgement. As a control another 45 astrologers made the same judgements by simply guessing. The result was 5400 judgements each of E and N, and the same number of control judgements. For both E and N the agreement among astrologers was very poor (mean kappa 0.10 for direction and 0.01 for confidence), and the hit rate was at chance level (mean 50.3% vs 51.0% for controls vs 50% expected by chance), showing if anything that judgements were made worse by looking at charts.



Distribution of hits. Above each plot black circles indicate the equivalent hit rate for judgements made with high, medium and low confidence.

Other things being equal, the hit rate should improve as confidence increases, especially as each astrologer had complete freedom to take into account all relevant factors ranging from birth time uncertainty to uncertainties in interpretation. But judgements made with high confidence were no better than those made with low confidence. Factors such as technique, experience, personality, gender, use of intuition, and birth data accuracy made no difference. The fairness of the test was supported by the high proportion of judgements made with high confidence (34%) and medium confidence (45%). On average each astrologer had 10 years of experience and spent 5 minutes on each judgement.

Palmistry avoids the problem of uncertain birth times, so might palmists perform better than astrologers? This was addressed by a sub-test in which audiences of astrologers or palmists had to make 16 E and 15 N judgements of the charts and hands (both projected as 35 mm slides) of extreme scorers. As in the main test the average time per judgement was about 5 minutes. The 13 most experienced astrologers (all part-time or full-time professionals) averaged 54% hits with an agreement kappa of 0.10. The 14 most experienced palmists (at least 6 were professionals) averaged 51% hits with an agreement kappa of 0.12. The number of judgements was too small to tell if there was a genuine difference, especially as neither group performed better than chance. Synthesis was largely ignored, and audiences were swayed in their judgements by the presence or absence of relatively few factors such as this aspect or that line. They usually differed on what was relevant, so disagreement was the rule. Thus it was not uncommon for half the audience to vote one way and the other half to vote the other way. This disagreement had no evident effect on their faith in astrology or palmistry.

Do astrologers perform better than cold readers? As it happens an out-of-practice student of cold reading was present at one of the early sub-tests and was in the worst possible position at the back of the room. He noticed that when I announced the judgements to be made, I tended to lower my eyes and voice during the correct judgement (which of course I knew in advance) as if trying to hide it. From such cues alone he scored 72% hits, higher than anyone else even in the main test. After this I took precautions to prevent cues. The mean hit rate was 56% for 17 astrologers before precautions vs 52% for 22 astrologers after precautions, suggesting that astrologers do pick up cues but not to the extent that a cold reader does. The astrologer concerned with maximising client satisfaction could therefore do worse than abandon astrology (but not of course the pretence of astrology) in favour of cold reading.

Summary of Carlson's Double-Blind Test of Astrology

Francoise Gauquelin *APP* 1986, 4.1, 4-8 followed in the same issue by comments from Hans Eysenck and Teresa Weed Hamilton. The original study by Shawn Carlson appeared in *Nature* 1985, 318, 419-425 at which time it was the largest study of its kind and was notable for involving an advisory panel of three prominent NCGR astrologers to ensure that the study was fair, and double-blind conditions to avoid any possibility of bias. In view of the controversy it created, the following abstract includes information kindly provided by Carlson in 1986 that is not in the *APP* abstract or in the original paper. The study involved three different tests as follows:

(1) 128 subjects obtained via advertisements and notices in the San Francisco Bay area had to pick their own chart interpretation out of three. Subjects excluded those who strongly disbelieved in astrology, had previously had a chart constructed, or were under 17. Roughly half were male and the mean age was 28, range 17-65. Subjects could not be test subjects (but could be controls, see below) if their birth place, date and time were not documented and if their birth time was not recorded to better than 15 minutes. The charts were calculated by two astrologers using a Digicomp DR70 [a dedicated chart-calculating computer introduced in the 1970s before PCs became popular], and the interpretations were individually typed by a total of 28 experienced astrologers selected by the advisory panel for competence and a background in psychology. Each interpretation was about 1000 words on pages supplied by Carlson that had pre-printed headings typical of an astrology reading (personality, relationships, career, education, current situation) to ensure uniformity of content and length. So each was representative of the best US professional practice. To avoid give-away clues, each interpretation avoided astrological terms and age indications. In addition, 128 control

subjects (same Sun sign as the actual subjects but differing in age by at least 3 years) were given the same task. Usable responses were received from 83 subjects and 94 controls. The 83 subjects ranked the authentic interpretation 28, 33, 22 times in 1st, 2nd, 3rd place, which was not significantly different from the results expected by chance ($83/3 = 27.7$ times in each case, $p = 0.57$). The 94 control subjects ranked the authentic interpretation 42, 34, 18 times in 1st, 2nd, 3rd place, which was almost significantly different from the results expected by chance ($94/3 = 31.3$ times in each case, $p = 0.07$).

(2) To test whether subjects could recognise themselves, they also had to rank the accuracy of 3 CPI profiles. One was their authentic profile, the other two were chosen at random from other subjects of the same sex. The same 3 profiles were also given to control subjects chosen at random and of the same sex as the test subjects. The subjects had to be matched for sex because the CPI contains scales that discriminate between the sexes. The CPI has 18 scales, 3 of which (well-being, good impression, communality) are designed to detect faking, and the rest provide scores on personality dimensions such as dominance, sociability, self-control, responsibility, achievement, and femininity. The CPI was used in preference to other personality inventories because its scales were judged by the advising astrologers to be closest to what is discernible in a chart. It had also been extensively researched. Unfortunately the subjects had not been advised in advance of this second test, most were not particularly interested in the CPI, and more than half failed to respond. The 56 subjects who responded ranked the authentic profile 25, 16, 15 times in 1st, 2nd, 3rd place vs $56/3 = 18.7$ expected, which was in the right direction (and more in the right direction than picking authentic charts) but not significant ($p = 0.46$). For the 50 control subjects who responded the corresponding rankings were 21, 13, 16 vs $50/3 = 16.7$ expected, again nonsignificant ($p = 0.61$). Given the difficulty of understanding a graph rather than readable text, these results are perhaps unsurprising.

(3) For each of the charts they had interpreted and a further chart, each astrologer was given 3 CPI profiles. One was the authentic profile for the chart subject, the other two were chosen at random from other subjects of the same sex. Each astrologer also received a copy of the CPI interpretation manual that explained the meaning and interpretation of each of the 18 CPI scales. They then rated the fit between each profile and chart on a scale of 1-10. Because all astrologers had some background in psychology (nearly all claimed to have some formal training in psychology, average 3 years, three were professional psychologists, and most claimed to have some experience with the California Psychological Inventory), this test should have been easier than it was for the subjects. Nevertheless, of 226 charts sent out, only 114 were returned. The astrologers matched the authentic profile 40, 46, 28 times in 1st, 2nd, 3rd place vs $114/3 = 38$ expected by chance, which was in the right direction but was not significant ($p = 0.32$).

The advisory panel had predicted that, in tests (1) and (3), the hit rate would be about 50% vs 33.3% expected by chance, whereas the observed hit rates were 33.7% and 34.5%. So even though the panel was satisfied that the tests were fair, the results were at chance level (and still less than the 44.6% hit rate for subjects picking their own CPI profile). **Comments** by Hans Eysenck and Teresa Weed Hamilton focussed on the CPI. Despite its popularity, most of the validity coefficients for single scales are low, while collectively the scales are both too complex and too limited to be a good test of astrology. Its acceptance by the advising astrologers suggests they had little training in

psychology. Carlson's study cannot therefore be considered as a valid test of astrology. [This ignores the first test, which did not involve the CPI, and therefore remains valid.]

Guy de Penguern's New Challenge to CORA

Francoise Gauquelin *APP* 1987, 5.2, 10-14. In response to Guy de Penguern's claim that he could determine health problems from the birth chart, I submitted to him 100 cases with birth data and approximate birth time, each with the date (sometimes also the time) of death. The cases were taken from the register of a Paris hospital. Initially he gave a dozen health problems for each case, but the number of agreements with the hospital records was poor (6% for the first 50 cases), so he agreed to focus on deaths by cancer and cardio-vascular disease. But for 51 cases he predicted more cancer than expected by chance among non-cancer cases than among cancer cases, which was in the wrong direction. I must thank Guy de Penguern for having had the patience and dedication to thoroughly perform this test. It brings a clarification that had to be done.

An Open Letter to National Public Radio

Purcell Styber *Kosmos* 1990, 19.4, 34-43. To Morning Edition, National Public Radio, Washington DC. You recently broadcast a tacky segment on astrology that shows you know nothing about it. The astrology you find impossible to accept (newspaper horoscopes) is the same astrology that genuine astrologers refuse to accept. There is a large body of evidence suggesting that genuine astrology cannot be dismissed. Gauquelin's Mars effect, Vernon Clark's matching experiments, John Nelson's radio studies, Frank Brown's work on oysters, to mention only a few. But try it for yourself. Choose two people you know, send me their birth data, and I will send you a four-page psychological analysis without knowing their names or even seeing them. Since people with fixed opinions are rarely receptive to contrary evidence, I will understand if I do not hear from you. [No response was reported in subsequent issues. Of the four examples of evidence, three were known at the time (but evidently not by the author) to rest on artifacts, and the fourth (Gauquelin) requires further work before artifacts can be disregarded.]

The Devil and his Advocate

Wout Heukelom *AinO* 1991, 6.1, 29-39. The author reviews three large-scale tests of astrologers by Carlson, Dean, and McGrew & McFall. [Abstracts of all three are included in this section.] He plays the role of a devil's advocate who criticises both astrologers and scientists. Main conclusions: (1) Astrologers think they can judge the quality of well designed scientific studies, and carry out difficult matching tests. Apparently they cannot, but neither can any untrained person. (2) In these three studies not a single astrological rule, either alone or in combination, has been found valid, for which there is no satisfactory explanation from an astrological point of view. (3) Readings by astrologers of the whole chart have been found invalid. Another demerit point for astrologers. (4) Astrologers disagree in their assessments of a single birth chart, and in their confidence in that assessment, and more than one third disagree with themselves when assessing the same natal chart for the second time. (5) Astrologers assume their success is due to the validity of astrology. They are wrong, because clients appear just as happy with delineations from wrong charts. (6) Probably astrologers are not aware of the psychological and physiological mechanisms (like Barnum effects and body language) that could explain their apparent success. (7) Astrologers protect themselves against the negative results of scientific studies in which they took part by adopting astrological and nonscientific explanations.

A Collaborative Vernon Clark Experiment

John McGrew and Richard McFall *Correlation* 1992, 11.2, 2-10. Six astrologers matched 23 birth charts to comprehensive case files, including photographs and a 7-page 61-item questionnaire devised by them that covered hobbies, interests, school grades, best and worst subjects, talents, vocational interests, past and present jobs, education and occupation of parents, type of neighbourhood where they lived, relationship with parents and siblings, dates of deaths in family, dates of moves across the country, birth defects, disfiguring injuries, deviant behaviour, convictions, whether a victim of serious crime, honesty, main personal problems, religious beliefs, health problems, fondness for travel, phobias, dislikes, attitude to authority, sexual relationships, loyalty, favourite colours, ideal living situation, punctuality, perseverance, a night or day person, strengths and weaknesses of best friend, goals in life, height, weight, hair colour, eye colour, skin colour, and race. Each question was open-ended rather than forced-choice, because the astrologers felt this better represented everyday astrological practice. The charts were of native Americans (4 men, 19 women) aged 30-32 years. Altogether the information provided was considerably more than would be involved in a typical consultation. Birth times were verified by birth records and in most cases were recorded with a precision of five minutes or better. The mean accuracy, i.e. agreement with the case files, expressed as Cohen's kappa (0 = zero accuracy and 1 = perfect accuracy), was 0.02. The mean agreement between astrologers was 0.03 (0 = zero agreement and 1 = perfect agreement). Accuracy was unrelated to confidence or to birth-time precision. In a follow-up study, five groups of 5-6 astrologers each matched a subset of 5 charts, so that collectively all 23 charts were matched. The mean accuracy was -0.15, i.e. worse than chance and in the wrong direction. Although the astrologers had collaborated to make the experiment as fair as possible, the negative findings had no effect on their belief in the validity of astrology.

An Attempt to Predict Accidental Death with Vedic Astrology

John Dudley *Correlation* 1995, 14.2, 7-11. The predictive qualities of Vedic astrology were tested using 20 pairs of birth data. One of each pair was a real person who had died in a road accident. The other was a fictitious person who acted as a control. In each pair the birth place was the same, and the birth dates were no more than three months apart, as were the death dates. Using Vedic astrology, a form of astrology widely applied in India, the author (working blind) attempted to identify the genuine accidental death. The result was 11 hits and 9 misses, which is not significantly different from the 10 expected by chance.

The Astrotest: A Tough Match for Astrologers

Rob Nanninga, *Correlation*, 1996, 15.2, 14-20, followed by a comment from Jan van Rooij 21-25. In May 1994 the Dutch daily newspaper *Algemeen Dagblad* published an article by Martin Boot, a former astrologer, who argued that astrologers cannot predict. In response the astrologer Rene Jelsma claimed "astrologers can really predict". So I decided to resolve this difference of opinion by inviting astrologers to take part in a test. All participants would receive the birth date, time and place of seven anonymous subjects. They would also receive the subjects' responses to a questionnaire devised by the participants. 5000 Dutch guilders (about £2000) was offered to any participant who successfully matched all charts to their owners.

More than 70 astrologers showed interest, sending in an average of ten questions that I synthesised into a list of 25 that covered education, vocation, hobbies, interests, main goals, personality, relationships, health, religion, etc. I also asked for dates of important events, and added 24 multiple choice questions taken from the Berkeley Personality

Profile. Eight experienced astrologers checked the result and had no major objections. At their suggestion I added three multiple choice questions covering family background. The seven subjects were born in the Netherlands during 1957-1959 with birth data supported by birth certificates. Subjects with an Ascendant near a cusp (so a few minutes difference in birth time could change its sign) were excluded. As a precaution, the questionnaire and list of birth data were sent to Dutch skeptics who tried to find the matching pairs. Although one scored three hits, there was no reason to suppose that any of the pairs could be identified by using hidden clues.

Of the 44 astrologers who took the test, at least half had read more than one hundred charts and were very experienced, while one-third were frequently paid for their services. One quarter were members of the Dutch Society of Practising Astrologers. Half expected 100% hits, and only six expected less than 60%, so their confidence was high. In fact the best astrologer scored only three hits. Half scored no hits, and the average score was 0.75 hits vs 1.00 expected by chance, giving a mean effect size of -0.04, not even in the right direction. There was no evidence that the most experienced astrologers did any better than beginners. The mean agreement between astrologers was 0.01, almost as if each astrologer had used a random generator for deciding their responses.

I asked the astrologers what factors might be responsible for the disappointing results. They pointed out that the outer planet positions were very similar (nevertheless the charts showed many differences), as were some of the questionnaire replies (for example all subjects claimed to be reliable workers, but again there were many more differences than similarities), and maybe the questions were not always answered truthfully (but why should anyone lie about their hobbies or the date of their wedding?). Some participants felt they did not receive enough information, but nearly all had received more than they had asked for. So these arguments are unconvincing. Even if all responses including birth data were totally false, this would not explain why the astrologers failed to show mutual agreement.

Some leading Dutch astrologers explained the results by resorting to the paranormal. They claimed that astrologers can get hits only by using their intuition or by tuning in to the cosmic order, which can be done only during authentic consultations. As soon as anyone interferes by selecting clients or asking questions, this ability disappears. But clearly the participants would not agree with this view, otherwise they would not have participated. Furthermore their confidence presumably included their confidence in intuition, whose role they would have maximised by their method of working. So the results allow no reason to suppose that astrology depends on paranormal influences. Includes birth data. **Comment** In this test the astrologers were offered such an enormous amount of information that solving the puzzle was unlikely, yet that was precisely the situation they requested. So their panicky explanations are unnecessary. They simply overrated their ability.

Leo Knegt: A White Crow Beyond our Wildest Dreams?

Rudolf Smit *Correlation* 1997, 16.1, 3-18 with a follow-up in 1998, 17.2, 72-75. If you wish to upset the law that all crows are black, you must not seek to show that no crows are; it is enough to prove one single crow to be white. William James, *What Psychical Research Has Accomplished* 1897. Leo Knegt (1882-1957) was one of the Netherlands' most eminent astrologers. He was tested in a 1933 blind trial by the lawyer Cornelis Van Rossem, who gave him the birth data and gender (and nothing else) of ten subjects selected for precise birth times, distinct characteristics, and the availability of someone who knew them well. Knegt had to describe characteristics that could be verified, and

had to avoid anything that was general, ambiguous, or hard to verify. In some cases Knegt was asked to focus on particular issues such as career, health, or whether the subject had a very unusual character trait. As a precaution, unknown to Knegt, Van Rossem had altered the birth co-ordinates very slightly, which made no significant change to the chart but prevented identification of the registry office and therefore identification of the subjects by inspection of registry office records. In his published results *Twee Occulte Problemen* (The Hague 1933), Van Rossem reproduces Knegt's ten readings in columns side by side with his own comments and those of the independent assessor.

Knegt's interpretations were found to be both accurate and at times amazingly specific, certainly more specific than most astrologers today would consider possible. For example his correct prediction that one female subject would find a position on a passenger ship could hardly be more specific considering that (1) in those days not many women had paid positions, (2) the subject never had a job before, (3) the position of the stewardess on a passenger ship was certainly much harder to come by than the position of an office clerk, and (4) Knegt did not use Pluto since it had then hardly been introduced into astrology, nor did he use midpoints or other modern techniques, his interpretations being based largely on planets in houses. Similarly he correctly identified a formidable swindler, a prominent inventor, marked nervous disorders, and long-term troubles due to swollen feet. In effect Knegt seems to have been an astrological white crow, living proof of the impossible. So how did Knegt do it?

For its time the test was quite good but by today's standards there are deficiencies. For example, it was not double blind, and it could have been influenced by three kinds of artifact: (1) Those that Van Rossem was unaware of because he was a lawyer and not a psychologist. (2) Those that nobody was aware of because it was the early days of experimental psychology. (3) Those that we ourselves are unaware of because Van Rossem does not give enough detail to answer our questions. For example, was it all done by post, were there time limits, where did he get his data and his second assessor, did anyone check that the printed results were identical to the original records, might Knegt be already familiar with some of the charts (at least four of the subjects were public figures), and so on. We just do not know, so we are unable to draw firm conclusions. In this article I look at Van Rossem's blind trial in detail, giving examples of Knegt's specific interpretations and the charts they were based on, and asking readers for their help in trying to find out how Knegt did it.

I also give the birth data for five subjects to see if readers can match them to (1) the case histories plus (2) correct specifics from Knegt's interpretations plus (3) Van Rossem's comments. For example they have to pick the chart that matched (1) *"A public and typical social figure; the native was a well-known speculator; a marked ascent in life followed by an inglorious end."* plus (2) *"Big spender. Short-lived role as author. Solid relationships in political and economic circles."* plus (3) *"Everything I asked for was in the interpretation. Even the special talent was hit right on the head. Also the psychological description is excellent."* The point is, in each case Knegt was successful and the way he was successful is shown in detail, so astrologers cannot argue that the test is unrealistic. I gave them a year in which to reply.

Follow-up Only two readers sent in suggestions about how Knegt did it. They did not agree on the signifiers that Knegt might have used, so no conclusion was possible. As for the matching test, I had also advertised it in the AA's newsletter *Transit* in order to reach as large an audience as possible (now perhaps more than 1500 readers), but

again only two astrologers responded. So I appealed to the Australian astrologer Dymock Brose, who had a large worldwide audience with his website and his monthly *Astrologer's Forum* newsletter, which quickly led to a further 19 astrologers responding. The results were disappointing. Most astrologers scored around chance level, namely one hit only. Only two astrologers reached three hits out of five. Overall there were 29 hits vs 21 expected by chance, whereas if each astrologer had equalled Knecht's performance there would have been 105 hits. Among the 21 astrologers there were 208 agreements, slightly less than the 210 agreements expected by chance. The effect sizes were hits 0.095, agreement -0.002. [In 2006 Smit attempted a further follow-up of the matching test via the internet. Eight astrologers responded. One scored two hits, another scored one hit, the rest scored no hits. Most of them used Chinese astrology.]

Can Astrologers Pick Politicians from Painters?

Suitbert Ertel *Correlation* 1998, 17.1, 3-8. A German astrologer had published an improved method of chart reading and asked me to test his skill. So I gave him accurately timed birth data for 20 Scottish politicians and 20 Scottish painters, in randomised order, copied from documents at Edinburgh's birth registration office. He was confident of being able to tell which was which, but his judgements were no better than chance. The challenge was then extended by internet communication. Eleven experienced astrologers asked for the birth data and sent in their judgements (five more received the birth data but did not respond). From their comments their methods seemed rather diverse, but all seemed to approach the test in a serious manner. However, they did not perform individually better than chance (range was 7-13 hits, four scored 12 hits, $p = 0.25$ by binomial test, and one scored 13 hits, $p = 0.13$). Nor did they succeed as a group (mean 10.7 hits, $p = 0.75$, equivalent effect size $r = 0.068$). Moreover, mean agreement was poor ($\kappa = 0.056$, where 0 = no agreement and 1 = perfect agreement). The result is consistent with previous studies. Possible reasons for the failure (other than failure of astrology itself) include wrong birth data, wrong professions, and insufficiently experienced astrologers, but none of these seem plausible. Includes birth data.

8. Approaches to research (16 abstracts)

Unlike the previous abstracts that focus on research results, those below are of articles that focus on approaches to research and related matters such as computers, internet, hidden persuaders, and the need for science. Astrologers see the universe as consisting of *connected* bits so we can tell what people are doing by looking at the planets. The current scientific model sees the universe as consisting of *disconnected* bits organised by natural evolutionary processes. Some astrologers claim this difference in viewpoint means that astrology cannot be studied by science. Other astrologers disagree, and this section includes some of their arguments for and against. Be aware that most of their arguments ignore the effect of hidden persuaders and are therefore of historical interest only.

The Whole is More than the Sum of its Parts

Peter Niehenke *APP* 1983, 1.2, 29-32. Statistical investigations into astrology are often accused of not doing justice to the astrologer's intuitive skill, thus bringing about their bad reputation among convinced astrologers. But some astrologers have misused their art in a similar way and brought it into disrepute among scientists. Between a justified distrust and the unjustified fear of bad results, we should accept the usefulness of statistical tools for overcoming our prejudices and improving our knowledge. Whatever the outcome of such inquiries, positive or negative, it will help the discussion of what

astrology really is. We need to be aware that the multiplicity of horoscope components make it open to any interpretation whatsoever. Two examples: (1) Recently I saw three horoscopes of John Lennon, each with a different birth time, yet each indicating "definitely" Lennon's sudden death. (2) One of my clients had consulted four other astrologers before she came to me. She judged my interpretation to be the most adequate of all, and showed me the work of my colleagues for comparison. I thus became aware that I had made an error of twenty years in her birth date!

Professional Astrology Discussion

Anon *Kosmos* 1984, 13.3, 28-32. A discussion among nearly 20 leading representatives of several US astrology groups reached agreement on the following definition of astrology: "Astrology is the philosophy that postulates a relationship between relevant celestial phenomena and/or processes and certain terrestrial affairs". The definition leaves open the cause of the relationship, and leaves undefined the celestial phenomena and terrestrial affairs to allow its adoption by schools of astrology regardless of the techniques they use. Agreement was also reached on a code of ethics based on the codes of several of the represented groups. [Dictionaries, encyclopedias and astrology textbooks have defined astrology variously as a science, a supposed science, an art, a divinatory art, an art/science, a language, a philosophy, and as a system for self-understanding. But the majority (roughly half) define astrology as the *study* of relationships between the stars and human affairs. In non-astrology books the reference is usually to *supposed* relationships.]

Opinions from a German Conference

Francoise Gauquelin *APP* 1984, 2.3, 3-4. In this changing world astrology has lost its immobility. It has become a research topic for diplomas and theses, more numerous each year, presented at universities all over the world. This research trend is bringing continuously new arguments for and against the traditional laws of the astrological system. How is this new trend perceived by astrologers? An open debate presided by Peter Niehenke at the end of the Conference of the German Astrological Association in Bensheim (13-15 April 1984) asked the question: **Is Astrology in a Crisis?** The variety of reactions to this question was interesting. Here is my summary of some of them: *Peter Niehenke*: Is a judgment possible for us? If the result comes out negatively, will we admit it to be true and give up astrology? *Herr Schulze*: Astrology being a body of knowledge preserved by Babylonian priests on clay tablets, and most of the tablets having not yet been deciphered, how can this body of knowledge be already judged and condemned by modern science? *Thomas Koberl*: There is never one definitive judgment, but a long series of tests, with the possibility of a slow adaptation of our practice to their verdict. *Francoise Gauquelin*: I don't consider that as a crisis, only as the normal course of events. When old assertions begin to be verified instead of remaining intangible, some will need modifications. It may be felt as painful, but it is unavoidable. *Frau von Kraft*: Astrology cannot be in a crisis, because it is not a scientific theory that can be checked. It is just a method for helping others. *Gudula Beyse*: Astrology being a science of the mind, it cannot be reduced to a physical science. It is based on analogies, not on rational methods. *Heidrun Kunzmann*: The way in which scientific researchers study astrology is excessively simplistic. This is why it cannot bear results. *Thomas Koberl*: This becomes evident when astrologers, each using a different method, nevertheless achieve successes in their practice. *Karlheinz Grzybienski*: Of course we are used to start from the observation of individual cases. But with many individual cases, a general knowledge should ultimately emerge. *Adele Conrad*: The crisis comes from having so many different methods, so many theories. In this sense, it seems to me that scientific checkings of what is really working may be important. *Manfred Groeger*: It is important to make

things quantifiable, for there is a need for proof. *Peter Niehenke*: Yes, but aren't we used to do it in an often superstitious way? Have we enough training for making useful comparisons? I have often the impression that we just want to rest on our cosmic bed. This is not enough. We must accept a certain crisis in our too comfortable beliefs.

Personal Computers and the New Astrology

Richard Nolle *Kosmos* 1987, 16.1, 36-41. Only since the mid-1979s has solid-state technology made it possible for the average person to have a personal computer. Today (this was written in 1986) a PC as powerful as the mainframe computers used by NASA to land a man on the Moon is affordable by any astrologer. An off-the-shelf PC XT takes only 1.5 minutes to calculate and print an error-free natal chart, often with options not readily available in books such as parallax correction. Before computers the Erlewinés used punched-card charts sorted with metal rods to find how many had a particular factor, while my wife and I shuffled many hundreds of charts in index-card form to do the same. All of those charts had of course to be calculated by hand. Today a PC XT will take just a day or two to do work that previously took months of painstaking brain-draining exhausting labour. Yet astrologers remain trapped in dogma and tradition. We learned from books written by authors who learned from books, and so on, thus passing on a set of rules accepted more or less on faith, simply because we had no way to test them systematically. It was possible only to apply them here and there using the few charts we could calculate by hand. Today we don't have to accept this mess any more. [PCs in 2007 are a thousand times faster than an XT and can calculate a chart in a fraction of a second]

Methodological Issues

J.E.Becerra *Kosmos* 1987, 16.2, 42-47. Reprinted in *APP* 1988, 6.1, 36-39. The author, a medical epidemiologist, evaluates the strength of observed astrological correspondences and thus their relevance to astrological practice. He points out that measures of statistical significance depend on both the sample size and the correlation between variables, so the latter is confounded by the former. What is needed in astrology is a measure of the strength of the association. In epidemiology such a measure is the relative risk, given by chance of X if you have Y / chance of X if you don't have Y. For example the chance of lung cancer if you smoke is about 10 times the chance if you don't smoke. For the Mars effect the relative risk = the risk of an eminent professional being a sports champion if Mars is in a key sector / the risk of being a sports champion if Mars is not in a key sector. Here the relative risk is given by $(\text{Obs}/\text{Exp}) / (\text{N}-\text{Obs})/(\text{N}-\text{Exp})$ where Obs = observed frequency, Exp = expected frequency, and N is the sample size. In terms of the percentages given by Gauquelin, relative risk = $20.8/17.2 / (100-20.8)/(100-17.2) = 1.26$. That is, an eminent professional is 1.26 times more likely to be a sports champion if they have Mars in a key sector than if they don't. Since there is no Mars effect for ordinary people (ie Obs = Exp), the relative risk for ordinary people is 1.00. That is, an ordinary person is no more likely to be a sports champion if they have Mars in a key sector than if they don't. For low relative risks, usually defined as less than 1.5, the statistical significance mostly depends on sample size, so even very significant results (as in the Gauquelin work) may have no practical value. The author suggests that a correspondence will be useful in practice only if the relative risk exceeds about 2. Three years later, in *Kosmos* 1990, 19.1, 2-4, the author notes that nobody has heeded his advice, adding that the improper use of statistics by some authors is not a valid argument for ignoring scientific standards in astrological research. [Unfortunately relative risk has no upper numerical limit, a disadvantage that can be avoided by using instead the effect size expressed as a

correlation, which has limits of ± 1 . For the Mars effect it is given by $(\text{Obs}-\text{Exp})/(\text{N}-\text{Exp}) = 0.043$ or very roughly by $(\text{relative risk} - 1) \times \text{Exp}/\text{N} = 0.045$.]

Research: Some Concepts

William E Brandt *Kosmos* 1988, 17.4, 4-12. The term "research" has been applied so widely that it now has no single identifiable meaning. One approach classifies it as *historical* (looks at past events), *descriptive* (looks at present events), and *experimental* (tests ideas). Regardless of the type, good research is careful and systematic. It cannot tolerate anything vague, sloppy, or unclear. Research is needed if astrology is to attain credibility. But first the aim must be defined. Research is not the answer if we fail to define the question.

Science as a Way to Consensus

Wout Heukelom *AinO* 1990, 5.2, 1 & 6. In the spring of 1987 a successful "Studium Generale" was held on astrology at the University of Groningen. Yet beforehand there had been complaints from both sides. Scientists objected (wrongly) that astrology was unverifiable. Astrologers felt (wrongly) that speakers would be stacked against astrology (in fact just as many astrologers as scientists were invited to speak). The organisers wished only to have a fair discussion about the merits of astrology based on the facts gathered through research. This is the only way to a fair consensus. We should not be for or against astrology, we should want only to get the facts right.

Unprofessional Tendencies in Astrology

Jacob Ruijling *AinO* 1992, 7.2, 26-35. Why do outsiders perceive astrology as nonsense? For example the Dutch skeptics society want a disclaimer in the horoscope columns of newspapers. One reason for this perception is that astrologers ignore the results of empirical research, yet anyone who studies this research must conclude that astrology cannot live up to its claims. So there is a tension between astrology and observation. For example a joint committee of Dutch astrological organisations, set up to formulate guidelines for improving astrological practice, concluded in 1992 that the quality of a birth chart reading comes from the astrologer and is not determined by any particular technique. This immediately creates problems because ethical codes imply that astrologers can predict the future (eg of the client's health) whereas the research shows that astrology cannot predict. The same codes say that astrologers should not predict, but by definition astrologers cannot avoid predicting if they use birth charts. Important questions that I cannot answer include whether education (eg in medical astrology) can be tested if the discipline itself has not been tested, how education, diplomas, and discipline are connected, and what kinds of education presently exist. If astrologers are to progress they must recognise that (1) astrology cannot predict, (2) astrologers predict but not on the basis of astrology, and (3) astrologers should focus more on what makes astrology appear to work and on how astrologers should work.

Difficulties in Attempting to Study the Meaning of Pluto

Marian van Brakel *AinO* 1993, 8.1, 36-41. This article illustrates the difficulties one can encounter when attempting to do astrological research. In my astrological practice I had become intrigued by the link that transitting Pluto seems to have with difficult periods in the lives of my clients. So in March 1991 I joined a committee to study the effect of Pluto. We advertised for subjects willing to be interviewed and collected 13 useful charts. But not everyone could interview them, we were inexperienced in research, we could not agree on the results or on how to proceed, astrologers who knew about science criticised our approach, and ordinary astrologers wondered what we were doing and thought it was all a waste of our time. The committee was dissolved in April 1992. The article ends

with a plea for suitably trained people to start a new research project that avoids the above pitfalls. [But they already had, see first section]

Is the Scientific Approach Relevant to Astrology? (Key Topic 1)

Geoffrey Dean, Arthur Mather, and 33 others *Correlation* 1994, 13.1, 11-52. To collect views on this topic we (Dean and Mather) compiled a brief discourse that explored the scientific approach, its limitations, and its relevance to astrology, and sent it to over 100 potential commentators (mostly astrologers, mostly non-subscribers to *Correlation*, and about 50% female), of whom 23 responded. Their opinions ranged from "excellent and provocative" to "virtually valueless." We revised the discourse in the light of their comments and sent it back to the 23 respondents (13 replied). We also sent it to several key astrologers who had not responded to the initial discourse (2 replied), and 10 interested scientists (8 replied). Where possible each reply was recycled with its author to eliminate avoidable arguments and to cover questions that informed readers might be expected to ask. In total 33 people responded of which 4 were female. Their contributions ranged from a few sentences to nearly 4500 words, each bringing a view that, collectively, provided a breadth never before achieved in print. From now on nobody should debate scientific issues in astrology without first reading this collection.

Summary: (1) Is the scientific approach relevant to astrology? Yes, but only to those parts testable by observation. No assumptions about how astrology works (eg causally or non-causally) are required. Thus to test whether a person fits his chart better than a control requires no assumptions whatever. (2) Why are scientists and astrologers in conflict over whether astrology works? Mainly because they tend to look at different things. Scientists are mostly concerned with accuracy (controlled tests) whereas astrologers are mostly concerned with satisfaction (client acceptance). But accuracy is unrelated to satisfaction. So their views can conflict yet both can be right. In particular cases a more important reason on either side may be dishonesty, ignorance and arrogance.

Different Approaches to Astrological Research

Charles Harvey *Correlation* 1994, 13.2, 55-59. The ordinary research done by astrologers this century has led to conceptual breakthroughs such as midpoints, harmonics, composite charts, and Astro*Carto*Graphy, whereas the formal research by researchers has led to something of an impasse. Why the discrepancy? Currently the only approach seen as having scientific value focusses on measurement (Earth) and analysis (Air). Other approaches such as intuition (Fire) and feeling (Water) are generally ignored, yet these qualities underpin astrology. So the discrepancy arises from the failure of researchers to compare like with like. For example it might be fruitful to compare chart readings not with personality scores but with the profile produced by a depth psychologist or a psychologically aware journalist. Or to have a psychologist evaluate the reading of someone she knows intimately. Such approaches may not lend themselves to number crunching but they do involve comparing like with like, and therefore have a greater chance of revealing astrology's power to describe people. The more we think in the symbolic terms used by astrology the more likely we are to come up with convincing results.

Authenticity a Precondition for Tests of Astrology

Leon van Assem, Wil Rozenbroek and Steef van der Weele *AinO* 1995, 10.1, 6-8. In 1992 NGPA, the Dutch Society of Practising Astrologers, surveyed the philosophical opinions of its leading members and received 19 replies. Concerning scientific research into astrology, the views they agreed on were as follows: The birth chart shows a person's inner life, disposition, health, present circumstances and future tendencies, but

not abilities, morals or IQ. Not every chart indication will unfold. Indications can be overruled by free will. There is an ordering principle in life (as above so below) that is thought to be working during an astrological consultation. A successful consultation requires intuition, rapport, and conversation with the client to identify problem areas in more detail and to correct errors in the astrology. The last means that contradictory indications by different systems do not matter. Only a few respondents felt that chart interpretation without knowing the client was possible and useful.

Some Philosophical Problems of Astrology (Key Topic 2)

Geoffrey Dean, Peter Loptson, and 13 others *Correlation* 1995, 14.2, 32-44. Modern philosophers generally accept astrology as a source of sympathy and support, but they reject it as a source of knowledge. This matches the idea that astrology can be viewed in two ways, one in terms of the satisfaction enjoyed by users, and the other in terms of its accuracy. Of course the two viewpoints may not be independent but for the present purpose this is of no consequence. Astrology from the satisfaction viewpoint is generally unproblematic: (1) Satisfaction typically rests on value judgements and subjective feelings, both of which can legitimately differ. So arguments about the extent and type of satisfaction provided by astrology may be pointless. (2) The astrology so viewed need not be true and is therefore uncontroversial. (3) Nevertheless problems can arise if astrologers needlessly embrace assailable arguments. Why undermine uncontroversial claims with assailable arguments? (4) Problems can also arise if satisfaction depends on perceptions that are in fact false. Action based on false perceptions could be harmful. Astrology from the accuracy viewpoint faces numerous problems: (1) Astrology is defined as precisely not the result of any means we know of. (2) Astrological effects are essentially statistical, are nonidentifiable except after the event, and therefore cannot be an independent source of knowledge. (3) Astrologers have been reluctant to describe what their model predicts, the criteria by which it could be tested, and the evidence they would accept as showing it had failed. (4) No claims to accuracy can be justified unless astrologers make proper experiments *and* distinguish between alternative explanations *and* have independent reasons for thinking that astrological effects exist.

Astrology on the Internet

Joanna M Ashmun *Correlation* 1996, 15.2, 35-51. The author surveyed astrology on the Internet during 1996. Almost all public astrology on the Internet is social or commercial talk of little interest to researchers. Hundreds of serious astrologers subscribe to mailing lists, some moderated and some not. The most striking quality of lists is that they discuss *everything*, often generating more heat than light, but saying a lot about the power of astrology to generate mutual interest across social and cultural boundaries. As people join and lose interest (it usually takes about 3 months), the newcomers bring up the same old topics, so the level of discussion does not deepen over time. Nothing is resolved or changed. The way astrologers treat researchers and skeptics is just the way they treat other astrologers who disagree with them -- they continue on as if the disagreements never existed. From experience with lists on other topics, I have to say that posts by astrologers are less literate than average. Most would rather have an iffy quotation from Rudhyar or Jung to support their opinions than some good numbers. Many astrologers have university educations, quite a few have graduate degrees, and they must, therefore, have had to do some reading, writing, and scholarship sometime, but these presumed skills rarely escape to the mailing lists.

I've recommended *Correlation* a few times when relevant but haven't seen it mentioned except in replies to me. Overall, journals of all types including newspapers and popular magazines are mentioned on the lists no more often than once in every 2000 postings.

There are frequent mentions of a big variety of astrology books but no agreement that any particular author or book is the last word on any topic. In June 1995, before my present survey, a poll was taken on alt.astrology asking which five astrology books readers would pick if five were all they could keep. The report doesn't say how many replied, but the results require at least 25 respondents if everyone gave five titles. Of 107 titles named, the two most popular books (number of picks not reported, but at least three each) were Reinhold Ebertin's *Combination of Stellar Influences* and Robert Hand's *Horoscope Symbols*. Twelve other books were named more than once. In A-Z author order they were John Addey's *Harmonics in Astrology*, Stephen Arroyo's *Astrology. Karma and Transformation*, Geoffrey Dean and Arthur Mather's *Recent Advances in Natal Astrology*, Liz Greene and Howard Sasportas's *The Development of Personality Seminars in Psychological Astrology I*, Liz Greene's *The Astrology of Fate*, Liz Greene's *Saturn. A New Look at an Old Devil*, Robert Hand's *Planets in Transit*, Marc Edmund Jones's *The Sabian Symbols*, Debbi Kempton Smith's *Secrets from a Stargazer's Notebook*, Tracy Marks's *The Astrology of Self-Discovery*, Dane Rudhyar's *The Astrology of Personality*, Bil Tiemey's *Dynamics of Aspect Analysis*. Another 93 titles were named once each.

Astrology and Human Judgement (Key Topic 4)

Geoffrey Dean, Ivan Kelly, Arthur Mather, and 5 others *Correlation* 1998, 17.2, 24-71. Unless we understand the judgement processes that underly chart interpretation and its assessment, we cannot hope to understand astrology. In the psychological literature these processes have been studied for more than a quarter of a century, but in the astrological literature they have been almost completely neglected. The bad news is that, from start to finish, astrology involves the kind of judgements that we are not very good at. There are many non-astrological reasons [described elsewhere on this website as reasoning errors or hidden persuaders] why astrology should be seen as valid, none of which require that astrology be true, which of course is not a problem peculiar to astrology. The good news is that there are ways of avoiding the known ways of fooling ourselves, and ways of dealing with crooked arguments, all described at some length. However, such matters are almost universally ignored by astrologers and their teaching institutions. Until the situation improves, the education of astrologers will be fatally deficient.

On Being Properly Scientific

Geoffrey Dean *Correlation* 2003, 21.2, 43-45. Everyone might agree with the editor in 21.1 that well-designed studies should do away with erroneous conclusions. But it is hard to agree that current studies in *Correlation* reach this standard. Their conclusions may not be erroneous in themselves but they mislead when they assume that confirmation of astrology's reality is only a matter of time. Indeed, *Correlation's* current sub-title (research in astrology) would seem to require it, whereas the sub-title before 18(1) (research into astrology) did not, in the same way that we can do research into phlogiston but not in it. The crunch question: Can astrologers do what they claim? This was a difficult question to answer in the 1970s when only a handful of studies existed, but today there are something like a hundred studies (albeit not all of them easily retrievable) with enough variety in design to satisfy most enquiries. Provisional bounds can now be put on what astrologers can and cannot do. The problems with the way astrologers draw conclusions from experience are now known. We can now decide which topic will be of most value to that forgotten person in research, the working astrologer, be it techniques or counselling skills or (worst case) how to survive disconfirmation. Yet these important advances are not mentioned in current issues of *Correlation*. Authors seem not to be doing their homework. If we are to be properly relevant we must start

from what astrologers can actually do under artifact-free conditions, not from what they say they can do under who-knows-what conditions. We must focus on what astrologers would accept as disconfirming evidence, not on evidence they would reject as irrelevant. We must distinguish between reality and vested interests (think of Galileo). Finally we must do what few authors and referees seem capable of doing, namely attend to all the evidence, not just the parts selected to prove a case. In short, we must be properly scientific. Rabbit stew will not be possible if all we have are reports of rabbits. As Mrs Beeton might say, first catch your rabbit.

The Truth of Astrology

Competition entries illustrate faulty reasoning

Geoffrey Dean

An abridged and updated version of an article that first appeared in *Correlation* 1997, 16(2), 40-56.

Abstract -- Artifacts and faulty reasoning by astrologers lie at the heart of every dispute about whether astrology works. But instead of avoiding artifacts and applying correct reasoning, astrologers retreat into irrelevant but high-sounding arguments about truth and reality. In this article you meet a diversity of such arguments, all devised by astrologers in response to a competition to show that astrology is true. In each case you are shown how artifacts and faulty reasoning have led the arguments astray. Read this article if you want to see how astrologers view astrology, and why critics find those views unsound. It started in July 1997 when the UK Astrological Association Newsletter *Transit* invited astrologers to submit articles demonstrating "the Truth of Astrology -- whatever that may mean to the author". The best articles would receive prizes of £200, 100 and 50. A total of 29 entries were received, including 8 from outside the UK, only slightly less than the 34 entries received for the \$US5000 superprize of 1983. Only the prize-winning entries have been published, so all entries are summarised here. Roughly half the entries conclude that astrology provides meaning and emotional support but not factual truth, which is unattainable due to the fallibility of astrologers despite the underlying Greater Truth. The other half conclude that astrology does provide factual truth, as confirmed by implication, experience, or statistical tests. Apart from this disagreement, nearly all entries show a disturbing level of artifacts (especially the consider-only-confirming-cases artifact) and faulty reasoning even among the big names. The critical thinking skills that are essential for any respectable discipline are generally absent. If nothing else, the competition confirms an urgent need for astrologers to acquire such skills. Interestingly, this unwelcome conclusion produced a storm of protest from astrologers and led to the sacking of the editor. So it seems most unlikely that astrologers will ever worry about artifacts or take up critical thinking. The similarity to a fundamentalist religion is disturbingly clear.

About the competition

In 1997 the AA Newsletter *Transit* invited astrologers to submit "articles of up to 3000 words which put forward a case for, and demonstrate, the Truth of Astrology -- whatever that may mean to the author" (July issue page 27). Prizes of £200, 100 and 50 were sponsored by the AA, the Lodge, *The Traditional Astrologer*, and the late Dr Norman Hurst, then Britain's oldest active astrologer who died March 1997 aged 97. A total of 29 entries were received, including 8 from outside the UK, only slightly less than the 34 entries received for the \$US5000 superprize of 1983.

The response was especially encouraging because astrology prize competitions have seldom done well in the past. An annual £25 Astrological Association prize "for the most valuable contribution to the study of astrology" was launched in 1970, fizzled out in 1973, reappeared in 1979 and (with prize money doubled) in 1980, and was then cancelled. The number of entries was typically only 2 or 3, ranging from 0 in 1972 to 9 in 1970. The 1980 \$US1000 and 1981 \$US2000 prizes offered by *Recent Advances* for the validation of signs attracted 6 and 4 entries but no winners. The 1982 Grand Prix Astrologique of BF100,000 (about £1200) for evidence of causal links understandably attracted a very poor response and no winners.

The encouraging response suggests that astrologers are at last on their home ground. Demonstrations of truth could involve interesting new tests, so the entries (details of which have not hitherto been published) could provide sobering and salutary lessons for us grubby empiricists. I start by giving a summary of each entry and finish by looking at some implications for researchers.

Classification of entries

As expected, the entries reflect the diversity of astrologers' feelings about the meaning

of *truth*. But rather than being unmanageably diverse they fall conveniently into two roughly equal approaches, namely arguments vs demonstrations. The arguments are basically philosophical arguments (truth is X, astrology is X, therefore astrology is true) or appeals to experience (we know astrology works), with some of the latter also including philosophical arguments. The demonstrations are either statistical tests or chart interpretations.

For convenience I have grouped the entries according to approach, in alphabetical order of entrant's name, here reduced to initials. Where necessary I have added a note in [] to highlight features that might otherwise escape attention. In no way do these notes imply criticism of any author's dedication and enthusiasm, which are exemplary throughout.

Entries based on philosophical arguments (N=8)

KB, USA. Mankind questions everything. Skeptics challenge astrology because it has no obvious explanation. But there is no explanation of man's evolution, or of gravity, or of genes. They just are. The same with astrology. It is true because it exists. [But skeptics challenge astrology for many other reasons such as the failure of controlled tests to demonstrate useful effect sizes, and in such challenges the absence of an obvious explanation is irrelevant.]

AD, Denmark. The question is not whether astrology is objectively true but whether astrology will become a generally accepted model of reality. The more that people agree on a "reality" the more that reality is validated, which does not of course make it objectively true. Instead of asking if astrology is true we should ask if it enriches life and if it does good. Astrology is just one way, but a very effective one, of extracting meaning from the world. So is astrology true? In a relative sense, yes, in an absolute sense, no. [Meaning astrology need not be true provided astrologers agree it is true. Note the problem: if agreeing that the earth is flat does not make it so, then the reality implied by agreement is merely an illusion. The entry gives no hint that illusions can be bad for you.]

MH, England. This entry won first prize, see *Astrological Journal* Nov-Dec 1997, 14-18. Truth and facts are not the same thing. Fact = it is raining, truth = what really lies behind that fact (rising clouds, angry Gods, whatever). Astrological truth is not like logical truth, such as if A=B and B=C then A=C [no matter that this entry (as you will see) and later entries argue exactly like this, namely that if what we perceive is true, and if we perceive that astrology works, then astrology is true]. Nor is astrological truth like revealed truth as might come during meditation [as if being revealed makes it true even if it is false]. But like any language, astrology can describe truths [with language we can also lie, mislead, deceive, distort, conceal, confuse, mystify, and obscure, which difficulties the entry ignores]. It may well have the power to reveal truths about ourselves or the world [then again it may not]. Gauquelin's work has proved that there is a consistent connection between above and below. [So the stars must compel, which manifestly they do not. But Gauquelin's work cannot possibly prove a consistent connection when there is no effect for half the planets, or for signs, or for aspects, or for character traits, or for the 99.995% of the population who are not eminent, all of which are contrary to what astrology claims.] However, it would appear that this truth is not good enough for us. We do not seek factual truth. [A point contradicted by the conversation at any astrology conference or chart interpretation, which generally involves highly factual things like health, wealth, and relationships.] Neither logical truth

nor revealed truth describes astrology. Instead, astrology is a language. [Here the entry assumes what it sets out to prove, namely that astrologers are interested in astrology as a language and not as a source of factual truth. As Bertrand Russell said, assuming your case has many advantages, like the advantage of theft over honest toil.] To ask for the truth of astrology is like asking for the truth of English. But with it we can make meaningful connections (eg Mars and sports champions) that are not possible with other languages. [But what makes a language useful is that people agree on what the words mean, which astrologers spectacularly do not. No meaningful conversation is possible when the same piece of sky can simultaneously mean intense (tropical Scorpio) to Western speakers and relaxed (sidereal Libra) to Eastern speakers.] Astrology's truth lies in our perception of what is being said. [Here the entry ends by shooting itself in the foot. In effect it says that astrology does not need to be true as long as astrologers like it. What matters is our perception of what is being said, that is, our fanciful imaginings. Why then all this debate about the nature of truth? If the author is correct then the entire Truth of Astrology competition was pointless.]

EH, Netherlands. Certain universal truths do exist, eg birth and death. Religion is potent because its truths are simple, eg Christianity says love our neighbours as we love ourselves. Just as simple is astrology's truth: *as above so below*. At a time when high technology alienates us, astrology provides a panacea, a framework of understanding, a valuable guide to living. The truth of astrology is its simplicity. [But many equally simple frameworks exist, see any New Age bookstore, and many of them eg biorhythms contradict astrology. How should we decide between them? The entry does not say.]

JP, England. Nobody has come up with a sure proof of astrology, otherwise we would know about it via the *Astrological Journal* if not the BBC. Its truth lies in its symbols and meaning. But we cannot know in advance which of countless possible meanings will apply, so the truth of astrology lies at a deeper level: Mars in Cancer is always Mars in Cancer. [Meaning we cannot know astrology is true even though we know astrology is true. But this is truth by fiat, like black clouds mean it is raining even if it isn't. Deeper also means vaguer, making it easier to get any meaning we like.]

JR, England. This entry won second prize, see *The Traditional Astrologer* October 1997, 15-17. The truth of astrology lies in the glory of the heavens, in the architecture of the cosmos, in being able to see the wood for the trees, and in adapting to changed circumstances. But it is not wholly comprehended by horoscopy and the tyranny of the chart. Tropical astrologers who ignore constellations have no right to talk about the Age of Aquarius. Many things point to the truth of astrology, such as the ratio 1:1.5 in the cycles of Pluto and Neptune (so Neptune does the work of dissolution at each Pluto return), and the countless correspondences between *as above* and *so below*, for example the Andromeda galaxy reached 0 degrees Aries around the birth of Jesus. [With millions of galaxies to choose from, such after-the-event correspondences mean nothing. It would be more remarkable if no correspondences existed. The author rightly calls his entry "a rambling mish-mash", a style well suited to those of an uncritical disposition and an attention span not exceeding one minute. Some topics seem irrelevant, such as the author can see the Moon while writing, and some are too rambling to allow any hope of a meaningful summary. Interestingly, the author judges his chances of winning from his birth chart, and concludes he won't win. Nevertheless the entry won second prize for its "sheer virtuosity, entertainment value, and deeper message."]

RS, England. The key concept is *as above so below*, which the mythical Hermes called an unassailable Truth. It can manifest in four areas, namely prediction (eg horary

astrology), education (eg vocational), self-understanding (eg humanistic), and spirituality (eg esoteric). Thus *as above so below* is not only a correspondence, it is an activity (people act on it), a participation in *as above vs so below*. This is the truth of astrology. But it works only in symbols embracing different levels of existence, eg Jupiter can represent an object in a horary chart or a liver problem in a decumbiture chart, even within the same chart, eg Moon square Saturn may initially indicate a physical eating disorder and later a fear of authority. This diversity of interpretation means that any test of a particular correspondences is doomed from the start, because astrology simply doesn't work when confined to a rational framework. [Note the problem: all is well once we know the level, but we have no way of knowing the level. Which is like betting on a race only after we know the winner. Such a nonfalsifiable astrology is indeed untestable. It cannot possibly be wrong even when using the wrong chart.]

DT, England. Astrology helps us see our role in the universe. This deeper truth is obscured by arguments such as sun sign vs rising sign [which argument the author then gets bogged down by]. Astrology's greater truth is that it is incapable of lying, so it is only the fallibility of astrologers that leads us astray. [But this is truth by fiat again. Religious fundamentalists use the same strategy, keeping their beliefs intact by never saying anything that could be contradicted by observation. The astute person will ask disconfirming questions such as "What evidence would you accept as showing that astrology is not true?", but none of the entries provide an answer.]

Entries appealing to experience (N=7)

Those that include philosophical arguments are marked *

CB, Scotland. Much nonsense masquerades as astrology, and truth cannot conceivably embrace them all. To establish the truth of astrology we must start at the bottom. Many scientific observations -- the Piccardi effect, solar and lunar periodicities in plants, lunar effects in oysters and rats and Miami murders, Gauquelin's Mars effect, Jonas's prediction of sex from the birth chart -- suggest that astrology's truths will be found if only we care to look. [This entry gets many facts wrong, eg lunar effects, Jonas's predictions, and "it is not so long ago that the accepted laws of aerodynamics established that bumble bees were incapable of flight." Yes, the aerodynamics of fixed wings fail for bumble bees, but not the aerodynamics of flapping wings.]

CC, USA. In astrology there are many grandiose claims, endless arguments between astrologers, but little testing. Which is understandable, because astrologers can make more money telling fortunes than doing research, and they make no enemies by being uncritical. Indeed, anyone who makes money from astrology has a vested interest in keeping the waters as muddy as possible, so high-paying clients can never know how bad it is. "There is a great unconscious fear that somehow astrology is just not going to hold up under scrutiny." Compared to natal work, which is often too vague for testing, predicting sports outcomes is concrete. American football gives the author the best demonstration yet of the truth of astrology. She believes testing will reveal an astrology more accurate than is currently dreamt of. [This entry's admirable call for testing is nevertheless insecurely based. It is not true that little testing has occurred (much has occurred), nor is there just fear that astrology might fail when scrutinised (it is already happening). In fact testing has so far revealed only an astrology more erroneous than is currently dreamt of.]

JH, England.* We know the truth of astrology because chart readings are accurate -- even sun sign columns, albeit only slightly. Each chart is unique, so it cannot be tested statistically [modern researchers might disagree]. We assume astrology is valid, we proceed on that basis, and behold, it is so. Knowing you are part of a pattern does not make it go away but it does give you some kind of control -- and this is the truth of astrology. [But behold, it might not be so, see the later section on faulty reasoning.]

MJ, Wales.* We are beginning to realise that our physical world is a complete holistic system, helped by the recent concepts of "fractal" [a geometric form having a fine structure at all magnifications] and "attractor" [a condition that dynamic systems converge on if you wait long enough but then drastically diverge from once they reach it, like a moth attracted to a candle flame]. Just as fractal has endless fine structure, so astrology has an infinite number of self-consistent variations on the general theme. Just as dynamic systems converge on attractors, so Mars attracts sports champions, the Moon attracts writers, and people are attracted to being like their birth charts. For the first time, scientific support for the truth of astrology is within our grasp. [But the entry is merely arguing by analogy: astrology is complex, science is complex, therefore science proves astrology. The only truth this reveals is the truth of magical correspondences, which unless independently confirmed is no truth at all.]

JM, England.* Astrology has many inconsistencies, eg it gives no weight to planetary distance and size. Nevertheless experience shows that astrology works, despite scientists dismissing this as anecdotal evidence. [But that is precisely the problem -- "anecdotal" means there is no prevention of non-astrological factors such as faulty reasoning, so such experience cannot tell us whether success is due to astrology or to something else.] Just as physical forces have effects, so do images and symbols such as psychoanalysis and astrology. We know this because they change our behaviour [but only we change our behaviour, even if the symbols happen to be wrong, ask any critic of psychoanalysis]. We use astrology to give meaning to the world, and therein lies its truth [so faces in clouds are true?].

CS, England. Planetary movement could affect us directly via its effect on the birth process and on DNA, as per Seymour's resonance-enhanced geomagnetic theory. Pre-natal epoch indicates the ideal birth moment, echoing the time of conception nine months previously, which is a birthright lost each time that intervention occurs. Link these two, and we get nearer to proving the scientific truth of astrology. [Maybe, but it is a huge leap of faith between theoretical physical influences and the grandiose claims of astrology.]

JBW, England.* There is only one way to become aware of the truth of astrology, namely by observation. It is only by experience that we are made aware of Nature's influences; from this secure foundation nobody dares to doubt their existence. Does a mountain climber stay at home because others disagree about theories of gravity? The same applies to astrology. Centuries of rich experience confirm the truth of ancient wisdom beyond all possible doubt. Astrology is truth itself. Like the gentle rain from heaven, or the warmth of spring, it is there whether we seek it or not. [We could also say that centuries of rich experience confirm faulty reasoning beyond all possible doubt, as occurred with bloodletting and belief in the four humours.]

Entries based on statistical tests (N=4)

GB & MK, England. MK claims that married couples show more harmonious aspects by sign than inharmonious ones. To test this claim the authors obtained a random sample of 5885 married couples from the UK National Bureau of Census and Statistics, and generated controls either at random or by shuffling husbands and wives. A chi-squared test ($df=11$ with expectancies = control counts) found a significant occurrence ($p < 0.05$) of Mercury-Mercury and Mars-Mars aspects measured by sign, which was seen as "powerful circumstantial evidence for the truth of astrology." [But a chi-squared test is inappropriate here because it does not allow for sampling error in the controls. When the correct (contingency) test is applied, the results become more consistent with chance. Furthermore, statistical significance tells us nothing about the size of the effect, which on a scale of 0 (no effect) to 1 (perfect) is a negligible 0.015 for the best individual result, equivalent to tossing heads 50.8% of the time instead of the 50.0% expected. Hardly "powerful circumstantial evidence for the truth of astrology." Ironically the authors do not test MK's actual claim, but their data shows that the claim is simply not true, at least not in this sample.]

JLL, USA. Bonatti's 13th century astrological rules of warfare can be applied to US Presidential elections. But which chart should be used out of the nine that could plausibly apply? For the 51 elections to date, the hits for each chart ranged from 38% to 71%, mean 55%, which seems promising. The incumbent won 61% of the time, so the astrological model has to explain this bias, and it does -- there are astronomical factors that can be weighted to match this bias. Even so, the difference in astrological scores between the two sides was unrelated to the outcome, thus scores of +5 vs -3 were no more likely to be a hit than 1 vs 0. [So a strong indication is no more reliable than a weak one, which is bad news. Unfortunately insufficient details are given to allow proper assessment. The author implies that these results confirm the truth of astrology, but they might also confirm flaws in the approach. Without more work we cannot tell.]

SS, Germany. The author counts beneficial aspects (0,60,120) in the helio charts of famous people. Helio allows him to focus on aspects without having to worry about the fast-moving Moon, Ascendant and MC, which means he can use birth dates without times. He finds that what matters are not individual aspects but multiple combinations, for example conjunctions of 3 or more planets, 3 or more linked sextiles, and Grand Trines. These multiple combinations occur much more frequently in the charts of famous people than in the charts of ordinary people. [The expected frequency depends on the time period, so the data being compared have to be matched in time, but the author seems unaware of this. He does not say how these particular combinations were chosen, which leaves the possibility of selection artifacts. A better test would be to plot counts vs shifted birthday.]

CS, England. The popularity of astrology is not enough to prove its truth. Tests are needed. Hypothesis: congenial relationships will involve more compatible sun signs than expected. Questionnaires were completed by 25 volunteers (7 male) aged 17-77 mean 36 years, who indicated birthdate and sign for themselves, their partner, their best friends, and their favourite relatives. Fire signs had more contacts with the same element (in this case Fire) than with each of the other elements, as did Water signs, but Earth and Air signs had fewer contacts. [So the results are inconclusive. Also the sample sizes are too small for comfort. Also the author's questionnaire is labelled *Astrology (Sun Sign) Survey* and gives the aim of the study, thus encouraging self-attribution and data-selection artifacts.]

Entries based on chart interpretations (N=10)

BB, England. This entry won third prize, see *Astrology* 1997, 67(4), 38-46. The author presents astrocartographic maps for two UK earthquakes and takes nearly five pages to say (1) Mark the event place, its opposite position on the other side of the world, and their mirror images across the equator. (2) Do the same for the place where the Sun is overhead at noon. (3) Ditto for the Moon. Somehow, by a logic that is nowhere explained, such marks are said to show both the truth of astrology and how modern ideas of gravity are wrong. There are other obscure maps, some of which are said to contain various circles centred on the place that make the truth of astrology quite clear, but none of the maps show such circles. The author concludes that his approach provides "the chance to show Scientists that Astrology is very connected to Astronomy, and which IS the Truth of Astrology." So persuasive was his argument that his entry won third prize.

PC, England. One problem of astrology is that its truths are expressed in a language that few people can bother to learn. But not any more. The use of own-name asteroids make the truth of astrology instantly accessible to anyone. No struggling with arcane symbols, just look at the names. The contacts are easier too, the most dependable being conjunctions, oppositions, and sometimes midpoints, in four different zodiacs. If the asteroids don't work then invariably their dwads will (dwads are the 12 signs within each natal sign, so in effect each asteroid appears a total of 12 times around each zodiac. The author gives eight of her favourite charts showing how perfectly the system works. [Throw in enough factors, as here, and the system cannot fail to work. So the claim is meaningless without blind controls to show that applicable asteroids work better than inapplicable asteroids.]

CD, England. Astrology must prove itself. So the author cast a chart for the moment she chose to explore the issue (8 May 1997 at 1600 GMT 50n50 0w17). The chart says that astrology must develop into a living philosophy (angles in Cardinal signs), that it must be interpreted intuitively (MC in Cancer), that it cannot afford to be ambivalent (Ascendant in Libra), that astrology cannot be subject to the same [unspecified] criteria as a science (Mars in Virgo in 11th), and so on. Controlled studies cannot show the truth of astrology because they only look at isolated factors, thus reducing astrology to a pseudoscience. Our own experiences will validate our beliefs in Astrology. [Controlled studies are not limited to isolated factors. They can look at whatever an astrologer looks at, but this time avoiding artifacts that can fool people into seeing links where none actually exist.]

CD, Romania. The author lists selected natal chart positions, also transits, progressions, and one-degree directions, for Romania's chart (5 February 1859) for 47 individual years during the 130 years 1859-1988. The agreement between the interpretation and the events of that year confirm the truth of astrology. For example, in 1930 Jupiter in 3rd house coincided with the return of Carol II as regent, while in 1957 Jupiter in 4th house coincided with the retreat of the Red Army. [This is a good example of the consider-only-confirming-cases artifact at work. The results show only that, given enough events and chart factors to choose from, astrology can fit anything in retrospect, in the same way that a big enough bag of licorice allsorts will always contain our favourites. The issue is whether unselected events fit Romania's chart better than they fit other charts, but the entry does not tell us.]

IF, England. Astrology is proved every time we read charts for clients. If it were false we would not have clients. [Not true, witness phrenology.] Researchers look at isolated factors so no wonder their results are negative. The chart of John Dee shows how

accurate astrology can be. For example Sun in Cancer indicates that Dee loved the past, and Moon in Aquarius indicates that Dee was ahead of his time [no matter that the author is doing precisely what he condemns researchers for]. However, the multiple meanings of astrological symbols means that these things cannot be predicted in advance. Once the life has been lived we see how the chart fits like a glove [but thanks to multiple meanings even the wrong chart fits like a glove]. Science has not yet come to terms with multiple meanings. If you want proof of astrology, use the same proof that applies to religion or painting or music, not to science, ie life should be enhanced by it. [Like drugs enhance the life of a drug dealer? It is not true that science cannot cope with multiple meanings, see any matching test. Unlike the next entrant, the author gives no hint of the problems caused by nonfalsifiability.]

AM, England. Most charts have such a wide range of possibilities that they will fit anything in retrospect. So the truth of astrology is best tested by predicting events, in this case predicting the outcome of the UK General Election [which at the time of writing was one week away]. Uranus culminating at the opening of the polls indicates a change of government. The charts of Major, Blair and Ashdown indicate a Labour win. If this indication is correct then it will demonstrate the truth of astrology. [The indication was indeed correct. But by the same argument, wrong predictions (which are not hard to find) demonstrate the opposite. So what should we now conclude? Especially as the author's readings can be plausibly reversed depending on whether you see Uranus as innovative or disruptive. Also, one week before the election the outcome (a Labour landslide) was more or less obvious to everyone.]

JR, England. The author gives the chart factors relevant to her various painful neuroses and traumas, and finds comfort and guidance in them. For example she shows how particular transits related to a nervous breakdown, and how on another occasion "this T-square ... must have been the root cause of many of the problems of my life", which kept her going. Hopefully this has led to the truth of astrology, for this will mean harmony between the heavens and my earthly journey. [Note that word *cause*. Does embracing causality make astrology more helpful?]

BU, England. Cardinal Newman became converted to Christianity at age 15. As did C S Lewis in 1929. In 1977 George Foreman, bashed insensible in his heavyweight title fight, had a religious vision, and when he regained the title at age 45 he claimed it was due to God. In each case either a Saturn transit or a Saturn opposition return was involved, suggesting that God/religion = Saturn, a point supported by various mythologies. Thus Saturn is the Rosetta stone that reveals the truth of astrology. [How does this sit with Saturn being the Greater Malefic?]

BW, Norway. Dogs cannot role-play their chart and are therefore ideal subjects for study. The author's dog has Sun conjunct Uranus in 3rd (needs constant stimulation to calm him down) and Jupiter in Leo in 10th (a showman, up to many tricks and antics). These and many other correspondences confirm the truth of astrology. In working with clients we can never be sure if they are free from self-attribution, ie more or less living their lives in accordance with their astrological knowledge. Dogs cannot do this. [The entry came with delightful pictures of a Golden Labrador showing the various correspondences. But as already noted, such correspondences confirm only how easy it is to match ambiguities. The issue is whether the chart matches the author's dog better than it matches other dogs, but the entry does not tell us.]

AW, Scotland. Astrology is true if planetary meanings agree with observations of people and world affairs. The Jupiter-Uranus conjunction coincided with breakthroughs in 1903 (first powered flight) and 1969 (Moon landing). It occurred again in 6 Aquarius on 15-16 February 1997. To find out what happened, the author gave a questionnaire to 17 people with key planets in 4-7 Aquarius, asking if January was unusually difficult, and if anything significant happened in February. The answers averaged 15 yes, 2 no. On a global scale China's leader died, Hubble telescope sent stunning images, USA appointed first woman Secretary of State, Scottish scientists cloned a sheep. This demonstrates the truth of astrology. [But there are no controls and no blind conditions. The issue is whether these two months were more Jupiter-Uranus than any other two months, but the entry does not tell us.]

Overview of entries

Recall that the 29 entries had to put forward a case for, and demonstrate, the Truth of Astrology. They fall conveniently into two roughly equal approaches, namely arguments vs demonstrations, or philosophical (12 entries) vs non-philosophical (17 entries).

Philosophical entries

The philosophical entries argue variously that astrology is truth because: it exists, astrologers say so, it is simple, it gives us control, it is consistent with modern-day physics, it provides meaning, correspondences exist, *as above so below* is unassailable, it is incapable of lying, and it is truth itself. Some of these depend on particular interpretations of truth (eg existence, meaning), some on the distinction between astrology and astrologers (only astrologers are fallible), and the rest on circular argument (astrology is true because it is true). Most of them conclude in effect that the truth delivered by astrology is actually satisfaction (it provides meaning, it enriches life, it does good) rather than accuracy (freedom from error), which due to the fallibility of astrologers is held to be undeliverable despite the underlying Greater Truth.

That the last is held to exist despite the declared impossibility of actually knowing it exists, as opposed to merely believing it exists, shows how close their kind of astrology is to a religion. Interestingly, most of the philosophical entries avoided mentioning religion.

Non-philosophical entries

By contrast the non-philosophical entries focussed on accuracy, either by implication, observation (ie experience), statistical tests, or chart interpretations. They presented various arguments. Things like lunar effects in oysters and the prenatal epoch indicate a sound scientific basis to astrology, as do tests with $p < 0.05$. Centuries of rich experience confirm the truth of ancient wisdom beyond all possible doubt. Every day astrologers see evidence that astrology works. The relevant chart did fit Romanian events, earthquakes, world affairs, human character, nervous breakdowns, and dogs. These results confirm that astrology delivers accuracy and therefore truth. Or so the entries argued (more on this in the next sections).

This division of truth into satisfaction vs accuracy is a crucial one. Failure to recognise it has caused much unnecessary dispute between astrologers and critics. In this case a similar failure by entrants has created much unnecessary discourse, wasting effort that could have been used more productively. Indeed it creates unnecessary dispute even between leading astrologers. For example a recent 4400-word internet debate on the

Vertex between Michael Erlewine (for) and Chris Turner (against) can be summarised as follows. *Erlewine*: Techniques that work for one astrologer do not work for another because astrology is an oracle with elaborate rituals. That the rituals differ is of no consequence, it is the reading we are after. What matters is what we experience and what we learn about ourselves. *Turner*: A chart is like a piece of sheet music. People may play the music differently but the melody and harmonies do not change. The same applies to astrology otherwise it becomes useless. Why bother learning to play if we cannot get the melody right? *In short*: The above debate boils down to Erlewine's satisfaction (astrology need not be true as long as it feels good) vs Turner's accuracy (astrology needs to be true otherwise why bother?).

Some implications for researchers

Entries can be viewed in various ways depending on the interests of readers. Thus a Fire person might be looking for stimulating ideas, a Water person for emotional satisfaction, and an Air person for feet off the ground. Nobody can say that a particular view is better or worse than another, and in this case all three views are amply rewarded. The entries collectively provide fascinating reading. Indeed, the judges were clearly delighted with the "wide variety of styles with impressive or moving themes, which made our roles as judges very difficult."

But for an Earth person looking for disciplined arguments, clear thinking, and absence of errors, the entries are less rewarding. They tended to be uninformed, wordy, and hard to follow. Many statements, for example those linking suicide with the full moon, were simply wrong. Gauquelin's results were invariably misrepresented. Only ten entries cited works by others, as if nobody else had ever discussed truth before. Indeed, there was generally no hint of the difficulty that philosophers have in deciding whether something is true or not. On the other hand, if you jump off a cliff then debating the nature of truth will not save you. Some entries correctly noted that science cannot discover absolute truth -- but then nothing can. None noted that science is an excellent way of discovering *error*, something that astrology could never do, at least not an astrology as promoted by most of the entrants.

Worst of all, artifacts and faulty reasoning were everywhere, especially the consider-only-confirming-cases artifact. Thus almost all entries failed to recognise that no conclusions can be made from hits unless we consider the misses and have a control group for comparison. Until we do, the supposed fit between charts and Romanian events, earthquakes, world affairs, human character, nervous breakdowns and dogs is meaningless in the same way that finding food on a restaurant menu is meaningless (we should be surprised only if food was off the menu).

To be fair, most of the above defects are never absent from astrology books and magazines, so the entries are not alone. Nevertheless the defects pose a serious threat to astrology, so let me sidetrack for a moment to explain what I mean

Faulty reasoning and the consider-only-confirming-cases artifact

In every entry that involved a chart interpretation, as indeed in any chart interpretation, the author's claim (that charts match the person or event) is like my claiming that clouds match the presence of winter. Obviously my claim makes no sense in places with clear winters or cloudy summers. So before you can accept my claim, you need data on clear and cloudy days in each season. Counting confirming cases (cloudy days in winter) is not enough.

The same applies to chart interpretations. Without data showing that applicable charts work better than inapplicable charts, the claim that a particular conclusion (astrology works) follows from a particular observation (confirming cases) is simply meaningless. It is a case of artifacts and faulty reasoning.

Recall that the entries are required to demonstrate the truth of astrology. Suppose some researchers do their homework and show that, contrary to my experience, clouds and winter are in fact totally unrelated. And suppose I pay no attention, arguing that astrology works on a higher plane and therefore cannot be tested by statistics. After all, I spent all winter looking at clouds, so I just *know* it works. Note the problem -- not everyone will believe me. Why should they?

Note the solution -- avoiding artifacts and false reasoning does not require me to embrace mechanism, or materialistic science, or hostile paradigms, or any other supposedly anti-astrology horror, it merely requires me to think clearly and count the right things. Nothing special at all. Many people do it all the time, especially when shopping. Now back to where I left off, namely the low level of scholarship evident in the entries and in astrology generally.

But does it matter?

Of course none of this matters if we see astrology as an elaborate sun sign column, good only for entertainment or for consoling frustrated romantics. But if we see astrology as a source of knowledge, we are making a claim that, like all claims to knowledge, will be contested by philosophers, scientists, and educated people generally. After all, such claims are ten a penny, and no sensible person will take the claimant's word for it. If our claim is even to be considered, we have to write clearly and have a good standard of scholarship, otherwise no educated person will bother. But none of the entries come close, especially the prize winners. We should therefore not be surprised to learn that many people have trouble taking astrology seriously.

Nevertheless the entrants achieved a higher standard than generally exists among astrologers, as shown by Joanna Ashmun's description of astrology emailing lists, see *Correlation* 1996, 15(2), 41-43. The lists involve astrologers from beginning student to established professional, but on average the participants have about one year of astrological study. According to Ashmun: "They write badly and they read badly, ... there is almost no critical response; errors are ignored, corrections are not acknowledged. People answer off the top of their heads ... and then get sidetracked into arguing about who's a liar instead of sorting out the facts of the original question. ... Many astrologers have university educations, quite a few have graduate degrees, and they must, therefore, have had to do some reading, writing, and scholarship sometime, but these presumed skills rarely escape to the mailing lists."

It need not be like this

As shown on this website in *Case for and against astrology* under Adroit Utilities, and *Phillipson interview of researchers* (section 4) under Doing Scientific Research, it is feasible to make a case for astrology that is scholarly, impartial, and consistent with the evidence. So why cannot astrologers do just that? Why instead do they make their case so assailable?

The remedy might seem obvious. Astrologers must become familiar with research results, and they must acquire the critical thinking skills that today are part of any university course in the social sciences, meaning no more artifacts and no more faulty

reasoning. On the other hand, it seems clear that this would mean the demise of astrology as currently practiced. So what should astrologers actually do? Here, in lieu, is what they actually did:

Aftermath

Interestingly, this article and its unwelcome conclusion produced a storm of protest from astrologers. It even led to the sacking of the *Correlation* editor who published it and, in subsequent issues under a new editor (a practising astrologer), a dramatic drop in scientific rigour. The publishers, despite their supposed interest in truth, had evidently decided that, when faced with the Emperor's New Clothes, it was best to keep their heads in the sand. So in retrospect it seems quite unlikely that astrologers will ever avoid artifacts or take up critical thinking. Criticism in astrology is simply not welcome. Whereas science reserves its highest praise for those who prove their predecessors wrong, astrology drums critics out of the corps. The similarity to a fundamentalist religion will be disturbingly clear.

Acknowledgements

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Vested Interests 1, Scientific Integrity 0

The decline and fall of the AA's research journal *Correlation*

Ivan W Kelly

This article without the sub-title was the lead article in *Skeptical Briefs* 10(1), March 2000. At the end Geoffrey Dean provides a follow-up covering the subsequent years to 2006. Ivan W Kelly is Professor of Educational Psychology and Special Education at the University of Saskatchewan.

Abstract -- In the author's opinion *Correlation* under Rudolf Smit (editor 1993-1998) had become one of the most impressive and open-minded journals in existence, the model example of a journal in *any* area. Smit was also editor and translator for one of the Netherlands' leading scientific institutes, and his open-minded stance conflicted with the AA's attitude that only positive results are welcome. The AA argued that negative articles should be subject to their veto, which Smit (like his predecessor Simon Best 1981-1992) saw as contrary to the spirit of science. In due course the AA replaced Smit with practising astrologer Pat Harris, whose first issue revealed such a disastrous loss of rigor that, if it continues, can only provide ammunition for critics. A **follow up** reveals that the loss of rigor did indeed continue, together with farcical refereeing and censorship of unwelcome material. When in 2000 three *Correlation* consulting editors raised concerns about the journal's poor intellectual credibility, the editor reacted by sacking them. The days when *Correlation* could be regarded as a serious journal are clearly over.

In the fall of 1998, Rudolf Smit, then editor and translator for one of the Netherlands' leading scientific institutes, and an ex-astrologer, was sacked from his spare-time position as editor of the British astrological research journal *Correlation*. Even if astrology is not your pet subject, Smit's sacking provides a salutary look at paranormal politics and what happens when science is unable to deliver the support required by vested interests.

The story begins in 1958, when research-minded British astrologers founded the Astrological Association (AA), specifically to encourage research. Its aims included "to enlarge the knowledge of Astrology in a scientific spirit", and were accompanied by a brief statement urging the use of the scientific approach for "distinguishing factual truth from error, for checking theories". The AA was not the first astrological research body but it was to become the most active, the most expert, and easily the most important.

Twenty years later its findings were included in *Recent Advances in Natal Astrology*, a massive critical review (608 pages, 1020 references) prepared under the aegis of the AA by Geoffrey Dean with Arthur Mather and 52 others from 10 countries. Nothing like it had appeared before and it quickly became the bible for astrology researchers world-wide. Its conclusion, "The picture emerging suggests that astrology works, but seldom in the way or to the extent that it is said to work", has been repeatedly confirmed by subsequent research and repeatedly ignored by most astrologers.

In 1979 the interest raised by *Recent Advances* led the AA to found an ongoing series of London research conferences, and in 1981 the research journal *Correlation* was established. Previously research findings had been published (albeit infrequently) in the AA's *Astrological Journal*, now generally regarded as the leading English-language journal devoted to serious astrology, with nearly 30 shelf-inches of issues to date.

Correlation was the world's first refereed scientific journal devoted to astrological research. It accepted "articles reporting empirical research into astrology, review articles, and those discussing methodological, conceptual and philosophical issues relating to astrology" with the proviso that "all submissions are refereed for content and clarity of expression." Definitely not your average astrology journal. Its circulation eventually reached about 600, which compares favorably with the median circulation for scientific journals in parapsychology (about 1000) or in astronomy or psychology (about 2000). But it remained generally unavailable in academic libraries, so its contents (about 6 shelf-inches of issues to date, which include about 70 empirical studies) are little known. *Correlation* inspired other research journals, notably in France, the USA and Holland, where one non-refereed precursor had been founded in 1977 by Rudolf Smit. But it remained the only one with high standards.

Under the editorship of Simon Best (1981-1992) and Rudolf Smit (1993-1998), its twice-yearly issues achieved commendable levels of scientific rigor and impartiality, which ultimately led to the political problems described later. One frequent scientist contributor reported "never did I feel that articles with negative results were returned for revision or rejected ... AA organizers never made me feel like an outsider ... whereas other [skeptical] journals provided many instances of prejudiced, dogmatic and restrictive behavior to people of the wrong faith". No mean achievement.

Indeed *Correlation* under Rudolf Smit had, in my opinion, become one of the most impressive and open-minded journals in existence, the model example of a journal in *any* area (and I do not say this lightly). Thus few if any of the journals put out by a particular school of thought such as the psychoanalytic journals have the rigor or the integrity to publish the kind of searching articles that Smit did. To appreciate his achievement one need only look at supposedly serious astrology journals such as *The Mountain Astrologer*, where informed debate is conspicuously absent (and, according to insider sources, actively discouraged).

Unfortunately Smit's open-minded stance conflicted with the underlying attitude of most astrologers, which is that research should support (not challenge) existing beliefs and practices, so only positive results are welcome. But the research results submitted to *Correlation* tended to be negative, and even if positive they were never commensurate with the claims of astrologers. Whenever promising areas were investigated, such as Nelson's radio propagation claims, Bradley's link between rainfall and Jupiter, Mayo's zodiac zig-zag, Clark's chart matching experiments, Addey's harmonics, Gauquelin's link with character traits, the classic time twins George III and Samuel Hemmings, and more recently the sun-sign claims of Gunter Sach and a Manchester University marketing study, serious flaws were uncovered and the promise disappeared. When combined with studies published elsewhere the result was a compelling case against the theory and practice of astrology.

But it got worse. To astrologers even more upsetting were the key astrological discourses begun under Rudolf Smit in 1994, in which astrologers and scientists systematically surveyed key topics in astrological research. The first topic was "Is the

scientific approach relevant to astrology?" Over 100 potential debaters were contacted, of which eventually twenty-five astrologers and eight scientists collaborated on a core discourse and then provided commentaries. The general conclusion was unremarkable, namely that the scientific approach is relevant only where claims are testable, but the debate itself was ground-breaking. Never before had astrologers and scientists tried so hard to resolve their differences. Readers in favour of research were delighted ("excellent ... a huge job that was well done"), but not the AA, whose secretary claimed it was "of little interest ... if further issues ... continue in the same vein, the subscription to *Correlation* will be halved."

Subsequent astrological overviews involved the same collaborative approach and more AA displeasure. The topics were conceptual problems (devastating), theories of astrology (none credible), and biases of human judgment (neglected by astrologers but readily explaining their beliefs). No doubt the AA was displeased because the surveys seemed to deny even the promise of future promises. Furthermore the AA had revised its aims, the links with research now being "to encourage ... members to undertake astrological research ... for the good of astrology" (no scientific qualifier here), and "to enhance ... the good name of astrology among ... the scientific community" (which seems to leave no room for negative results). The once pro-science views of the AA had become anti-science or at best lukewarm, so rigorous scientific surveys were now unwelcome.

The final straw occurred in 1997 when in issue 16(2) pages 40-56, Geoffrey Dean made a rigorous critique of the twenty-nine entries to a "Truth of Astrology" essay competition sponsored by various bodies including the AA. He concluded that even the prize-winning essay "abandons scholarship and clear thinking in favour of muddle and misrepresentation", so until astrologers become better informed about research there was little hope of their ever gaining recognition in scientific circles. Astrologers were outraged. They responded not with letters in which each criticism was systematically refuted (only one letter was received and even that was hopelessly muddled) but with tearful complaints to the AA. Even though the focus on "truth" invited the scientific approach, they failed to adopt it. [You can read Dean's critique on this website under Doing Scientific Research]

The AA immediately called editor Rudolf Smit to account. They argued that the scientific approach to astrology was simplistic and misleading because astrology operates on principles outside those of known science, so non-scientific approaches such as spiritual or postmodernist should be favored. Their argument ignored the contrary findings of the collaborative surveys, and was a clear sign that from now on only vested interests would matter. The AA also argued that Geoffrey Dean's input was too extensive and too critical, which among other things supposedly discouraged potential contributors, so he should be banned from at least two subsequent issues. But, worst of all, the AA demanded that for the final refereeing of Dean's articles they would have the last word.

Hence, if they did not like them, Dean's articles could not be published, period, whatever their quality. So much for editorial independence. (This is the same Geoffrey Dean whose two-part critique of astrology in *Skeptical Inquirer* 1986-87 was reprinted in the *Hundredth Monkey Phenomena* anthology, where it was described as "classic and thorough ... hailed as perhaps the best ever done" and a main contributor to the entry on astrology in Prometheus Books' *Encyclopedia of the Paranormal*.)

Smit accepted the first argument even though postmodern and spiritual approaches seemed irrelevant to the testable claims made in astrology books. But he rejected the

second as censorship and an attack on scientific integrity. The AA disagreed. In due course they sacked him and appointed Pat Harris, an astrologer and PhD student at Southampton University studying the application of astrology to health psychology.

The AA gave an assurance that *Correlation* under Harris would continue with the same intellectual rigor as before. This seemed at odds with their previous arguments so I asked for a clarification. In condensed form my questions and the AA's answers were as follows:

Q: If little will change in content, why change editor?

A: We have a new editor and little will change in content.

Q: If the problem is too many critical articles, how will the new editor solve it? By censorship?

A: Some people are irritated by criticism.

When it was pointed out that their answers evaded the issue, they responded with further evasion, and when challenged still further evasion. Evidently the AA publicly welcome science for its prestige but secretly reject it for its rigor. In my view the AA should now abandon any pretense that *Correlation* (or any other AA publication) is genuinely scientific. In fact there seems no need even for pretense -- the first issue of *Correlation* under its new editor reveals such a disastrous loss of rigor that, if it continues, can only provide ammunition for critics. Quite the reverse of the AA's aim of enhancing "the good name of astrology among ... the scientific community".

My conclusion is this: Half a century of research has made it clear that no astrological body could embrace science and stay in business. It would be like introducing devil worship into theology. That no national astrological body including the AA has officially rejected the (at best) extremely problematic notion of sun signs is evidence enough that politics and membership fees come before scientific integrity. I should add that this conclusion affords no pleasure whatever. The efforts of the early AA in promoting scientific research into astrology deserve the highest praise. It seemed that astrologers were at last putting their house in order, which view must now be abandoned, perhaps forever. That this should happen in British astrology, often regarded as the last outpost of astrological sobriety, should give skeptics cause for concern.

Follow-up July 2006

Geoffrey Dean

When a journal is found to be lacking in the very integrity and rigour that it lays claim to, one expects a responsible publisher to take corrective action. But in the six years since Professor Kelly raised his concerns the AA has taken no corrective action. The disastrous loss of rigour and censorship of unwelcome material still continue. *Correlation* has disqualified itself as a journal worthy of serious consideration.

Farcical refereeing

Ironically one of the reasons why Rudolf Smit was sacked was an alleged (but actually untrue) lack of refereeing of articles under his control. Subsequently the AA stressed the need for refereeing and the need for authors to abide by referee comments. "The only criteria for publication will be rigour, not whether the paper supports or opposes astrology." Read what follows and make your own judgement.

In mid 1998 *Correlation* 17(1) ran an article by Suitbert Ertel in which eleven experienced astrologers failed to tell 20 painters from 20 politicians using birth charts. A critique was subsequently received from Christopher Bagley but the referee concluded (in 1500 words listing 12 major deficiencies) that it was uninformed and not acceptable for publication. For example it attacked the study's motives even though Ertel was merely testing the astrologers' own claims, it took no heed of previous studies, key arguments were misleading or invalid, and much of it was irrelevant. So it should be returned for improvement. But the new editor Pat Harris ignored the referee's report and published the critique unchanged together with her glowing endorsement. At the time Bagley was her supervisor at Southampton University.

Without checking with the consulting editors, the editor also changed *Correlation's* subtitle from "Journal of Research INTO Astrology" to "Journal of Research IN Astrology". However, when *Correlation* first started in 1981, INTO was adopted only after much discussion, and the choice was not made lightly. The editor was asked if her next editorial could explain the change, but she brushed away the request by saying the reason for the change was "obvious". Concerns about the brush-off were dismissed by "it's just me".

Concerns about refereeing arose again when 19(1) published Mike Harding's article on "Prejudice in Astrological Research". Of one referee's 65 recommendations (6000 words with 40 references!), only 1 in 6 were adequately responded to. The rest were ignored. The referee raised the matter with the editor, who replied that her policy on referee recommendations is that "the author is not bound to follow them".

This farcical policy led three consulting editors (Dean, Smit, and Spencer, all professional editors with more than fifty years of professional editing experience between them) to submit a letter to *Correlation* about the lack of rigour, using Harding's article as an example of unacceptable standards. You can read this letter in the Appendix. It was January 2001.

The editor's response was evasive and delaying (the letter was not published until 12 months later), which led the three authors to circularise their concerns to the other consulting editors. To which the editor responded by sacking Dean and Smit as consulting editors. Spencer had already resigned in protest. As for Harding's article, the editor's justification for rejecting the referee's recommendations was that she "considered it was ready for publication".

The same cavalier attitude towards referees still applies today. For example none of the referee's comments on Kollerstrom's article in 23(1) was acted on, not even the correction of typos. Now for censorship.

Censorship at *Correlation* is alive and well

In successive editorials Pat Harris stressed the need for comments. For example in 18(1) it was hoped that future issues would contain "a very wide ranging discussion". In 19(1) it was hoped that articles would "generate much interest, debate and many letters". In 20(1) readers were "welcome to enter into the debate at any point". In fact this did not apply if your name was G Dean. Here are some examples that show how, six years later, Ivan Kelly's concerns about censorship and loss of scientific integrity are alive and well. The first example is a long one but salutary in its absurdities.

Example 1

In October 1999 Dean and Mather submitted to *Correlation* the results of their inviting astrologers and scientists to devise tests of sun sign columns. Their article had taken four years to prepare and had involved exhaustive recycling with contributors from nine countries to maximise information content. Two months later the editor Pat Harris rejected their article on various grounds, of which the following are typical:

Round 1 The editor felt that "a major flaw in your study design" was due to "asking for a range of opinions on a very mixed bag of data". In fact the invitation was to submit tests not opinions. The editor felt that philosopher Dr William Grey's position on sun signs was "foolish and uninformed". In fact Dr Grey specialised in the philosophy of science, had conducted surveys of astrology, and was one of the few philosophers who had gone to the trouble of meeting astrologers and of having his chart read. The editor felt that the AA's refusal to reveal their position on sun signs could be because the AA considered the authors' invitation "to be a waste of time because of the flaws I have pointed out in the study design". But how is asking the AA for its position on sun signs a waste of time?

Round 2 The authors raised these and other points with the editor, who replied "Why were not sunsign columnists consulted on the way in which their columns were written?". But they were. "There is no citation of research into differences between perceived accuracy in various sunsign writers' columns". How is this relevant to devising tests? "Your final conclusions are on very shaky ground. Where is your own reader survey of sunsign columns in order to compare this with astrologers' comments?" But why should devising a test require the authors to survey readers of sunsign columns? Where is the connection? "Your methodology is not sufficiently carefully thought out to support your overall conclusions." But if the authors get five replies to ten invitations, and conclude that five people replied, how is their conclusion not supported?

Round 3 The authors stressed that they were merely reporting the response to an invitation to devise tests of sun signs. They were not performing tests, yet the editor was implying the opposite. The editor replied "The essential problem with your research is that it is not properly designed towards a practical end." But how was the end (devising tests of sun sign columns) not practical? "I repeat that this is not scientific writing and analysis and is not, therefore, suitable for *Correlation* in the form in which it is presented."

Round 4 The authors then wondered if their results might be more suitable for *Correlation's* Forum, which is described as a section "open for various communications such as letters and comments" which will be "considered as preliminary publication open for encouraging and also critical comment". So they asked the editor under what conditions might their material be considered for Forum, for example with limits on length or focus. The editor replied "There are no conditions under which I would accept your sunsign material for Forum. Your article is unscientific in its presentation and analysis." It was now January 2000.

Outcome Dean and Mather had then been collaborating on scientific articles about astrology for more than twenty years since finishing *Recent Advances*, and had a solid reputation among scientists for quality work. Their rejected sun sign article was immediately snapped up by another journal, and appears on this website under Sun Signs. See if you agree with the *Correlation* editor that it is flawed, careless, poorly designed and unscientific, and let this website know.

Example 2

In January 2000 Dean submitted a letter to *Correlation* in response to the editor's plea for comments on the previous issue. Thus Peter Roberts's factor analysis of responses to a questionnaire of 110 items was hardly meaningful when the sample size was only 78, Graham Douglas had ignored the crucial literature on cognitive biases, Christopher Bagley's criticism of Ertel had many errors (all were explained), Claire Smith's argument for biological tides (the Moon causes tides, we are 60% water, therefore the Moon causes tides in us) was famously fallacious, and Frank McGillion's argument for seasonal effects had ignored age incidence (an artifact that may explain apparent seasonality). The letter was censored.

Example 3

In July 2000 Dean submitted two items for *Correlation's* Forum. One pointed out that Cedric Smith's Fourier analysis of Gauquelin data had already been done by others many years earlier, and that any conclusion was premature until the data had been cleaned of known artifacts. The other added to Suitbert Ertel's response to Christopher Bagley, and urged Bagley to reply to Ertel's questions (he never did). Both items were censored.

Example 4

In August 2002 Dean sent a letter to *Correlation* pointing out that Bernadette Brady's 34-page exploratory analysis in 20(2) of links between parents and children relied exclusively on chi-squared tests. But the tests were invalid (they used empirical expectancies instead of theoretical ones), all were incorrectly calculated, and all violated the test's assumption of independence. (Such errors would have been spotted by any referee with an understanding of elementary statistics.) There were many other mistakes. Yet these meaningless results were described on the front cover as "the stuff of which astrologers' dreams are made". Dean's letter was censored. Three years later about two-thirds of it was published in *Correlation* 23(1), 68-69 (2005), but the rest was still censored.

Example 5

In December 2001 *Correlation* 19(2) printed the first of a series of five long critiques by Suitbert Ertel on Dean's finding social artifacts in the Gauquelin data. Dean submitted a brief reply that was not printed until three issues later in 21(1). Meanwhile Ertel's critiques continued, each making mistakes that a referee should have picked up, culminating in a sixth long article in 23(1). Ertel's total was now 82 pages vs Dean's 1 page. Dean subsequently replied via a 10-page letter, of which 7 were comments on Ertel's article and 3 were comments on other relevant articles in the same issue. Dean's 7 pages were subsequently censored by the editor down to 4.5 pages, removing 60% of the words including paragraphs of crucial information, without any mention of this to readers, while Ertel was allowed another 4 pages to reply to the remnants. Dean's other 3 pages were completely censored. You can read the uncensored version of Dean's letter on this website under Gauquelin. It includes the parts censored from Example 4 above.

In summary

These concerns about censorship and loss of scientific integrity arose only when Pat Harris became editor. Previous editors Simon Best (1981-1992) and Rudolf Smit (1993-1998) never censored any letter, nor would they dream of doing so, for censorship is contrary to the spirit of science. That censorship is not contrary to the spirit of AA-style astrology confirms Ivan Kelly's view that the AA has abandoned its aim of enhancing "the good name of astrology among ... the scientific community". The days when

Correlation could be regarded (as AstroDatabank puts it) "the hands-down best journal of astrological research" are clearly over.

Appendix. Letter to *Correlation*

From *Correlation* 20(1), 67-69, 2001

From the following Consulting Editors in alphabetical order:

Geoffrey Dean (Australia), Rudolf Smit (Netherlands), and Wayne Spencer (England).

Refereeing policy reduces *Correlation's* credibility

Dear Editor, We are three editors with more than fifty years of professional editing experience between us. In our opinion the feature article "Prejudice in Astrological Research" by Mike Harding, hereafter referred to as PIAR, in *Correlation* 19(1) raises concerns about refereeing and intellectual credibility.

To start with, PIAR boils down to arguing that astrology is incompatible with science, therefore science is largely irrelevant. Clearly this will not do. The problem is not that astrology is incompatible with science but that it is unconvincingly so -- the arguments typically offered in favour of astrology fall well below the standards of critical thinking expected of any intellectual discipline, see Kelly's article in *Psychological Reports* 1997, 81, 1035-1066, and the totality of research outcomes is so negative that the case for astrology as a source of knowledge could be fairly said to have collapsed, see issues of *Correlation* since 1990. Indeed, the emerging picture would seem to deny any incompatibility between astrology and science, see Chapters 9 and 10 of Phillipson's *Astrology in the Year Zero*.

Overall, PIAR ignores informed criticism in favour of uninformed criticism, and condemns existing methodology without saying what should be done instead, thus contributing nothing to the debate. But the criteria that scientists and others use to judge the merits of an idea such as astrology (for example its empirical track record, its ability to meet critical scrutiny, and its consistency with the evidence) are not arbitrary. For them, astrology's conspicuous failure to meet these criteria is the deciding factor. Until the proponents of astrology recognise this, PIAR's complaints of prejudice are beside the point. As Phillipson says (p.181) "criticisms of science (no matter how valid they may be) do nothing to prove astrology."

However, what arouses our main concern is PIAR's response to refereeing. Of one referee's 65 recommendations (6000 words, 40 references, or about 15 *Correlation* pages), only 1 in 6 were adequately responded to. The rest were ignored, leading to severe assailability both of PIAR and of *Correlation's* credibility, all of it avoidable, as shown by the following examples:

PIAR ignores KT's [Key Topics previously published in *Correlation*], where most of its arguments are contested, and its treatment of Ertel ignores Ertel's letter in 18(2), as if scholarship did not matter. PIAR often argues by innuendo -- because some scientists are hostile to astrology, they all are; because Carlson's article was flawed in some areas, it was flawed in all areas. But neither is true. PIAR says that Adorno's anti-astrology views reveal only psychobabble, as if current criticism of such psychobabble did not also apply to astrology and PIAR's own astrobabble (as in fear = Saturn). PIAR says that astrological practice is based on experience, as if experience was unproblematic (it is hugely problematic, see KT4). PIAR says that phrenology's whole approach came from

science, which is incorrect, and ignores how phrenology highlights the problems of experience despite this point being stressed by the referee. PIAR says science's worldview "is often fatally flawed by its own assumptions about the nature of human beings", but without giving examples, as if any doubt was inconceivable to the author. Worse, the possibility that astrology might also be "fatally flawed by its own assumptions" seems equally inconceivable, as if only science (but never astrology or anything else that is nonscientific) could ever be wrong.

Is PIAR as unprejudiced as it demands others to be? It seems not. It gives no hint that many of its topics, such as research into astrology, have a scholarly literature. It does not discuss relevant findings. It ignores informed criticism. It attacks the *Skeptical Inquirer*, which it repeatedly misspells as *Enquirer*, but inexplicably ignores *SI*'s articles on astrology. These examples (many more could be cited) show how PIAR has failed to maintain the standards of argument, of scholarship, of clarity, of impartiality, and of concern for the reader, that attention to referee recommendations would have ensured. These deficiencies are not a matter of opinion but a matter of standards; they apply whether or not we agree with PIAR's views.

But PIAR is not an isolated case. The referee recommendations (12 major items, 1500 words) for Bagley's article in *Correlation* 18(1) were similarly ignored, as was a follow-up letter pointing out the resulting lack of standards, despite the statement in 18(1) that "letters and comments on these papers will be very welcome." However the AA's policy on referee recommendations is that "the author is not bound to follow them", which is precisely the process attacked by professional editor Kenneth Irving in 16(2), since although it might improve an author's writing "it cannot and should not replace the kind of independent review used by any journal adhering to the standards of academic publishing." The same view emerged from a poll of *Correlation* consulting editors in 1995, who unanimously opposed a lowering of standards. But PIAR shows that conspicuously lower standards are now a reality, which confirms our experience that consulting editors have not been consulted on policy since the previous editor stepped down at the end of 1998.

Correlation makes the claim that all submissions are "refereed for content and clarity of expression", which may reasonably be understood to imply a compliance with imposed standards. But due to AA policy the claim is meaningless, as is the claim that consulting editors are responsible for those standards. Every professional refereed journal that we know of puts the referees in charge of standards, not the authors. No referee is perfect, therefore authors always have the right to question decisions, but they have no right to decide standards.

We therefore call upon our fellow consulting editors to seek changes to AA policy, and to insist that consulting editors be actually consulted on this and other policy matters. If no changes are made, we fear that readers will see *Correlation* as having become, as Kelly (*Skeptical Briefs* March 2000) puts it, a case of "Vested interests 1, Scientific integrity 0." No academic journal can afford such a reputation.

Editor's response

The editor responded evasively in the same issue as follows (p.69):

As editor I welcome Geoff Dean's, Rudolf Smit's and Wayne Spencer's comments. In early December I took an editorial decision to move entirely to anonymous peer review to bring *Correlation* into line with other academic practice. As of now all papers will be

sent anonymously to a minimum of two reviewers. While in a small community anonymity will sometimes be impossible, since some researchers will be aware of, and recognise, each others' work, the goal is to focus on content rather than personality, which latter has often been the case in the past. I hope that *Correlation* will also thus set an example to other research periodicals and web sites dealing with astrology.

As far as the use of reviewers' criticisms are concerned, these obviously fall into different classes. Factual errors must obviously be corrected, but differences of opinion are a matter of the editor's judgement. I propose that in future, when reviewers have extensive criticisms of a paper, I will send them a second draft for comment.

The purpose of the editorial board is to advise the editor, as well as take on specific reviewing tasks, and I welcome all input from members of the board. Mike Harding's article "Prejudice in Astrological Research" 19(1) was resubmitted, after peer review, and I considered that it was ready for publication. It is a necessarily provocative article and I am happy to see that it has succeeded in provoking a response from *Correlation* readers. It was also warmly received by a number of subscribers to the journal, both in the UK and abroad, and also members of the editorial board. I am happy to be able to advise readers that there will be further papers from Mike in future issues of the journal. These will be subject, like all future material, to anonymous peer review.

[There was no response from Mike Harding nor have further papers from him appeared in *Correlation*]

What tests are easy?

A guide for students doing projects

Geoffrey Dean

Abstract -- It is a myth to say astrology cannot be tested. How could astrologers know it works if they could not test it? Some tests are difficult. Other tests are easy and can be made by anyone. The key is to ask the right questions. The most overworked areas are identified (don't bother with these since one more test will make no difference) along with three easy tests of sun sign beliefs, two easy tests of sun sign columns, one easy test of astrologers, and one easy test of Barnum effects.

Can astrology be tested?

As soon as astrologers hear the word "test" they tend to raise objections such as the following:

Astrology (soul stuff) cannot be tested by science (materialism).
Psychology is too confused for its tests to be meaningful.
Proper testing is not possible in the absence of funding.
Testers are closed-minded and cannot be taken seriously.

Ignore such objections. First, if they were true then astrologers could never know anything about astrology. How could they know it works if they could not test it? Second, the objections are irrelevant to the questions that matter, such as are Leos more generous than non-Leos, or do astrologers agree on what a chart means. Third, yes, some tests are difficult but others are easy and can be made by anyone. See *Research results* under Doing Scientific Research for abstracts of 91 studies that illustrate the diversity of tests that have been made.

Helpful questions

Well-considered questions, even if not part of your eventual project, may help in clarifying your approach to astrology. For example, to evaluate any idea such as "astrology works", try asking the following questions. The aim is not to win but to learn:

- (1) Why do you believe in this idea? This puts the burden of proof on the claimant where it belongs.
- (2) What evidence would you accept as proving your idea wrong? This is a potent question because it opposes the tendency to consider only confirming cases.
- (3) Are there other explanations that would produce the same outcome? This too is a potent question because it looks at how informed the claimant is.

Avoid open ended questions. Ask not "how does astrology work?" but "what is meant by astrology?" so you know what the issues are (astrologers seldom agree on this or

anything else, so the answer will depend on who you talk to). Not "is astrology true?" but "to what extent is it true?" or "does it need to be true?" The key question is "does astrology deliver benefits beyond those due to non-astrological factors?", but this cannot be answered until the other questions have been answered. Do not expect to find this question answered in astrology books.

Projects about sun signs

Signs are the most researched topic in astrology with well over one hundred empirical studies. Most studies are simply counts of people born under various signs, but such counts are too contaminated by ordinary influences (astronomy, sampling, demography, age incidence) to mean anything. We can try correcting for such influences but in practice the uncertainty is too great. So forget counting sun signs. If you need convincing, read this website's critiques of Sachs's *Astrology File* under Sun Signs.

The remaining studies, if adequately controlled against non-astrological influences, have invariably been negative. Signs are not only the most researched topic in astrology but are also the most disconfirmed. Signs are simply not valid, not even slightly. So forget validation, including validation of sun sign compatibility. Turn instead to looking at people's reactions towards an extremely popular belief now known (but not widely known) to be untrue.

Sun signs seem valid because they cannot fail to fit (everyone, not just Leos, will admit to being generous). They are also a good topic of conversation and are nice to have around. People tend to like them, but exactly why is not well understood despite many speculations. So one easy and useful project might be to ask people why they like or dislike sun signs, and to find reasons for any differences. For example men may view sun signs differently from women.

Reactions to disconfirmation

Sun signs let you study people's reactions to disconfirmation. Assemble a roomful of people, sit them in a circle according to sun sign (this adds intrigue and keeps the group focussed), and record each person's level of belief in sun signs (put a scale on display for them to choose from, such as strong, moderately strong, and so on). Ask for opinions why anyone should believe or disbelieve in sun signs, and get a debate going. Observe the arguments and record how each person reacts to views opposing their own. After a suitable period stop the debate and again record each person's level of belief. Ask why they changed or why they didn't change. Next, raise the question that nobody will have raised, namely what evidence would each person accept as disproving sun signs. Record their answers. Then summarise the evidence from this website about sun signs, and restart the debate. After a suitable period stop the debate and again record each person's level of belief. Rationally, everyone should end up as disbelievers, but most likely the believers will carry on believing. Ask them why. You now have the makings of an absorbing essay for your social science teacher. You may also be facing slings and arrows as in *True Confessions* under Sun Signs.

Sun sign junkies

Belief in sun signs is known to slightly affect a person's self-image and in some cases even their choice of job. The daily horoscope may well have an effect on daily mood. But measuring these things requires large samples, careful techniques, and lots of time, which puts them well beyond the resources of most projects. But there is a much easier

way of getting useful insight into these things, namely by talking to people who take sun sign columns very seriously and cannot exist without them. These sun sign junkies comprise about 1% of the general population and may be hard to find, but your newsagent may know a few. This is an unexplored area that deserves attention.

Mix and match

Finally two easy projects that have been done before but are still informative and fun. (1) See if people can pick their own newspaper horoscope after you have mounted each one separately and removed all cues (they may need retyping). If picking is difficult, have people rank their top three or four choices. (2) Count agreements and disagreements between horoscopes from different newspapers or women's magazines. If you want more mileage, do a repeat but mixing the days so the horoscopes being compared are not for the same day. Then get others to repeat the exercise to see if their counts agree with yours. In each case it is a good idea to have a trial run to make sure there are no snags.

Projects about serious astrology

The bad news is that many tests are difficult, time consuming, and have already been done. For example testing whether an astrologer can identify people from their charts has already been done in 54 studies, some of which took several years to complete. Overall 742 astrologers and more than 1400 charts were tested but the results showed no support for astrology. (The support shown by some early tests was later found to be an artifact of sampling.) Another 20 studies involving nearly 500 subjects tested whether people can pick their own chart reading but again the results showed no support for astrology. See *Meta-analyses* under Doing Scientific Research for overviews of all the studies in areas like these.

In general the better the study the more negative the outcome. The problem is that the sheer weight of studies will not be overturned by adding one more study. The good news is that other studies are much easier, just as useful, and more fun. And anyone can do them.

Tests of agreement

For example if you change the topic from seeing if astrologers are *accurate* to seeing if astrologers *agree*, the test becomes almost ridiculously easy. Just sit astrologers together in the same room, put a succession of charts on a screen, and ask questions that are a mixture of easy (is this person outgoing?) and difficult (does this person own a cat?). Any charts will do, even invented ones, because it is irrelevant what the person is actually like. What matters is whether the astrologers agree on what the chart is saying, and whether their agreement varies with difficulty.

To be feasible the above test requires access to a local astrology group. But it is worth the bother. Notice how all the usual excuses for error (birth time not accurate enough, person does not know themselves, and so on) no longer apply, since accuracy is not a concern. The point is, if astrologers cannot agree on what a chart is saying, then what price astrology? So far 28 such tests have been made involving a total of 506 astrologers and 762 charts, but their agreement was scarcely better than no agreement. Do not expect to find this result mentioned in astrology books.

One size fits all

A popular but interesting test is pretending to obtain chart readings for a roomful of people, who rate each statement in the reading for accuracy and then indicate to what extent the reading has increased their belief in astrology. Each reading is preceded by the person's name and birth details, so it looks genuine, but in fact each person gets the same fake reading. Alternatively a different fake reading can be provided for every 5-10 people, which allows you to test more statements without lengthening the individual readings. The aim is to show people how easy it is to read specifics into generalities (this is called the Barnum effect), how this affects their belief level, and to compile a reading that will fit as many people as possible.

Here the sense seems to come from the reading but in fact it comes from our ability to make sense out of vague data, as when we see faces in clouds. The most readily-accepted Barnum statements are favourable (you are forceful and well-liked by others), or vague (you enjoy a certain amount of change and variety), or two-headed (you are generally cheerful but get depressed at times). Not unexpectedly, the result of accepting Barnum statements is an increase in belief. The Barnum effect has attracted around 70 studies but it still makes a telling point.

The fallacy of personal validation

Interestingly, the most famous Barnum study, made in 1949, and many studies since then, used 13 statements taken mostly from an astrology book. The statements were typical of what might be heard during a chart reading. The studies found that when the statements are presented as a personal reading, as would of course apply during a chart reading, most people rate their accuracy as good or excellent. In case you are interested, the statements are as follows:

(1) You have a great need for other people to like and admire you. (2) You have a tendency to be critical of yourself. (3) You have a great deal of unused capacity which you have not turned to your advantage. (4) While you have some personality weaknesses, you are generally able to compensate for them. (5) Your sexual adjustment has presented problems for you. (6) Disciplined and self-controlled outside, you tend to be worrisome and insecure inside. (7) At times you have serious doubts as to whether you have made the right decision or done the right thing. (8) You prefer a certain amount of change and variety and become dissatisfied when hemmed in by restrictions and limitations. (9) You pride yourself as an independent thinker and do not accept others' statements without satisfactory proof. (10) You have found it unwise to be too frank in revealing yourself to others. (11) At times you are extroverted, affable, sociable, while at other times you are introverted, wary, reserved. (12) Some of your aspirations tend to be pretty unrealistic. (13) Security is one of your major goals in life.

Taken from Forer BR, The fallacy of personal validation: A classroom demonstration of gullibility. *Journal of Abnormal and Social Psychology* 1949, 44, 118-123. The "personal validation" in the title refers to the process of looking at a statement, seeing that it fits, and concluding that the system works. Just as astrologers do every day.

To see how it works, look at volume 10 pages 25-27 of Noel Tyl's *Principles and Practice of Astrology*, Llewellyn 1975, where he gives a reading to show how astrological counselling should be conducted. Tyl, a famous American astrologer and a psychology graduate, is renowned among astrologers for the quality of his work, so we can take this as being representative of the best practice. Tyl is talking to Eric, a new client aged 24. I have added comments in [].

"Basically, we should begin with a general statement to differentiate you from ... all other people. The horoscope shows that you are gracious, friendly, that you express yourself softly [all this was already obvious, now comes the favourable Barnum], and that you're very sensitive. [Now the vague Barnum] But, Eric, there are tensions here ... linked to self-esteem, how you feel about yourself. [Now the double-headed Barnum] The horoscope suggests that, on the one hand, you're pretty particular about whom you

relate to. [Now repeat vague Barnum] This might be a defense because you're not too pleased with yourself. [Now back to double-headed Barnum] And, then on the other hand, you're friendly to the extreme in order to be accepted. Do you think that is accurate?" To which Eric replied "Yeah (smiling). That's it, right on the button. [But how could it be otherwise?] Gee, I know a little about Astrology; how do you see all that?"

Sources of information

If your project requires a review of the literature, remember that books which examine the truth about astrology can be hard to find. For every book there are dozens of articles that can be even harder to find. Be aware that works earlier than 1990 tend to be dated. A comprehensive guide to finding information, plus an annotated book list, is on this website in *Finding info* under Adroit Utilities. Unfortunately books that suggest tests are almost nonexistent. Two recent titles are:

Blackmore S & Hart-Davis A (1995). *Test Your Psychic Powers: Find Out the Truth for Yourself*. Thorsons, London. Sets out simple experiments for testing sun sign columns and nine other paranormal areas (telepathy, crystals, dreams, dowsing, pendulums, premonitions, psychokinesis, ouija boards, and palmistry) that you might find more appealing! Blackmore was then a leading skeptic and investigator of the paranormal.

Wilson A (1998). *What's the big idea? The paranormal*. Hodder Headline, London, with illustrations by N Dewar. A humorous but critical look at the paranormal for young people, with occasional simple tests including one of sun sign columns. "If you want to know the truth about the paranormal, don't read the stars."

What works best in astrology?

Explore your ideas with 24 charts

Abstract -- In 1979 a group of astrologers in New Zealand decided to explore the merits of different approaches to chart interpretation in a new way. They obtained from reputable textbooks the topics said to be visible in birth charts, arranged them into paired opposites such as X and not X, and gave them to 135 subjects (mostly in New Zealand but also in Australia and Canada) for self-assessment, and also to a close friend of each subject for an independent assessment. This data was then reduced to 24 subjects who, unlike the average person, were definitely one thing or the other on each of 15 paired descriptions. This was the data that the astrologers planned to explore. Unfortunately data collection took much longer than expected and the data was never used. It was retrieved especially for this website to encourage exploration as originally planned. Exploration can be made by any reader who can calculate and interpret birth charts. Their responses are analysed and posted anonymously at the end of the article. What works best in astrology? So far nine responses with an exploration time ranging from 3 to 12 hours. Analysis reveals no consistent variation in correct choices with difficulty, confidence, technique or experience. But the number of responses is still very small. More responses are needed before a proper analysis can be made. Watch this space...

In 1973 the famous US astrologer Dr Zipporah Dobyns complained that "astrology is almost as confused as the earthly chaos it is supposed to clarify" (ZP Dobyns and N Roof, *The Astrologer's Casebook*, TIA Publications, Los Angeles, page 4). Today software programs offer several zodiacs, many house systems, extra planets (real or imagined), almost unlimited aspects and midpoints with your choice of orb, and so on. But there is no agreement on which combination works best for which topic, or even on which topics can or cannot be seen in birth charts. It seems that there is no view by an astrologer of standing that cannot be contradicted by another astrologer of standing. Sun signs are a good example, see the article *History, controversies, validity* under Sun Signs.

Astrologers attempt an exploration

In 1979 a group of astrologers in New Zealand attempted to resolve the contradictions. Like many other groups before them, they decided to explore the merits of different approaches to chart interpretation, but in a new way. They obtained from reputable textbooks the topics said to be visible in birth charts such as particular traits and events, and arranged them into pairs a and b that were opposite in meaning. Any uncertainties were removed by discussion with working astrologers and counselling psychologists, as were any differences in social desirability between a and b that might bias a subject's response.

The paired descriptions were then given to 135 subjects and close friends recruited by various methods such as ads in bookshops, mostly in New Zealand but also in Australia and Canada. Each subject and close friend had to separately indicate which description definitely applied to the subject. If neither description definitely applied, they indicated "not definitely one or the other". The subjects also completed the Eysenck Personality Questionnaire. From these 135 subjects were picked those with the largest number of definite descriptions and the best agreement between subject, friend, and (where relevant) the EPQ.

The definite subjects were interviewed to make sure their birth data and their responses had been accurately recorded. The result of this lengthy and painstaking process was 24 subjects who, unlike the average person, were definitely a or b on each of 15 paired descriptions. Mean age was 33 years, half were male, and one-third were born in the Northern hemisphere. This was the data that the astrologers planned to explore.

Unfortunately data collection took much longer than expected. In due course the astrologers went their separate ways and the data was never used. It was retrieved

especially for this website and appears below to encourage its exploration as was originally planned.

Birth data of 24 definite subjects

Birth times and dates are in GMT.

Time is from b Baby Book, h Hospital Record, m Mother's Memory.

Age is when the subject was interviewed in 1980, mean is 33 years.

ID	Age	Sex	Time	Source	Date	Latitude	Longitude	Place
01	18	f	2230	m	13 Aug 1962	44n15	077w37	Belleville Ont
02	23	m	0915	b	27 Dec 1957	35s45	144e15	Cohuna Vic
03	25	f	1715	m	26 Feb 1955	41s19	174e46	Wellington NZ
04	26	f	1740	h	14 Nov 1954	36s52	174e46	Auckland NZ
05	26	f	1410	h	31 Jan 1954	43n20	079w50	Hamilton Ont
06	27	f	1145	m	17 Aug 1953	33s58	117e59	Gnowangerup WA
07	27	m	1430	m	20 Jul 1953	39s25	175e31	Raetihi NZ
08	28	m	1830	m	06 Apr 1953	31s54	115e59	Midland WA
09	29	m	0000	b	13 Mar 1951	07n40	003e50	Ibadan Nigeria
10	31	f	0350	m	13 Nov 1949	46s24	168e24	Invercargill NZ
11	31	f	0545	m	01 Aug 1949	41s18	173e16	Nelson NZ
12	32	f	1612	m	30 Dec 1948	31s56	115e52	Mt Lawley WA
13	32	f	0500	b	22 Jun 1948	52n13	000e07	Cambridge UK
14	32	m	1220	m	30 May 1948	41s19	174e46	Wellington NZ
15	32	m	1500	m	18 Apr 1948	27s25	153e02	Brisbane Qld
16	33	f	1615	b	19 Jan 1947	44n15	077w37	Belleville Ont
17	35	f	0615	m	28 Oct 1945	34s52	138e30	Adelaide SA
18	38	m	1400	m	25 Sep 1942	39s29	176e55	Napier NZ
19	39	f	1130	m	11 Jan 1941	41s16	174e57	Lower Hutt NZ
20	40	m	0730	m	18 Feb 1940	51n14	003w30	Minehead UK
21	41	m	0100	m	09 Sep 1939	51n54	002w04	Cheltenham UK
22	42	m	1200	m	03 Mar 1939	52n06	005e08	Utrecht Neth
23	46	m	0830	m	13 Mar 1934	45s52	170e15	Mosgiel NZ
24	47	m	2215	m	23 Aug 1933	31s57	115e49	Perth WA

15 paired descriptions for exploration via the above birth charts

The 15 descriptions are variously character traits, physical traits, abilities, and events. Given the right technique, all are said to be visible in the birth chart. Chart indications such as "tends" or "sometimes" or "in between" do not apply here because each subject is known to be definitely a or definitely b.

- 1a. Physically active and energetic, enjoys hard work and exercise.
- 1b. Not physically active, prefers rest and quiet.

- 2a. Self-contained, not a party person, content to be alone.
- 2b. Sociable, prefers company, dislikes being alone.

- 3a. Wide interests, perhaps overscattered at times.
- 3b. Fewer interests, more directed.

- 4a. Frequently gets worked up (happy, angry, tense, upset, etc).
- 4b. Seldom gets worked up.

- 5a. Direct, to the point, can be tactless at times.
- 5b. More diplomatic, perhaps diffuse at times.

- 6a. Affections physically cool even in private.
6b. Affections physically warm and demonstrative.
- 7a. Flexible, adaptable, satisfied with compromises.
7b. Steady, self-willed, likes to have own way.
- 8a. Not especially interested in art, no special artistic talent.
8b. Very interested in art, noticeable artistic talent of some kind.
- 9a. Always busy, always working, often reads several books at once.
9b. Not especially busy, enjoys lazing around relaxing.
- 10a. Patient, undemanding, can postpone without fuss.
10b. Impatient, demanding, wants to do things immediately.
- 11a. Noticeable musical talent, can play an instrument well.
11b. No special musical talent, cannot play an instrument.
- 12a. Parent's marriage is happy.
12b. Parent's marriage is unhappy.
- 13a. Life is usually traumatic, many ups and downs.
13b. Life is usually uneventful, few ups and downs.
- 14a. Health is good.
14b. Health is poor.
- 15a. Eyes are brown or black.
15b. Eyes are blue, grey or green.

How to explore this data

Print out the birth data and descriptions. Calculate each of the 24 birth charts in your preferred style. Take each chart in turn and proceed as follows:

A. For each pair of descriptions write down the alternative (a or b) that best fits the chart, and your confidence in that fit (High, Medium, Low). Some items may seem difficult or even impossible, but they have been included to allow the exploration of intuition. Even if you don't believe in intuition, try them anyway, the results may surprise you. At the end your exploration should look something like this:

1. 1aH,2bM,3aL,4bM,5aH,6bM,7aL,8bM,9aH,10bM,11aL,12bM,13aH,14bM,15aL.
2. 1bM,2aH,3bM,4aL,5bM,6aH,7bM,8aL,9bM,10aH,11bM,12aL,13bM,14aH,15bM.
3. 1aM,2bM,3aM,4bM, ... and so on for a total of 24 charts.

Here the first line indicates that, for chart 1, you are highly confident the best fit is with description 1a, moderately confident the best fit is with description 2b, and so on. If you spend half a minute on each description, the total time required is about three hours.

B. Write down your view (easy, medium, difficult, impossible) of how easy it is to see each of the 15 descriptions in charts generally. When finished your view might look something like this:

Ease: 1e,2m,3d,4i,5e,6m,7d,8i,9e,10m,11d,12i,13e,14m,15d.

C. Write down your technique, time taken, and other relevant details. Two examples:
Ebertin, 6 hours, no intuition, German male, 15 years experience.
Tropical Placidus, 2 hours, much intuition, American female, 2 years experience.

D. Copy what you have written into a plaintext email and send it to rudolf.h.smit#hcc.net.nl with # replaced by @. All contributions will be acknowledged. The indications as they come in will be posted anonymously at the end of this article. No personal details such as your name or email address will appear, nor will they be passed to others. You can explore this data and contribute your findings in complete confidentiality.

Results -- what works best in astrology?

Began August 2003. # = response number. As the number of responses increases so should our understanding of what works best in astrology. What you see below is but a hint of the valuable information these explorations should eventually provide.

Method, time taken, intuition used, gender, years of experience

#1 Traditional Placidus, 8 hours, male, unstated intuition, 4-5 years.
#2 Equal House, 4 hours, male, little intuition, 14 years.
#3 Tropical Placidus, 3 hours, male, average intuition, 8 years.
#4 Tropical Placidus, 10 hours, male, much intuition, 8 years.
#5 Ebertin, 9 hours, female, average intuition, 1 year.
#6 Equal House, 12 hours, female, little intuition, 4 years.
#7 Vedic, 11 hours, female, much intuition, 3-4 years.
#8 Tropical Placidus, 8 hours, female, little intuition, 5 years.
#9 Vedic, 5 hours, female, average intuition, 7 years.

How respondents divided the descriptions according to difficulty

#1 Easy 1, medium 6, difficult 6, impossible 2, total 15 descriptions.
#2 Easy 4, medium 5, difficult 2, impossible 4, total 15 descriptions.
#3 Easy 4, medium 6, difficult 3, impossible 2, total 15 descriptions.
#4 Easy 6, medium 6, difficult 3, impossible 0, total 15 descriptions.
#5 Easy 3, medium 7, difficult 2, impossible 3, total 15 descriptions.
#6 Easy 5, medium 5, difficult 4, impossible 1, total 15 descriptions.
#7 Easy 2, medium 8, difficult 5, impossible 0, total 15 descriptions.
#8 Easy 2, medium 7, difficult 6, impossible 0, total 15 descriptions.
#9 Easy 6, medium 5, difficult 2, impossible 2, total 15 descriptions.

Percent correct choices at each level of difficulty

#1 Easy 37, medium 48, difficult 54, impossible not attempted.
#2 Easy 58, medium 53, difficult 44, impossible 45.
#3 Easy 45, medium 54, difficult 48, impossible 51.
#4 Easy 49, medium 48, difficult 64.
#5 Easy 64, medium 58, difficult 51, impossible 48.
#6 Easy 45, medium 45, difficult 40, impossible 45.
#7 Easy 59, medium 56, difficult 51.
#8 Easy 53, medium 50, difficult 52.
#9 Easy 48, medium 49, difficult 47, impossible 39.

How respondents divided their choices according to confidence

#1 High 39, medium 31, low 30, as percent of 312 choices.

#2 High 32, medium 26, low 42, as percent of 360 choices.
#3 High 38, medium 26, low 35, as percent of 360 choices.
#4 High 42, medium 37, low 21, as percent of 360 choices.
#5 High 34, medium 30, low 36, as percent of 360 choices.
#6 High 40, medium 31, low 29, as percent of 360 choices.
#7 High 42, medium 39, low 19, as percent of 360 choices.
#8 High 39, medium 41, low 20, as percent of 360 choices.
#9 High 38, medium 28, low 34, as percent of 360 choices.

Percent correct choices at each level of confidence

#1 High 47, medium 55, low 47.
#2 High 54, medium 53, low 47.
#3 High 51, medium 52, low 48.
#4 High 50, medium 57, low 47.
#5 High 66, medium 47, low 56.
#6 High 40, medium 42, low 48.
#7 High 55, medium 53, low 54.
#8 High 51, medium 56, low 44.
#9 High 51, medium 41, low 46.

The above results show no consistent variation in correct choices with difficulty, confidence, technique or experience. They do not tell us what works best in astrology. But the number of responses is still very small. More responses are needed before a proper analysis can be made. Watch this space...

The Gauquelin work

1. A concise history with photographs

Geoffrey Dean

The universe is fantastic, don't you realize that?
Michel Gauquelin *Planetary Heredity* 1988:51

Abstract -- Until his untimely death in May 1991, Michel Gauquelin (b.1928) was the world's most formidable scientific researcher into astrology, where his studies rank among the best ever conducted. Much of his success was due to Françoise (1929=2007), his Swiss-born wife and co-worker until 1985. His early fascination with astrology led to 45 years of research that resulted in a dozen popular books (many translated into several languages), 30 data books, and about 150 scientific articles. He used rigorous methods and large samples of hundreds or thousands of cases. Tests of signs, aspects, transits, and astrologers were negative. Tests of planetary positions with respect to the horizon were positive but only for eminent professionals and only for the Moon, Venus, Mars, Jupiter, and Saturn. The effect sizes were tiny (typically around 0.04 when expressed as a correlation) and of no practical use. Tests of planetary links between parents and children seemed positive but the effect size was even tinier (barely 0.02) and later seemed to disappear, leaving their existence in doubt. The planetary effect was later called the Mars effect because Mars (the planet linked to sports champions) was then the focus of attention. But depending on the occupation (there were nine others) it could have been called the Moon, Venus, Jupiter or Saturn effect. There was no effect for the Sun, Mercury, Uranus, Neptune, or Pluto, or for ordinary people such as those who visit astrologers. Planetary effects among eminent professionals have so far replicated across a total of 34 out of 35 studies, of which 8 are by independent researchers. Gauquelin's negative results upset astrologers, who found them hard to explain, and his positive results upset skeptics, who found them equally hard to explain. The outcome was 45 years of attack from both sides and a legacy of baffling puzzles for both astrology and science. Includes the Gauquelins' own account of how it all started, a non-technical account of his approach and results including negative results, nine tributes after his death, a bibliography of main works, and nine historic photographs. Part 2 (a separate article) takes up the crucial topics of artifacts and how the baffling puzzles might be explained.

The following historical account of the work and findings of the Gauquelins is based on their many books and articles, and on 15 years of personal correspondence and meetings. Even if you are familiar with their work you may find much of interest. Here "Gauquelin" means Michel Gauquelin (1928-1991) and "the Gauquelins" means Michel and Françoise, his Swiss-born wife (1929-2007) and co-worker until 1985. Appendices give their accounts of how it all started, his experimental approach, his early negative findings, and excerpts from tributes after Gauquelin's death. Part 2 (a separate article) takes up the crucial topics of artifacts and how the baffling puzzles revealed by the Gauquelin work might be explained.

Early days

Until his untimely death in May 1991, Michel Gauquelin was the world's most formidable scientific researcher into astrology. Born in Paris on 13 November 1928 at 10:15pm, Gauquelin's interest in astrology began early. As a seven-year-old he knew the dates of each Sun sign. Three years later his parents fled to southern France to escape the German occupation, and there his dentist father Roland Gauquelin showed him how to calculate a birth chart. At fifteen, back in Paris, he was skipping classes to browse in Chacornac's astrology bookshop opposite Notre Dame cathedral. During two years he read more than a hundred books in this way, and was busy writing his own. Michel Gauquelin's chart readings were so successful that his schoolmates called him Nostradamus, the Latinised name of the 16th century seer Michel de Notredame.

But were the claims of astrology true? He was unconvinced by the success of his readings and by the opinions of astrologers. However, during 1919-1946 the European astrologers Paul Choïnard, Karl Krafft, and Leon Lasson had separately published statistical surveys with apparently positive results. Could he believe them? To find out, Gauquelin started collecting and testing birth data, an activity that would continue for the rest of his life and change the face of astrological research.

In 1946 he enrolled at the Sorbonne (famous seat of the faculties of science and letters at the University of Paris) to study psychology and statistics, graduating three years later, during which time he continued testing the Choïnard-Krafft-Lasson claims. In 1952 he met Marie-Françoise Schneider, a Swiss psychology student whom he later married in 1954, and with her encouragement he wrote his first book. It was a highly productive partnership that lasted for more than thirty years until their separation in 1982 and divorce in 1985; she continued with her own research after his death, and died in 2007 after a decade of declining health. Gauquelin describes these early days (it was 1948-49) as follows:

"At the age of 20, I was wildly enthusiastic about everything to do with astrology, although I was almost equally mad about painting and tennis. I wanted to do research into astrology, but had neither the money, nor the time (I was finishing my studies), nor the application necessary. I did, however, have a foggy idea of what was involved. I would go down to the library, between a drawing session in a Montparnasse attic and a tennis match, and copy out the names and dates of birth of people ... It was a very long-term, expensive and obstacle-strewn project" (*Truth about Astrology* pp.19-20).

After a year or two of working like this, he had a few thousand cases without birth times, and a few hundred cases with birth times obtained from registry offices. See Appendix 1 and 2 for descriptions by Michel and Françoise of how it all started.



Left. Chacornac's astrology bookshop where the teenage Gauquelin would spend hours reading astrology books. Seen here in 1983, the bookshop closed in 2005. **Right.** Chez Gauquelin in rue Amyot, Paris, seen here in December 1981, 1 km south of Notre Dame. The Gauquelins' home-cum-laboratoire was upstairs in the tall apartment block on the right.

State of astrology in the 1940s

Gauquelin describes how astrology in the 1940s was marked by "A double void. First of all, an experimental void: apart from a few brief attempts, no-one had ventured to bring together a sufficiently large number of births, or carry out systematic investigations to test the great astrological laws. But a further absence [the second void] was perhaps even more cruel, that of a truly scientific method capable of guiding the researcher through the stumbling blocks that this type of research scatters in his path. In the fifties,

I became attached to the idea of filling this double (experimental and methodological) void" (*Written in the Stars* 1988:11).

In other words astrology in those days lacked adequate birth data and methods of analysis. Gauquelin's idea was to provide both, which (with the later help of Francoise) he did to an extent never matched before or since. The Sorbonne had taught them the skills needed to achieve standards well beyond those of previous researchers such as Choisnard, Lasson (France); Krafft, Schwab, Von Klockler (Germany); Carter, Sunley (UK); Bradley, Church of Light, Tobey (USA). Eventually their data (many tens of thousands of cases all with birth certificates), methods, and results filled thirty large data books, a dozen popular books many translated into several languages, and about 150 scientific articles and monographs.

Today Gauquelin's studies rank among the best ever conducted in astrology. Nevertheless his popular books tend to ignore astrological research by others (eg most of those cited above) and thus give an incomplete view of the field. But this was a common fault among early researchers, largely due to a scattered literature and the absence of reviews, an absence not remedied until the arrival of *Recent Advances* in 1977. See Appendix 3 for more details of Gauquelin's approach to filling the above double void.

Initial findings

Gauquelin began by analysing the same chart factors as Choisnard-Krafft-Lasson had done, but more rigorously and with larger samples. It took nearly ten years of painstaking effort shared in the beginning with his university studies 1946-1949, then interrupted by fifteen months of French military service 1952-53. But by 1954 his studies were complete. In July-August of that year, while Francoise was holidaying in Iceland, he finished the typescript of his first book *L'Influence des Astres*. It was published in late 1955 by Le Dauphin, Paris. It had 347 pages, of which nearly one-third listed the birth data of 576 and 508 physicians, 570 sports champions, 676 military men, 906 major painters, 361 minor painters, 500 actors, 494 politicians, 349 scientists, and 884 priests, a total of 5824 eminent professionals (actually 5726 since 68 physicians were common to both groups) all with birth time and place. It was the first time in astrology that such a large number of timed birth data had been published.



Subtitled *Etude critique et experimentale avec trente-trois figures*

The book received good coverage in the French press. For example there was nearly a full page in the popular weekly *France Dimanche* (30 Dec 1955:20) headed "Trois planetes decident de votre profession", which included a small picture of a young Gauquelin holding a page of figures with the caption (in French) "During ten years, the

young French statistician Michel Gauquelin has drawn up millions of figures to prove astrology false. But today he concludes that certain planets exert an influence." There was a similar large article in the only daily sports paper *L'Equipe* (The Team, 21 Dec 1955:5,9) headed "Faut-il croire a l'influence des astres?". Later there was a long article in the popular monthly science magazine *Science & Vie* (January 1959:87-91) headed "Astres, Destinee, et Mathematiques" above a large picture of a slide rule resting on the famous zodiac lady from *Les Tres Riches Heures du Duc de Berry*, with a subsequent smaller picture of "M.Gauquelin, mathematicien du destin" at his desk. So Gauquelin's book was fairly well publicised, at least in France.

Gauquelin's conclusions were generally bad news for astrology and were as follows:

Choisnard (1867-1930) was ignorant of statistics and generally used rather small samples (one or two hundred cases). The results given in his *La Loi d'heredite astrale* (1919) and *Preaves et Bases de l'astrologie scientifique* (1921) did not exceed chance fluctuations and did not replicate with large samples. Choisnard was also ignorant of astronomical effects, for example he attributes great significance to superior people having more rising signs near Virgo-Libra than near Pisces-Aries, but this is simply because (in the northern hemisphere) the former rise more slowly than the latter due to the varying angle between horizon and ecliptic.

Despite these disappointments, Gauquelin acknowledges that Choisnard inspired his application of statistics to astrology, for which Choisnard's tables of planetary positions were "easy to use and were for a long time indispensable to my work". Choisnard had also inspired his use of birth data taken from registry offices. "Choisnard was, without doubt, the first to have had the idea of using this valuable source of information bequeathed to us by the Committee of Public Welfare" (*Neo-Astrology* 1991:158).

Krafft (1900-1945) believed he knew the answers in advance of any research. His *Traite d'Astro-biologie* (1939) "forms the most indecipherable mass that one could imagine ... He never gives the raw data on which his arguments are based. He replaces them with a debauchery of 'suggestive' graphs [that] have the malicious gift of making statistics show what they do not show at all" (*L'Influence des Astres* 1955:39). Like Choisnard's, Krafft's results did not exceed chance fluctuations and did not replicate with large samples. His genius for error was extraordinary, for example in a sample of 115 musicians he attributed great significance to the absence of Moon conjunct Uranus in certain signs even though the slowly-moving Uranus could not have been in those signs in the first place, see Figure 1.

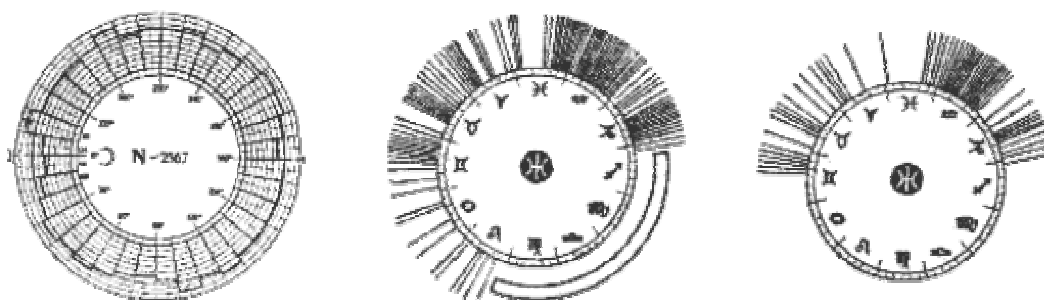


Figure 1. Krafft's findings for musicians. Left, at the births of 2567 musicians born since 1820 (data from Humber-Riemann's *Dictionnaire de Musique*, Paris 1913) Krafft observed that the aspects between the Moon and Uranus were least frequent around the conjunction (at 9 o'clock) and concluded that this was an unlucky aspect not favourable for musical success (p.27). These 115 unlucky cases were distributed around the ecliptic as shown centre

(orb 10 degrees) and right (orb 5 degrees), with many signs empty. Krafft concluded that the ecliptic "is not homogenous but has zones with specific effects" (pp.40-41). Krafft's book has more than 70 figures like these, clearly the result of a considerable labour, and at first sight their effect seems overwhelming. Without Gauquelin's expert scrutiny the unwary reader might easily be persuaded to draw incorrect conclusions.

Gauquelin comments "It seems quite incredible that he could have made such a ridiculous error. However, such errors occur on almost every page of Krafft's book [which] is a kind of statistical anti-methodology [that] should be given to students of probability calculations to put them on their guard" (*Astrology and Science* 1970:135).

The claims disconfirmed by Gauquelin ranged from simple ones like zodiac signs vs personality to more complex ones like planetary aspects between family members and transits at death. For details see Appendix 4. Gauquelin comments that his findings represent "a considerable inquiry in the testing of astrological rules with large and varied samples. It is necessary to stress that the results demolish astrology more than they might appear ... because they attack not the claims of particular authors but the elementary basis of the doctrine itself" (*L'Influence des Astres* 1955:62).

Surprising findings

The situation changed when Gauquelin tested the findings of French astrologer Leon Lasson. In 1938 Lasson had published *Astrologie Mondiale, la Loi des Grands Evenements Historiques, Quinze ans de paix sur l'Europe*, which predicted 15 years of peace in Europe, clearly not a promising start. But in a later work *Ceux qui nous guident* (1946) he looked at the house distributions of 807 births spread over six professions, and claimed the results were significant. House position had generally not been studied by Choïnard or Krafft, simply because large sets of data with the required birth times were then difficult to obtain. So here was an important challenge.

It was also a methodological challenge. For statistical purposes Gauquelin divided the diurnal circle into 36 sectors in order of diurnal motion starting at the ascendant, ie in the opposite direction to houses, see next section. However, the expected frequency in each sector is difficult to calculate because it depends on season (longer days in summer mean more births above the horizon), demography (the birth rate varies during both the day and the year), astronomy (planetary motion can be highly non-uniform eg due to retrogradation), and a particular sample (for all of the previous reasons). Gauquelin managed to solve this problem in various ways that were later published as *Methodes pour etudier la Repartition des Astres dans le Mouvement Diurne* (Paris 1957, 112 pages), which included a section by Francoise on three ways of calculating sector positions (rise-set, Placidus, graphical).

Gauquelin noted that Lasson's sample sizes were inadequate (often less than a hundred cases), and that he had not allowed for astronomic and demographic factors. For example Lasson found that writers tended to be born with Mercury rising, which in fact is due to the larger number of births near sunrise and to Mercury never being far from conjunct the Sun, so astrology has nothing to do with it. In the end Gauquelin was unable to replicate Lasson's results.

Nevertheless, much to Gauquelin's surprise, he observed in his own large samples similar (but not identical) results that did replicate. And it is these results, not the failed results of Choïnard, Krafft, and Lasson, that fill most of Gauquelin's first book. In its introduction he notes that he was "sincerely persuaded that [his book] would have nothing to offer except a critique of astrological doctrine ... But in the course of our work we were confronted by results so remarkable that scientific rigour obliged us to pursue

and extend them" (*L'Influence des Astres* 1955:12). Furthermore "no a priori reason appears sufficiently valid for rejecting the conclusions we have drawn" (p.15). He had experienced astrological observations that, in the famous words of Johannes Kepler (1571-1630), "had instructed and compelled my unwilling belief."

Note that the above "we" and "our" refer (in the style of French writing) to Michel only and not to both Gauquelins. For the first few years after they met in 1952, Francoise gave mainly moral help and was not involved in the writing of his first two books, even refusing an invitation to participate in the second because she was studying for exams. Planetary effects were discovered by Michel alone, a point missed by many commentators, for example by Suzel Fuzeau-Braesch in *L'Astrologie* (1989) in the vast "que sais-je?" series by Presses Universitaires de France, which error was corrected in the 1992 edition.

Replication leads to two general hypotheses

This compulsion of Gauquelin's unwilling belief was in 1955, at the end of the first scientific investigation of astrology's secrets conducted on a grand scale. Gauquelin's observations were simple enough -- eminent professional people such as eminent scientists tended to be born with a surplus or deficit of certain planets in the areas just past rise or culmination, see Figure 2.

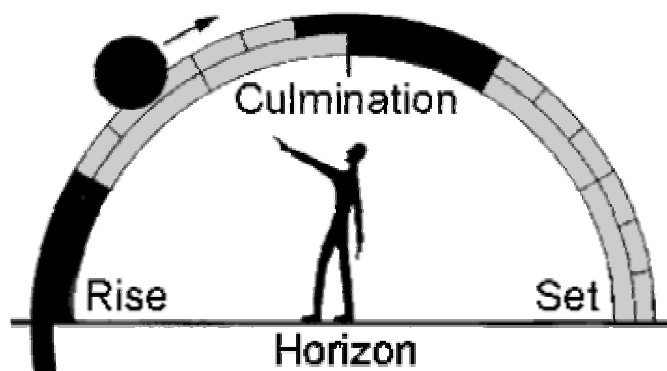


Figure 2. Diurnal planetary effects. Gauquelin divided the sky into 12 sectors (inner circle) or 36 sectors (outer circle), half above the horizon and half below. The sectors that planets tended to favour or avoid are shown in black. Gauquelin called them key sectors (inner circle) or plus zones (outer circle), but for simplicity I refer to both as key sectors.

Each profession was linked to one or more of three planets, namely Mars after which the effect is named, Jupiter, and Saturn (the Moon was added later and Venus later still), but not to the other planets or the Sun. For example the planet showing a surplus was Mars for physicians, military leaders and sports champions, Jupiter for actors, and Saturn for scientists. Mars and Saturn also showed a deficit for painters. These results were consistent with Mars = activity, Jupiter = outward show, Saturn = inner thought, which more or less fitted astrology. On the other hand there were notable conflicts that Gauquelin had listed side by side in *L'Influence des Astres* (p.212) and which can be summarised as follows:

Gauquelin's findings

Based on experience.
Sectors have no significant meaning.
Only key sectors have influence
and do not differ in quality.

Astrological doctrine

Not based on experience.
Houses have significant meaning.
Every house has an influence
and each differs in quality.

No sudden change at boundary.
 So far only Mars, Jupiter, Saturn.
 Maximum effect after axes.

Sudden change at boundary.
 All planets work, even some stars.
 Maximum effect before axes.

Gauquelin comments: "The main reaction of those who examined the work was to advise me to try a replication of the experiments abroad, to see if the same results would appear among births other than French. I agreed. The scope of the experiments had to be extended if I wished to confirm the facts. Beginning in 1956, my wife and I visited a different country each year. During the holidays, and taking advantage of the thirty days of freedom at our disposal, we accumulated new records; during the rest of the year we worked on the statistical calculations. In this way German, Italian, Belgian, and Dutch celebrities were united. In all, 15,000 births were collected for analysis, all complete, indexed, and obtained from the registry office by means of an energetic correspondence with numerous City Halls" (*Astrology and Science* 1970:152-153). During this data gathering Francoise's language skills were crucial.

These 15,000 new cases, together with a further 2000 cases from France, led to the results published in his second book *Les Hommes et les Astres*. Denoel, Paris 1960, 268 pages. Writing it had taken Gauquelin six months of work without pay. But the results were almost uniformly positive. Of the total of 13 French planetary observations for eminent professionals (Mars, Jupiter, Saturn for physicians and scientists; Moon, Mars for champions; Moon, Mars, Jupiter for military men; Moon, Jupiter for politicians; Jupiter for actors; Mars, Saturn for Painters), no less than 11 replicated with statistical significance. Similar tests of non-eminent people in the same professions gave results close to chance expectation. It was an impressive achievement. Gauquelin's summary from p.161 is shown below:

Significance level p	Of 13 replications with foreign data			All data
	Expected by chance	Non-eminent pros	Eminent pros	Eminent pros
>0.10	11.7	10	2	0
0.05-0.10	0.7	1	2	1
0.01-0.05	0.5	1	1	1
0.001-0.01	0.1	0	6	4
<0.001	0.0	1	2	7
Total replications	13.0	13	13	13
Mean sample size		1639	1416	2173

Note the marked difference between the chance and non-eminent results on the one hand, and the eminent results on the other. When the French and foreign data are combined (last column), 11 of the 13 results are significant at or below $p=0.01$, which compares with the 0.13 results expected by chance. To Gauquelin the results seemed conclusive: "Our research has given the same fundamental results across five different countries, for births during 1800-1930, in latitudes of 37 to 55 degrees spanning more than 20 degrees of longitude, despite frontiers, differences in language, institutions, mentality, or history. This is more persuasive than replications in the same country" (p.165).

In summary, the results using foreign data showed that the surpluses and deficits previously observed for Mars, Jupiter and Saturn at the birth of eminent professionals were real. The Moon (previously uncertain) was now linked to creative writers. Venus had no apparent effect, but was later found to reach significance when similar groups were combined, eg for writers plus journalists, and for actors plus musicians plus painters. As before, the results more or less fitted astrology, but the conflicts remained,

especially the lack of an effect for ordinary people, which on Gauquelin's later figures meant 99.994% of the population. It was all very puzzling.

Nevertheless the results led to two general hypotheses, based on a total sample of 20,396 cases, which guided his work from then on: (1) Different professions are linked to different planets. (2) The relationship increases with eminence and disappears for non-eminant persons. The effect had nothing to do with signs or aspects. What mattered was the planet's diurnal position relative to the horizon -- whether it was rising or had culminated overhead. (The opposite positions below the horizon seemed also to be involved, but too weakly and erratically to justify routine inclusion, a view corroborated 30 years later by Ertel who found no consistent relation to occupation.)

Generally the surplus or deficit was between 10% and 25% of the expected key sector total. This may seem a lot, but about four-fifths of births fall outside key sectors, and in terms of the whole sample (which is what matters) the effect is much smaller and of no practical value, see later section on effect size. Detecting such small effects amid the sampling noise is difficult and is one reason why the Gauquelin findings were to become controversial. Nevertheless, for the Gauquelins, planetary effects had replicated and were now a reality.



Left. One of many boxes of replies from registry offices. Replies were stored in their original envelopes (the one visible here is from Acheres-la-Forêt and is addressed to Monsieur Michel Gauquelin, 8 rue Amyot, 75005 Paris).
Right. Birth data and planetary positions were recorded on index cards. Eventually there were more than half a million cards.

Explaining planetary effects via heredity

Still puzzled by his findings, Gauquelin started looking for an explanation. He saw that inherited disposition and a favourable environment seemed sufficient to explain professional success, which meant that an explanation had to be linked in some way to heredity and environment. Of the two, heredity was the easiest to investigate. Especially as Françoise, as part of her official psychology studies (published as "L'heure de naissance" [hour of birth] in the French journal *Population* 14, 683-702, 1959), had obtained 6372 birth data from a large Parisian hospital and 10,878 birth data from registry offices near the hospital, which data could be used as a starting point.

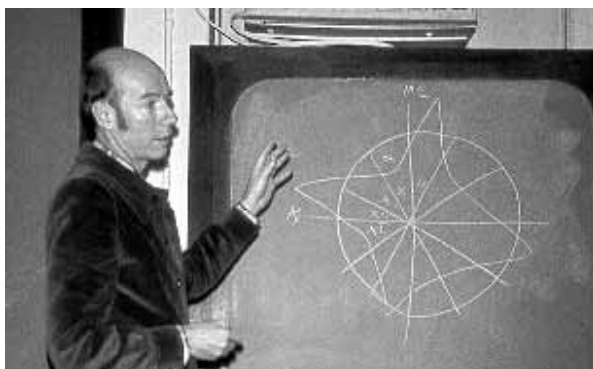
"So once again I was on the hunt for dates of birth, but this time I was interested in the general population of men and women, and not members of an elite selected for a special purpose. In fact, planetary heredity had to be a general law of human nature, and no longer a perquisite of some people whose vocation was clearly marked. For five years I worked on the birth registers at several city halls in the region of Paris. In the total figure more than 15,000 matchings of parents and their children were collected

[24948 individual birth data], which enabled me to calculate almost 300,000 positions of the planets" (*Astrology and Science* 1970:157).

The results repaid the huge effort and were published in *L'Heredite Planetaire* (Planete, Paris 1966, 226 pages), as if to herald the Gauquelins' own personal contribution to heredity, namely son Daniel born 22 April 1967. Parents with the Moon, Venus, Mars, Jupiter or Saturn in a key sector tended to pass the same planet on to their children, although not necessarily in the same key sector. Later Gauquelin explained how it works by reference to his own family:

"To take a practical example, my mother was born at Rouen in Normandy on 15 July 1900 at 4 o'clock in the afternoon, just at the rise of Jupiter. I was born on 13 November 1928 at 10:15 in the evening in Paris, at the culmination of Jupiter. In both cases, Jupiter was to be found in one of the key zones of the sky, and one could say that there is planetary heredity, as far as Jupiter is concerned, between my mother and myself. My sister was born in Paris on 9 October 1934 at 5 in the evening. Jupiter at that time was neither at the rise nor the culmination, and the hypothesis of Jovian heredity between my sister and my mother has not been confirmed" (*The Truth about Astrology* 1983:41).

The heredity effect was increased if both parents had the same planet in a key sector. There was no tendency to pass a different planet on, and there was no effect for zodiac signs or for aspects or for the other planets including the Sun. The strongest effect was for Venus, which supported the (weak) Venus effects recently discovered in eminent professionals. The heredity effect, like the planetary effect, was solely a diurnal effect and involved the same five planets. Although it was only half as strong it was still an important step forward.



Gauquelin presents the latest Gauquelin results in New York, March 1976, where the Gauquelins and I met for the first time. On the blackboard is the standard Gauquelin diagram showing how certain planets tend to peak in key sectors.

In fact Gauquelin later considered planetary heredity to be the most important of his findings because it offered a clue for integrating planets with disposition and environment. It also showed that planetary effects existed for ordinary people as well as eminent ones. Heredity effects had the practical advantage of not requiring expectancies for their calculation, only the counts for the four combinations of parents (planet in key sectors yes/no) vs children (ditto yes/no).

How the planets worked was unclear. Gauquelin dismissed the idea that planets could somehow imprint something on the person, simply because the moment of birth is too late -- everything is decided at the moment of conception. So he speculated that the unborn child might have a particular planetary sensitivity that would trigger the birth

process at a particular time rather than at some other time. The planet added nothing to the genetic makeup -- its position in the sky merely reflected what that makeup was.

To support this view Gauquelin pointed to the apparent disappearance of planetary effects for births after about 1950, which he attributed to the increasing incidence of interventions such as Caesarians that upset the delivery timing. On the other hand he noted that planets triggering birth would affect the beginning of labour rather than its end, but the beginning of labour for several thousand cases showed no planetary effect. As the first step to resolving this impasse, he wanted to study eminent professionals who had been born only via interventions. If the planetary effect disappeared it would strengthen his trigger idea. If it remained he would have to return to the imprint idea. He began such a study but died before it was finished (*Neo-Astrology* 1991:173).

Explaining planetary effects via personality

Despite the link with heredity there was a snag -- biological heredity was known to involve personality rather than occupation. So planetary effects had to reflect personality regardless of occupation, and more strongly because it was more direct, otherwise they would have no plausible basis. Both points had to be tested, and to do this Gauquelin chose four of his existing professional groups where success was most strongly linked to a single planet, namely writers (Moon), sports champions (Mars), actors (Jupiter), and scientists (Saturn). During 1967-1977, with the help of Francoise and a dozen paid helpers, he obtained as many biographies as he could for these four groups and extracted all the character traits from each biography. For 1980 cases, roughly one-third of the total, they extracted a total of 52,309 traits.

Fortunately for the analysis he had the help of Tom Shanks and the computer of Neil Michelsen's Astro Computing Service in San Diego. And by 1978 he had the results. They were positive. As he put it: "The relationship between planet and character trait could be observed without any need to take account of the professions. Persons with an iron will often had a tendency to be born under Mars, expansives under Jupiter, introspectives under Saturn and poetic temperaments under the Moon" (*Truth about Astrology* 1983:63). Furthermore the planetary effect sizes for character traits averaged 0.10, more than twice that for professions. It seemed to be an impressive vindication of Gauquelin's ideas. But there were snags.

First, a replication of the heredity effect in 1976 with 18,298 new parent-child comparisons was only weakly positive, with effects only half as strong as those in the first test in 1966. A third replication in 1984 with 33,120 parent-child comparisons showed no effect at all. In other words it was not clear whether the heredity effect (and thus the argument in favour of personality effects) actually existed.

Second, Gauquelin's trait calculations were based on the number of traits rather than the (much smaller) number of subjects. In other words his statistical results were based on inflated N's and were therefore much too optimistic. When repeated with correct N's their significance tended to disappear. Furthermore, the character traits were English translations of the original French, and had been extracted by Gauquelin after he knew where the planets were. So both procedures could have been affected by inadvertent bias.

Gauquelin accepted that a Gauquelin extraction bias had "very likely ... played a role in the [personality] studies", because computer checks of his manual results had confirmed the presence of Gauquelin bias in his sector calculations. But the calculation bias affected

his results only slightly, so he felt it was "unlikely ... that [extraction] bias in the studies explains 100% of the results" (*Correlation* 10(2), 22, 1990). But biasing the translating of trait words (where there is always a range of English words for each French one) is easier than biasing the sector corresponding to a given birth time (where only a small proportion will be ambiguous). And in this case it needed only 1 in 12 translated traits to be biased to produce the mean observed effect size of 0.10. So Gauquelin could be 11/12ths or 92% unbiased, at first sight a level not worthy of suspicion, yet enough bias would remain to explain his results.

Third, Suitbert Ertel had made a study in which four specially-trained students extracted traits from the biographies of 110 eminent professionals. Ertel's approach avoided the above problems and his results showed no tendency for planets to be linked with the relevant trait (*Correlation* 10(2), 3-19, 1990). The extraction had also been done by Gauquelin with positive results, and by two students hired by Gauquelin, again with positive results. Gauquelin argued that Ertel's negative results were due to poor extraction.

However, this seemed unlikely because Ertel's extraction process had been carefully refined beforehand to minimise errors. Also, when Ertel compared the extractions for all three studies, it was clear that Gauquelin, not working blind, tended to extract more matching traits and fewer non-matching traits than did Ertel's students working blind, even though the students extracted on average twice as many traits as Gauquelin did from the same biographies. Furthermore, as noted by Ertel in *Correlation* 12(1), 2-9, 1993, Ertel's student extractions were used as is, whereas Gauquelin's student extractions were discarded by him if they showed poor agreement. Discarding was often a matter of interpretation, for example in deciding whether "active" was in agreement with "energetic", which of course allowed the same Gauquelin bias that the study was supposed to avoid. And once again there were more matching traits and fewer non-matching traits in the Gauquelin-selected student extractions than in Ertel's student extractions (the effect size of the difference was 0.23, $p = 0.02$, or quite enough to explain the supposedly positive results).

Ertel concluded "this is strong evidence for concluding that Gauquelin, as trait extractor, was greatly influenced by his knowing the sector positions of the persons whose biographies he worked on" (p.13), and that this was enough to explain Gauquelin's character trait results. In other words Ertel had shown that, contrary to what heredity required, the planets were linked with occupation, not trait. Gauquelin's objections could have been resolved by analysing his student extractions before selection, but he died before this could be done. For a detailed overview see *Correlation* 16(2), 10-39, 1997.



The Gauquelins at the second AA research conference at the Institute of Psychiatry, London, in November 1981, where they spoke on their latest findings. The conference attracted a record 110 people from eight countries.

Psychology of the planets

If Ertel's finding holds, it means that the planet-trait links found by Gauquelin are merely the result of Gauquelin knowing planetary meanings in advance, no doubt a legacy of his intense teenage involvement with astrology. The same Gauquelin bias also upsets the study by Francoise Gauquelin (*Psychology of the Planets*, ACS 1982) which attempted to assess the accuracy of astrologers keywords directly, and which is of sufficient interest to deserve description.

First, for each of the ten planets, Francoise extracted their keywords from ten astrology textbooks selected for clarity and renown. The result was an average of 35 keywords per planet per textbook. With the help of Tom Shanks and Neil Michelsen's computer, she calculated each planet's sector distribution for professionals whose traits included a keyword for that planet, for example the Sun keyword *power* appeared in the trait lists of 225 professionals. She then calculated the significance level in key sectors for the combined keywords vs expectancy. The sample size was thus number of professionals (out of 1980) x number of traits (out of 35) and was typically about 21,000. She notes that the results are subject to semantic links between traits, so they are suggestive only.

According to Ertel's findings, the traits for each professional were inadvertently biased by Gauquelin in favour of the planetary keywords for the Moon, Venus, Mars, Jupiter and Saturn, the result of Gauquelin knowing in advance planetary positions in key sectors and planetary keywords. So we expect Francoise's results for those planets to be positive -- and they are, although for Jupiter they are mixed, being positive for a bad Jupiter (extravagant, wasteful) and negative for a good Jupiter (generous, dignified). The mean effect size calculated from her results is 0.054, well in line with the Gauquelins' previous personality results and thus consistent with Gauquelin bias.

For the other five planets Gauquelin had previously found no planetary effects (and therefore no traits), so for them there could be no corresponding bias in the trait list, which makes Francoise's test a useful independent test. However, the results were negative, again in line with the Gauquelins' previous results. The mean effect size calculated from her results is 0.009, most of which is due to Pluto, probably a sampling fluctuation due to Pluto's sample size being less than one fifth of the others.

When Francoise examined the astrologers keywords for the five Gauquelin planets, she noted that a keyword "given by only one astrologer is most often contradicted [by the Gauquelin traits]", whereas one given by "more than one astrologer ... is most often

confirmed" (p.57). Which is compatible with a Gauquelin bias arising from his reading many astrology books instead of just a few. On average 44% of keywords were on the Gauquelin trait list for that planet, 22% were on the trait list for a different planet, and the remaining 34% were on neither -- again a result compatible with the trait list having been shifted by Gauquelin bias in the direction of agreement with planetary keywords.



The same 1981 conference was a testimony to international interest in the Gauquelin findings. From the left are Jacob Venker (Netherlands), David Nias (London), Michel Gauquelin (France), Simon Best (New Zealand), then across table Alan Smithers (Manchester), Tom Shanks (USA), John Addey (Sutton), Austin Levy (Australia), Jacques Halbronn (France).

Setting an example

From the comfort of your armchair it is easy to underestimate the heroic effort that lies behind the Gauquelin findings. He set an example for astrologers in ways that go well beyond scientific rigour. Take data gathering and analysis. As I wrote in my postscript to Gauquelin's *Written in the Stars* (1988):

"For each case you must first find a reference source such as a biography or biographical dictionary. You must then copy the data without error, find the registry office address, and send off your request for the birth time on the birth certificate (which in France is available to anyone who asks for it) [and pays the fee]. When the data are complete you must check for summer time, convert to GMT, and calculate the positions of the planets, ascendant and midheaven. You are then ready to start tabulating, counting, and analysing, leaving only the worry of writing it up. The net result of all this is that the first one or two cases are a distinct pleasure. The next ten or twenty are not a pleasure at all. And by the first hundred you are going out of your mind. Only those who have done this kind of work will know what it takes. We owe more to Gauquelin than we know" (p.192).

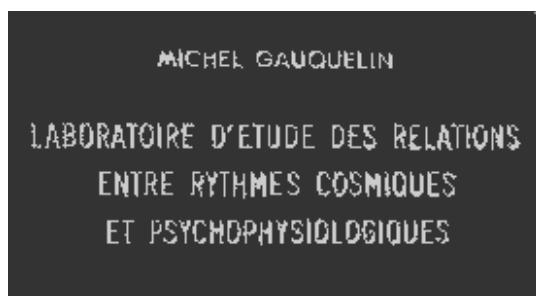
Now take the business of explaining your procedures and results:

"First, there is a statement of the problems (of data, of astronomy, of demography, of statistical analysis) and their solution. Second, there are the results and conclusions. Third, and most important, there is concern about loopholes (does it replicate? are the controls adequate? what should be done next? what happens if ... ?) followed by work to provide the answers. This is how a good scientist proceeds -- by never quite believing what he is seeing until alternative explanations have been eliminated. A good scientist also explains everything clearly, gives full references, and anticipates our questions. And here Gauquelin never lets us down" (p.193). But it doesn't end there.

In their 1982 book *Astrology Science or Superstition?*, Eysenck and Nias put it this way:

"From the beginning he [Gauquelin] has had to provide his own funds for research, although he now does receive the occasional grant for his privately run laboratory. [Furthermore] his work has involved getting data from birth certificates in registry offices all over the continent, and for financial reasons he has had to rely on public transport for much of this work. Since registry offices are typically open to the public on only a few days a week, it can be seen that there were many difficulties to overcome. Also his research had to be fitted in with part-time work to earn money. In this respect he provides the complete answer to astrologers who point to the lack of funds to explain astrology's lack of scientific progress; clearly what astrologers need is not so much funds as initiative and determination!" (pp.183-184).

Of course over the years a few astrologers such as Krafft have indeed shown initiative and determination in carrying out heroic research studies. For example before 1950 in the USA the Church of Light laboured for 30 years and studied thousands of charts now in the ISAR collection, while the now-defunct American Astrological Association analysed over 100,000 birth dates, albeit both with methodology too unsound or too limited to make the results of value. Since then others such as John Addey, T Patrick Davis, Michael Munkasey, and Edith Wangemann have devoted 20 or more years of their lives to astrological research. Nevertheless the Gauquelin work is still the supreme example of rigour, initiative and determination that every astrologer can aim for but few will achieve. See Appendix 5 for tributes after Gauquelin's death in 1991, and Appendix 6 for a list of the main Gauquelin publications.



Sign on the Gauquelins' front door upstairs at 8 rue Amyot

Use of effect sizes

Effect sizes are usually expressed as a correlation where 0 = no effect, as between one coin toss and another, and 1 = perfect correlation. Thus if all soldiers had the same sun sign, or if all children had the same aspect as their parents, the effect size in each case would be 1. An effect size involves the whole sample and thus gives a good idea of what is happening, whereas looking at just part of the sample can be misleading. Thus the typical planetary surplus or deficit in key sectors of 10% to 25% may seem like a lot, but the corresponding effect size (which for 40 years nobody bothered to calculate) is only 0.02 to 0.05. Planetary effects are tinier than they might seem.

The use of effect sizes has many advantages. They simplify the otherwise complicated estimation of sample size requirements (the sample size required to reliably detect effect size r is roughly $10/r^2$). They are in common use, which allows comparison with effect sizes in other fields. And sets of effect sizes can be examined by factor analysis and meta-analysis. For example the use of effect sizes and (since the 1980s) meta-analysis in parapsychology is recognised as having sorted out a field noted for large numbers of conflicting results. And in astrology it is doing the same, see elsewhere on this website.

Unfortunately Gauquelin never used effect sizes. Instead he generally presented his findings in terms of statistical significance, which varies roughly as N^2 where N = sample size. As N increases, even the most trivial effect will eventually reach astonishing significance. For example suppose that a technique gives 51% hits vs 50% expected by guessing. With 100,000 cases it will give around 51,000 hits vs 50,000 expected by guessing, for which the significance level by chi-squared test is an amazing 0.000,000,0003, way beyond anything Gauquelin ever got. Yet the hit rate is still only 51%. In short, significance levels tell us little about how big an effect is. In Part 2 we will see how effect sizes lead to important insights that were missed by the Gauquelins.



Gauquelin's main popular books. From the left, the first four are *L'Influence des Astres* 1955, *Les hommes et les astres* 1960, *Methodes* 1956, and *L'heredite planetaire* 1966. His final book *Neo-Astrology* 1991 is at far right.

Overview of 45 years' work in terms of effect size

In 1991, in his final book, Gauquelin's view of his findings from what was now 45 years of heroic work was essentially unchanged from that expressed in 1955 in his first book: "Having collected half a million dates of birth from the most diverse people, I have been able to observe that the majority of the elements in a horoscope seem not to possess any of the influences which have been attributed to them" (*Neo-Astrology* 1991:20). The mean effect sizes for various chart factors for professionals and for parents vs children are summarised below.

Chart factor	Professionals	Parents vs Children
Signs usually Sun, Moon, MC	-001* N=1290	-001 N=3923
Aspects eg between inner planets	.004 N=3007	-004 N=3923
Planets 10 Gauquelin studies	.043 N=1594	.016 N=16,034
Planets 17 Gauquelin replications	.047 N=349	**
Planets 8 independent replications	.035 N=523	

N is the mean number of professionals per sample or the mean number of parent-child comparisons. N is often very large.

An effect size of 0.04 is equivalent to tossing coins with a hit rate of $50(1+0.04)\% = 52\%$ instead of the 50% expected by chance.

For a client's chart reading, the minimum useful effect size is about 0.40, a hit rate of 70% instead of the 50% expected by chance.

* Occupation vs predicted sign. Traits vs predicted sign -002 (2206).

** The two Gauquelin replications gave .009 ($N=18,298$) in 1976 and -001 ($N=33,120$) in 1984.

The above table shows how effect sizes put Gauquelin's entire findings into context. For both professionals and families the mean effect sizes for signs and aspects are less than 0.005, and are often in the wrong direction, which shows that signs and aspects are without useful effect. That is, they do not mean what astrology books say they mean. In heredity, the number of children having the same sign or aspect as a parent is effectively no different from that expected by chance. For professionals the mean effect sizes for diurnal positions range from 0.035 to 0.047, mean 0.043 for 35 studies. They are replicable and highly significant, typically $p=0.0001$ for sample sizes around $N=2000$. But the hit rate of around 52% is of no practical use, especially as (on Gauquelin's figures) it applies only to the 0.006% of the population who are eminent. Applied pro rata to the general population, the hit rate is 50.0001% -- use astrology for a million clients and you might score one hit more than you would by tossing a coin.



Gauquelin's last public appearance, Utrecht January 1991, four months before his death. Next to Gauquelin (rear right) is Cornelis de Jager and Jan van Rooij. Opposite are Suitbert Ertel, Rudolf Smit, GJM Tomassen, and (nearest camera) Wout Heukelom.

Tests of astrologers

In 1966, after twenty years of unrelenting labour to test the claims of astrology and astrologers, Gauquelin summarised his philosophy and his findings as follows:

"It is useless to declare that astrology represents an infantile state of mind if well designed experiments prove that its pronouncements are correct. In that case it should once again assume an extraordinary importance. It matters little whether it is explained by symbolism or physics, or whether the stars are signs or causes. ... [But now] it is high time to come to an end. Every attempt, whether of astrologers or scientists, to produce evidence of the validity of astrological laws has been in vain. It is now quite certain that the signatures in the sky which presided over our births have no power whatever to decide our fates, to affect our hereditary characteristics, or to play any part however humble in the totality of effects, random and otherwise, which form the fabric of our lives and shape our impulses to action" (*Astrology and Science* 1970:125,138).

Astrologers predictably took little notice. Gauquelin comments:

"Astrologers remain unconvinced by the publication of these statistics totally destroying their doctrines. There was a time when they asserted, loudly and frequently, that statistics provided an ideal method of proving the truth of astrology, but this view was most popular during the period before the work of Choisnard and Krafft had been discredited. Today, astrologers have gone into reverse and claim, on the contrary, that statistics are irrelevant to astrology" (*Astrology and Science* 1970:136).

Gauquelin's response to the above U-turn was to test astrologers to see if they could match birth charts to people of opposite character such as long-lived vs died-in-infancy, or ordinary person vs four-times winner of the Tour de France cycle race. His matching tests pre-dated the 1961 matching tests of US psychologist and astrologer Vernon Clark after whom such tests are now named. But "astrologers regularly fail these tests and are sometimes so disillusioned that they accuse me of rigging the cases" (*Truth about Astrology* 1983:139). Since then such failures have been repeatedly confirmed by others including astrologers, so Gauquelin's failures had nothing to do with any supposed rigging.

Reactions of astrologers today

Today astrologers react to the Gauquelin work in two conflicting ways. The first is to overstate the link between Gauquelin's positive results and astrology. For example Mike Harding says "This proof [of astrology] has been made in the face of the harshest demands of statistics" (*Astrological Journal* 39(6), 17, 1997). But astrologers do not claim that astrology fails to work for half the planets, for signs, for aspects, for transits, for character, or for the 99.994 percent of the population who are not eminent.

The second is to dismiss Gauquelin's results as irrelevant. For example James Holden says "his work was very narrow in scope" (*History of Horoscopic Astrology*, AFA 1996:236), as if Gauquelin had never tested what astrologers actually did or had no understanding of astrology. Not for nothing had Gauquelin read 100 astrology books while still a teenager! His *Astrology and Science* (1970) shows a stupendous scholarly grasp of astrology's history, principles, and related cosmic influences that has never been bettered in a single book. His *Neo-Astrology* (1991) contains what could be the most succinct description of astrological principles (and their disconfirmation) ever published. To dismiss his findings as irrelevant is absurd.

In fact an often-cited point made in 1979 by Arthur Mather is as relevant today as it was then: "Both those who are for and against astrology (in the broadest sense) as a serious field for study recognize the importance of Gauquelin's work. It is probably not putting it too strongly to say that everything hangs on it" (*Zetetic Scholar* 3/4, 96, 1979). Indeed, about 23% of all *Correlation* pages since it began in 1981 have been on the Gauquelin work, which confirms its importance in the eyes of researchers. (On the other hand, one might wonder why 23% of all *Correlation* pages should be devoted to a hit rate of 50.0001%.)

Baffling planetary puzzles

Gauquelin's work simultaneously discredited astrology and replaced it with weak planetary effects of no practical use. Despite their tiny effect sizes, planetary effects attracted a huge controversy about whether they were real and (if real) what caused them. In effect there was total disagreement on whether planets could affect people. But planetary effects create far more intriguing puzzles than this, and it is these puzzles that are the real challenge of the Gauquelin work and the real legacy of his astonishing labour. Furthermore, as shown below, planetary effects are just as puzzling for astrology as they are for science.

For **astrology** the puzzles include: Why only diurnal position and not signs or aspects, why traditionally weak positions (cadent houses) and not strong ones, why occupation and not character, why does the occupation effect disappear at low eminence and sometimes diminish at the highest eminence, why does it sometimes deviate from tradition (eg Moon instead of Mercury for writers), and why only five planets (Moon,

Venus, Mars, Jupiter, Saturn) and not the Sun and other planets? Indeed, why an effect in the first place if isolated factors really are as meaningless as some astrologers claim? And why such a small effect?

For **science** the puzzles include: Why no link with physical variables such as size and distance (Figure 3), why no link with the sun, why is eminence important, why an effect only at birth, why contrary to all expectation is the effect larger for rounded birth times, and why does it disappear when the birth is induced or surgically assisted? Why is it enhanced if geomagnetic activity is high at birth or if both parents have the same planet emphasized? Since physical influences are present all the time, what is so special about those at birth, why is the link with birth and not with conception or the onset of labour? Indeed, why an effect in the first place? What evolutionary advantage could it confer?



Figure 3. Transit of Venus. In astrology Venus is entirely equal, as it were, to the Sun. But not to those who watched the transit of Venus in June 2004. Nor in the Gauquelin work, where Venus has an effect but the Sun does not. See Part 2 for more on these puzzling differences. Picture: Sydney Observatory, *Sky & Space*, September-October 2004:50.

For more than fifty years these puzzles have defied explanation. They seem totally and utterly baffling. Together with artifacts they are explored in Part 2.

Appendix 1. Michel on how it all started

Michel Gauquelin explained very briefly how it all started when he was interviewed in California by parapsychologist D Scott Rogo in 1984 after the publication of *Truth about Astrology*. Rogo, who was also a consulting editor to *Fate* magazine, describes the meeting as follows:

We met in his [Gauquelin's] Beverly Hills hotel room. I found him to be a charming, thoughtful and critical-minded man who clearly enjoys his work. I was interested in learning how he became interested in astrology in the first place. "As far as I know", he said, "I have always been interested in astrology. I don't know why. My father was interested in astrology, but just for fun. He was a dentist. I learned to calculate a chart but when I was 16 I began to wonder, if maybe the whole subject as rubbish? So what could I do? I discovered some books by French astrologers who had tried to put astrology on a scientific and statistical basis. The first thing I did was try to replicate their work; I failed." (*Fate* June 1984:80-87, p.82).

Gauquelin gives a more detailed account entitled "Confession in the Form of a Prologue" in his *Cosmic Influences on Human Behaviour* (translated from the French), Stein and Day, New York 1973:17-20.

As far back as I can go in my childhood, not to my earliest memories but to my first rational experiences, I have always known that I would be interested in astrology. Why? I do not know. Initially, chance played a role. No one in my family was an astrologer. They regarded horoscopes as a parlor game, nothing more. By the age of seven, I was asking my classmates their birth dates to tell them triumphantly the zodiac sign under which they were born.

By the age of ten, I was begging my father to show me how to calculate the ascendant of an astrological theme. This was during the "disaster" of 1940; my family, fleeing from the Germans, had taken refuge in the south of France for several months, leaving everything they owned behind them. However, I eagerly learned the laws of horoscope.

At the age of fifteen, together with a boy who has remained my best and most trusted friend, I cut classes at the Lycee Charlemagne to cross over the Seine and ferret through old Mr Chacornac's astrological bookstore opposite Notre Dame de Paris. We had no money to buy books, so we read them there in the store. By the age of seventeen, I had devoured more than a hundred works on astrology and I was drafting my own "Treatise" during the tedious hours of French-Latin classes. One day the teacher caught me at it. He read my youthful compendium and was quite disconcerted by it. Shrugging his shoulders, he returned my work to me and predicted that I would fail the baccalaureat examination, which was rapidly approaching. I have kept this notebook with its hard gray cover, my first "Treatise." Even this year, my friend and I were still laughing about his embarrassment. Yet basically, I had absorbed all the mysteries of the horoscope. A childish game, a waste of time -- who knows?

Until then, I had never asked myself this question: is all of this true? The limited success my predictions had earned me among my classmates, who had nicknamed me Nostradamus, and the small prestige which my specialty bestowed on me from very young persons of the opposite sex, were an ample reward. But the insatiable intellectual hunger that compelled me to read everything published about astrology was soon overcome by my desire to gather so many horoscopes that all skepticism would crumble under the weight of this proof.

I had discovered skepticism, not only in others, but also deep within myself. I could quote Descartes' first principle: Never accept anything as true unless I clearly and obviously know it to be true. But this would be deluding my readers and myself. One tends to rationalize afterward what has happened. I had at the very most a feeling that perhaps the astrological tree was concealing a forest of emptiness. Assurances from the astrologers I met were unrelated to the complex nature of the problem. It is true that for them there was no problem, and I found it increasingly difficult to tolerate their palaver. Was their proof only in their imaginations?

I decided to look for proofs and, if possible, to collect them. I began to frequent the Seine Archives, researching dates of birth. I filled notebook after notebook with figures, working as assiduously as a Benedictine monk. My head was full of such astrological aphorisms as: "Death occurs more frequently under the influence of Saturn;" "Professional soldiers are often born under the sign of Aries." I would find out if they were true or false. The little pocket money that I had was spent on stamps so that I could write to the many registry offices of France for records of hours of birth.

I was not the first to have this idea. Some astrologers, also claiming to be mathematicians, had believed that there was only one way to establish the validity of astrology: this was to provide statistics on a large number of births. [Here Gauquelin is referring to Choissard, Krafft and Lasson, whose claims were the focus of his first research.] Their books had convinced no one. Had they been mistaken? They had indeed been mistaken, for mere enumerations are not sufficient. One must know the laws of chance. I enrolled at the Sorbonne to learn them.

A feeling of hopelessness, at first vague, crept into my thoughts. It seemed that astrological laws were quite incompatible with modern scientific knowledge. This realization was reinforced by the very unencouraging results obtained from the columns of figures I had tabulated in my large notebooks. No, death does not occur more frequently under the influence of Saturn. No, professional soldiers are not born any more frequently than poets under the sign of Aries.

Yet the passion did not desert me for a single moment. I examined the most obscure aspects of horoscopes to drain the astrological abscess and burst the zodiacal bubble, but also perhaps with the secret hope of being that "hard-working hen" referred to by Kepler, which "in the stinking dung-heap of astrology may find a grain of corn, indeed a pearl or nugget of gold, if it searches and scratches long enough."

I scratched for a long time and eventually I found the gold nugget. At least I believed I had. But at the same time, I was very much aware how unlikely it was that this was true. Could my pearl be an artificial one, a slip of my thoughts, or a mirage conjured up by my subconscious? I was alone with my problem.

But fate was watching over me. On the university benches [this was in 1952] I met Francoise, my future wife. She was my first listener, my first reader and above all, my first critic. She advised me to write a book setting forth all the labor I had performed in secret. It was to be the "antiastrological" summary of my statistics and the nugget of gold. "And so," she said, "people will read you and criticize you. Then you will know if you have truly found something and if it is worth the trouble of continuing." At the age of twenty-five I wrote that book [*L'Influence des Astres*, finalised in August 1954, and published with Francoise's financial help in 1955] and I found that it was worth the effort to continue.

Thirty years later, in his *The Truth about Astrology* (Blackwell 1983:181), Gauquelin asks "Can there be a Conclusion?", and answers his own question as follows:

Though I am so full of my subject [neo-astrology], so determined to defend it, so proud of my discoveries, I am still tormented by two feuding demons. The first is the fear of having been mistaken in asserting that astral influence is real; the second is the agonizing thought of all I have been unable to discover or explain. After 30 years of critical consideration of astrology, my passion for it has not diminished. But today I would not allow myself to draw drastic conclusions as I have sometimes done in the past. I will be content simply to have thrown a little light on this vast mystery which has occupied so many great minds over the centuries.

Nearly ten years later still, in his final book *Neo-Astrology* (Penguin Arkana 1991:178) published after his death, his concluding words are as follows:

At the end of the twentieth century, two dreams must become reality: to go to the planets [space exploration], but also to know what the planets "do to us", so that as *The Emerald Table* says, "the miracle of unity may be perpetuated" [a reference to the unity expressed in "as above so below"].

Appendix 2. Francoise on how it all started

In her book *Psychology of the Planets* (ACS San Diego 1982:1), Francoise Gauquelin gives the following brief account of how it all started:

My training in psychology began in Geneva, Switzerland, my home country. Later, the fame of the Sorbonne University lured me to Paris. There a strange fate awaited me in the person of Michel Gauquelin, also a student of psychology and statistics, and secretly dedicated to investigating astrology. After some prodding, he finally confessed where he was disappearing to each Thursday afternoon, busily compiling files of complete birth data on the worst criminals in the annals of the French Police. Furthermore, his principal weekend activity was to calculate chart after chart to test the truth of astrological writings.

I was simultaneously baffled and filled with admiration. The topic of this research seemed senseless, but his objective methods seduced me. I longed for a husband who would accept my collaboration in scientific research and had found, until then, only wooers for a "stay-at-home," domestic wife. Michel accepted my participation in the research on his subjects. Without hesitation, I embarked on this adventure, certain that there was no risk involved. With objective methods, nothing positive could turn up from such a crazy enterprise. After a brief period of astrological verification, I hoped to convince Michel to abandon his projects for more quiet academic research within a normal curriculum at the Sorbonne. Our meetings developed into animated discussions about such things as how to properly divide the diurnal movement of the planets into thirty-six sectors, in which direction the sectors had to be numbered, and so on.

But my confidence in the quick effect of objective methods was too optimistic: the adventure proved to be much longer and much more difficult than I had expected. It has never ended.

Highlights from the adventure are recalled in her memorial to Michel in *APP* 8(1), 4-5, 1992 as follows:

I first met Michel at Paris University where we were both students in psychology, at the time a still little known science in France. This allowed us later on to make a successful career as editors of series of books popularizing the main discoveries in psychology. But to Michel, getting to know better this new science was not an end in itself. It was rather a way to learn how to explore with correct scientific methods the astrological theories which had intrigued him and fascinated him since a very young age. [He had] tested the influence of zodiac signs, transits, aspects, with no results whatsoever. Also, innovative astrologers like Paul Choïnard, Karl Ernst Krafft, Leon Lasson had published books energetically asserting that they obtained significant results with their collections of data which Michel was unable to confirm with fresh data. This showed him how difficult it is to properly evaluate astrological hypotheses and induced him to look for proper training at the university.

But while following his courses in psychology and statistics, he began [writing] to French registrars for birth certificates of eminent professionals. To his amazement and delight, a first group of 576 Academicians of Medicine showed peaks of Mars and Saturn frequencies after rise and culmination ... It was only after much prodding by me that Michel revealed what kept him always so busy between courses and where his statistical explorations had lead him. Rather skeptical at heart, I offered him nevertheless my collaboration in this time and pocket-money consuming endeavor, provided we checked again with a new group of famous French doctors his first positive results with the Academicians of Medicine. At the Archives of Paris, we found a biographical dictionary listing the necessary dates and birth places of other French doctors, which, completed with each doctor's birth time, proved to be born with Mars or Saturn rising or culminating as often as the Academicians of Medicine had been. Very impressed by this replication, I became Michel's permanent coworker and soon also his wife. And we started checking all the professional celebrities available at the Paris Archives.

The results were plentiful: 570 French sports champions had Mars overfrequent after rise and culmination, 857 Academicians of Science had Saturn over-frequent in these areas, 676 Military Leaders had Mars and Jupiter over frequent in the same zones, and so on ... The five most visible bodies, Moon, Venus, Mars, Jupiter and Saturn turned out to be repeatedly significant in always the same way. These first French results were published by Michel in 1955. [Here Francoise forgets that the Moon and Venus were not added until later.] Then the same procedures were followed in other European countries during our summer vacations from 1955 to 1959. All the new replications of the French experiments provided identical results as the data collected in France. Later on, the same process was repeated also in the United States, again with identical results. ... While investigating other factors interfering with the astrological results (astronomical and demographic cycles) we had the opportunity to collect family data with which we tested Michel's heredity hypothesis.

Following Michel's death, Francoise continued publishing and editing *Astro-Psychological Problems*, which she had founded in December 1982 as a forum for the discussion of Gauquelin matters. Her many contacts within Europe, and her fluency in French, English, German and Italian allowed APP to have a notable European content even though all articles were in English. In 1995 ill-health forced her to discontinue publication, and eventually she moved to an old people's home in Joigny 130 km southeast of Paris, where she died in April 2007.



Left to right: 1.1 December 1982, 7.1 March 1989 (first of three joint issues with the *NCGR Journal*), 11.1 March 1995 (last circulated issue). Original title *Astro-Psychological Problems* became the sub-title from 5.1 January 1987 under the new title *The Schneider-Gauquelin Research Journal*, but it was always popularly known as *APP*.

Appendix 3. Filling the experimental and methodological void

In the 1940s Gauquelin had noted how astrology lacked (1) birth data for proper tests, and (2) rigorous methods of analysis, which together amounted to a double void. Gauquelin approached the first void by filling it with eminent professionals. He chose eminence because it was objective: eminent people are listed in biographical dictionaries. He chose professionals because their occupations had the qualities most suited to astrological study:

"occupations which are above all an objective manifestation of a personal interest, a powerful vocation, or which have a direct relationship with the great poles of attraction for the mind -- science, art, politics, war, and so on. The professions I studied are quite different from the monotonous exercise of a paid activity. They express the pressing need to fulfill oneself in a particular way of life or activity -- creating a work of art, making a discovery, acting in a play, and achieving a sporting feat. For these very reasons, it was first and foremost the celebrities in each profession that I sought, for they manifest in a very striking manner the fundamental tendencies of their professional activity" (*L'Influence des Astres* 1955:69-71 as restated in *Written in the Stars* 1988:43).

His preference for eminent professionals was soundly based. Earlier, in the 1920s, the psychologist EK Strong and others had spent many years studying various professions. They found that the professions were significantly different from each other in ways having no apparent connection with employment, for example in their likes and dislikes about people, hobbies, amusements, and books. The findings showed that a profession can represent a way of life as well as a way of earning a living, and led to what is now a widely used inventory, the Strong Vocational Interest Blank. Much subsequent research using this inventory showed that patterns of likes and dislikes do not arise from the profession but exist before a person enters it. Furthermore, they are as stable and permanent as any known aspect of personality. All of which confirms the soundness of Gauquelin's approach.

Having chosen to study eminent professionals, Gauquelin then laid down a method for collecting their data, starting with biographical dictionaries. For each dictionary entry without exception he extracted the date and place of birth, and wrote to the registry office at each place of birth to obtain the time and confirmation of the date and place. Initially he used only French births, and managed to collect nearly 6000, all supported by birth certificates bearing the town hall stamp and signature of the Registrar. All sources and the actual birth data are given in an appendix to his first book *L'Influence des Astres* (pp.245-343).

Now for the second void: rigorous methods of analysis. Once the data were in, Gauquelin calculated the birth chart, counted the frequencies of the relevant factors, compared the observed frequencies with the expected frequencies (corrected for astronomic and demographic effects), and then tested the differences statistically. A claim would be supported only if the difference was significant and replicable.

Gauquelin began this work well before the advent of calculators, photocopiers, and home computers, so every letter, every record, every calculation, every tabulation, and every analysis had to be made by hand. The work could hardly be more laborious but it was nevertheless essential to the proper investigation of a controversial area. It had the huge advantage that the selection of data was objective and could be verified all the way from biographical dictionary to registry information. In this respect alone Gauquelin revolutionised the approach to astrological research.

Appendix 4. Early negative results

Gauquelin's first book *L'Influence des Astres* (1955:58-62) lists the following tests of factors that Choiseard or Krafft had declared valid. In every case Gauquelin's results were negative, as follows:

Planetary positions at death. [1] Aspects between Sun at birth and transiting VE,MA,JU,SA,UR,NE at death for 1154 eminent doctors, 2390 French nobility, 995 French generals, 1943 painters and sculptors, 500 priests, 409 documented war deaths. [2] Aspects between Moon at birth and transiting VE,MA,JU,SA,UR,NE at death for 635 eminent doctors, 1110 French nobility, 500 priests, 409 documented war deaths. Only births after 1800 were tested because earlier Moon tables were not available. [3] Aspects between the Ascendant at birth and transiting MA,SA,UR,NE at death for 500 priests. [4] Aspects between the Ascendant and planets at birth, and transiting Ascendant and planets at death, for 34 cases of violent death (more than 2000 comparisons).

Heredity studies. [1] Aspects between the natal Sun of father and natal Sun of his children for 1873 French nobility (1113 sons, 760 daughters). [2] Aspects between the natal Sun of children for French nobility (first 500 comparisons). [3] Distribution of planetary positions in families for four generations (56 members) of the Aboville family, and four generations (26 members) of the Hohenzollern family (the positions were compared with those for random control groups, but the latter were the more astonishing!).

Personality and aptitude. [1] Natal Sun positions (including signs) for 1995 generals, 1943 painters, 676 other military, 576 eminent doctors (Cancer was weak), 508 other doctors (Cancer was strongest), 500 actors, 623 criminals, 409 documented war deaths, 494 politicians, and 884 priests. [2] Natal positions of the other planets (Moon-Neptune), Ascendant and MC for 1154 eminent doctors, 884 priests, 676 military men, 500 actors, 570 sportsmen, 494 politicians, 1267 painters, 409 war deaths, and 623 criminals. At first sight the 623 criminals gave

significant results for the Moon, with a correlation between split halves of $r=0.45$, $p=.005$, but among so many tests it could have arisen by chance.

Other studies. [1] Shunned aspects between natal Sun, Moon and natal others especially VE,MA,SA,UR for 623 criminals. [2] Aspects between natal Moon and transiting Jupiter (the astrological significator for good fortune) on the days 1154 eminent French doctors were elected to the Academy of Medicine.

Gauquelin comments that "This dry enumeration does not reveal the importance of the conclusions drawn from the results. They represent a considerable inquiry in the testing of astrological rules with large and varied samples. It is necessary to stress that the results demolish astrology more than they might appear ... because they attack not the claims of particular authors but the most elementary bases of the doctrine itself" (*L'Influence des Astres* 1955:62).

Appendix 5. Nine tributes to Michel Gauquelin

Excerpts have been chosen where possible to avoid duplication. The first is from a letter to Francoise Schneider-Gauquelin (the name she adopted after her separation from Michel) in *APP* 8(2), 37, 1992. The rest are tributes from *Astrological Journal* 33(5), 281-294, September-October 1991. The most complete obituary, covering Gauquelin's scientific work, is by Suitbert Ertel (1991), *Nachruf auf Michel Gauquelin*, *Meridian* 4:5-13, includes a 3-page bibliography and a picture of the Gauquelins taken around 1970.

From a letter by Douglas Coe, Berkeley CA

You have made [a profound impression] upon many people like me, not just by the caliber of your scientific research, but by your personal example and your steadfast integrity in the face of irrational opposition from the scientific community. ... Many of us have research that has languished, because our jobs and families seem to leave us with little time for it. When I learn that you both held teaching positions, *and* had a family life, *and* published series of popular psychology books, *and* at the same time managed to complete the most important astrological research of the 20th century, I start to feel hopelessly inadequate. I admire you too much, you see. Many of us do. ... When I first met both of you in person at the ISAR conference in Dominguez Hills, more than a decade ago, I was so overwhelmed that I could scarcely say two words to you. ... it is clear that I am married to astrology, for better or for worse, [it is] a very happy marriage, and I would recommend it to anyone of a similar cast of mind and temperament.

From the editors Suzanne Lilley-Harvey and Zach Matthews

As with the death of the AA's founder John Addey in 1982, a whole era seems now to have ended; and we are left with a vacuum and a huge example to live up to. Dedication to impartial truth was Michel's lodestar; indefatigability and impeccable standards were his method. Together, ideal and method, along with the equally unrelenting efforts of his first wife Francoise, produced an enormous fund of valuable data for astrological research ... [that] has irrevocably changed the face of astrology as well as the attitude of orthodox science to our ancient science/art. ... Under the auspices of the Urania Trust, the Michel Gauquelin Research Fund has already been established with pledged backing from both the Astrological Association and the Faculty of Astrological Studies. The purpose of this fund is to encourage astrological research at the highest level; in essence, to continue the work of Michel Gauquelin.

From Francoise Schneider-Gauquelin

Knowing that I had been Michel's first wife from 1954 to 1985 and an enthusiastic collaborator of his astrological research projects ... a neighbor [rang to say] that the fire department had been asked to break into our research laboratory (LERRCP) to find out why Michel had not been seen walking in and out of the house as usual. Alas he was found lifeless on his couch with an empty vial of sleeping pills and a letter to his sister explaining his decision to end his life. It seems terribly sad to me that such a dynamic and resourceful researcher finally gave up pursuing this difficult career in a bout of depression. I think that astrology needs the kind of serious sorting out of what has a lasting scientific meaning among the innumerable ideas and techniques offered to public scrutiny in astrological journals, to which Michel introduced me when we met. Not only was he one of the most dedicated and scrupulous collectors of data in the world; he had also the grand vision of how many thoroughly researched data samples, replications, and controls were needed to sound reasonably convincing in scientific spheres. Obviously, after so many battles successfully conducted against rivals who were not always fighting in as fair and objective way as he did, weariness overwhelmed him. To this feeling the breakdown of his two successive marriages may have contributed, leaving him affectively too isolated.

From Professor Hans Eysenck

Michel Gauquelin was a delightful person, witty, sociable, and always ready to discuss his latest research. He was a

sportsman, ranking at his best among the 50 leading tennis players in France. At many conferences we attended, we would play truant and go off to have a game on the red clay courts of France, Italy, Germany or Switzerland. Michel always seemed eminently stable, a tower of strength; he never lost his temper, however unreasonable his critics. It is difficult to understand what caused him to take his own life, although the fact that his second marriage had broken down might have been responsible for the uncharacteristic depression which descended upon him this year. [He was also in poor health and his mother had recently died, a tragedy he shared with his sister Martine.] Only the future will tell us whether he opened a new chapter in scientific investigation, or whether he was deceived by some trivial error of methodology. (The above was also part of an obituary by Eysenck in *The Independent* 20 June 1991:31.)

From Charles Harvey

Michel Gauquelin, who had written so scathingly about the fantasies and absurdities of astrologers, as well as the grain of truth in astrology, was no dehumanised, dry-as-dust statistician, but a real, warm human being with whom one could have real discussion and debate. ... In fact Michel's first compelling love and romantic ambition had been to become a great painter. To that end he had studied for one year at the famous Paris Ecole des Beaux Arts. ... Michel had of course been an ardent student of astrology since at least the age of eleven when his dentist father taught him the basic principles and how to cast a chart. Those scientists and colleagues who have not had that experience and who follow Michel's research and his intellectual arguments at their face value, cannot fully appreciate the subtlety of Michel's position. He was absolutely true to the canon's of scientific research. He cultivated a supreme impartiality and objectivity and was ever willing to follow the facts wherever they might lead him. ... Gauquelin is now part of our heritage and tradition. His memory will never fade.

From Roger Elliot

Michel Gauquelin was the best friend that modern astrology could have. Sympathetic to our ideas but never credulous, he unearthed a truth from the layers of guesswork, anecdote and hand-me-down rules that form the astrological tradition. ... By some he was seen as a cold rationalist out to destroy our creed; and few practising astrologers yet use the Gauquelin sectors in their work. But to others, especially in Britain and, latterly, America, he became an endlessly helpful researcher, showing us how the scientific method could aid, not hinder, our work as astrologers. (The above was also part of an obituary by Elliot in *The Independent* 25 June 1991:14.)

From J.Lee Lehman

Michel was a pleasure to know and to work with. In addition to his intellect, he had a fine sense of humour, and seemed genuinely interested in people. Skeptics have occasionally tried to claim that, even after positive results, Michel still did not embrace Astrology. I would simply recall an incident at the last UAC: speakers were asked to put on costumes and act out the various signs and planets. Michel did Scorpio. Would a skeptic impersonate his own Sun sign?!

From Michael Erlewine

Although Michel Gauquelin and I met on but three occasions, we ... shared a number of lengthy, quite involved, and personal conversations covering all aspects of life. Some of these conversations have even been recorded in audio and video. ... Gauquelin had enormous discipline, in particular, as regards plain old hard work -- witness the repetitive data collecting tasks he set for himself. He prided himself on his fairness and impartiality, and was always quick to declare that whatever facts arose -- whether they supported his own hypotheses or not -- they would be the side he would take. He abhorred bias of any kind, and was tireless in rooting it out of his own approach. [As in] how he dealt with the dissolution of his first marriage and the subsequent public squabbles that ensued. ... In the end, he overcame whatever personal bias and hurt feelings he had and insisted on extending impartiality to his ex-wife. I myself witnessed this. ... With Gauquelin, conversations were always dialogues. He was always interested in what you had to say. This fact alone makes him almost unique in my experience.

From Geoffrey Dean

While astrologers talked, and talked about talking, Michel Gauquelin did. From his tiny Laboratoire in the backstreets of Paris his immense labours created mesmerising puzzles that have assured his place in history. If he saw further than most it was not because he stood on the shoulders of giants, but because he stood on the shoulders of data. ... Despite his daunting workload he was a prompt correspondent, using the manual typewriter he preferred to any wordprocessor, and always a model of clarity. For some of his later articles and books he invited help on what he called his "faltering English", which was ironic since Michel at his worst was usually clearer than most native English writers at their best. ... As befitted his elevated Jupiter he was philosophical about his results, confiding with a grin that he might or might not be right, and never sure that he would live to see the puzzles resolved, but always hopeful that he would. But it was not to be. When the sad news reached Australia it was early evening after a warm winter's day. The gum-scented air was quiet and sharply clear. In the West, abandoned by the diminishing echoes of a golden sunset, hung a rare triangle of planets a mere fingerswidth apart, an arrowhead pointing past the bright curving Moon to the East where, as they set, Saturn would rise. All five Gauquelin planets in key sectors and blazing forth this new beginning. If angels have registry offices they had better watch out.

Appendix 6. Main Gauquelin publications

Books by Michel Gauquelin include:

L'Influence des Astres. Le Dauphin, Paris 1955.
Methodes pour etudier la repartition des astres. LERRCP, Paris 1957
 (English translation, Phenomena Publications, Toronto 1981).
Les Hommes et les Astres. Denoel, Paris 1960.
L'Astrologie devant la Science. Planete, Paris 1966.
L'heredite planetaire. Planete, Paris 1966.
The Cosmic Clocks. Regenery, Chicago 1967.
Songes et Mesonges de l'Astrologie. Hachette, Paris 1969.
The Scientific Basis of Astrology. Stein and Day, New York 1969.
Astrology and Science. Peter Davies, London 1970 (ex Planete 1966).
Cosmic Influences on Human Behaviour. Stein and Day, New York 1973.
Dreams and Illusions of Astrology. Prometheus, Buffalo 1979.
The Spheres of Destiny. Dent, London 1980.
The Truth about Astrology. Blackwell, London 1983. Same as:
Birth times: A Scientific Investigaton of the Secrets of Astrology. Hill & Wang, New York 1983.
Cosmic Influences on Human Behaviour. 3rd ed, Aurora, New York 1985.
Planetary Heredity. ACS, San Diego 1988.
Written in the Stars. Aquarian, Wellingborough 1988.
Neo-Astrology: A Copernican Revolution. Penguin, London 1991.

In 1984 Richard Nolle, book reviewer for *Horoscope* magazine, wrote "Every astrology student above the beginning level needs to know the whole story behind Gauquelin's research into natal planetary placements. [I judge] *Birth Times [Truth about Astrology]* to be the best single source on Gauquelin's work for the lay reader or astrology student." (*Horoscope* June 1984:41-42)

Gauquelin was also the author or editor of some thirty books on psychology.

Books and journals by Francoise Gauquelin include:

Psychology of the Planets. ACS, San Diego, 1982, 110 pages.
Problemes de l'heure resolu pour le monde entier. Editions de La Grande Conjunction, Paris 1987, revised edition 1991, 360 pages.
Astro-Psychological Problems [APP] 1982-1995. Paris.

Of the thirty Gauquelin technical publications (totalling several shelf-feet of A4), seven are by Michel, one is by Francoise, and the rest are by both jointly. A comprehensive bibliography by Suitbert Ertel of the Gauquelin books and articles 1955-1991 appears in *Correlation* 11(1), 12-23, 1991. Perhaps the most concise overview of the Gauquelin work to 1992 is Ertel's "Update on the Mars Effect" *Skeptical Inquirer* 16, 150-160, 1992, includes 43 references and a survey of possible physical explanations. For more recent developments see "The Gauquelin work 2. Opinions, artifacts, puzzles" on this website under Gauquelin.

The Gauquelin work

2. Opinions, artifacts, puzzles

Geoffrey Dean

Abstract -- Many astrologers see Gauquelin planetary effects as the best factual evidence not only for astrology but also for the limitations of science. Scientists tend to be divided, seeing planetary effects as variously explicable, inexplicable, real, or an artifact. But the real challenge is not so much planetary effects as their associated puzzles for both astrology and science. The puzzles seem totally and utterly baffling. Can artifacts explain them? Here an artifact is something other than astrology that would result in Gauquelin planetary effects. Planetary effects have tiny effect sizes, and it does not need much of an artifact to produce a tiny effect size. Three types of artifact are identified -- (1) artifacts of *natural cycles* such as astronomy (Mars spends more time conjunct Sun than opposite Sun) and demography (birth rate varies with time and place); (2) artifacts of *procedure* such as selection bias (use only data

that work) and improper statistics (shoot enough arrows and some are bound to hit); and (3) artifacts of *social behaviour* such as faking by parents (adjust birth data to match a desired astrology) and self-attribution by subjects (adjust behaviour to match astrology). Artifacts type (1) and (2) do not explain most planetary puzzles and planetary effects persist when the artifacts are controlled. So these artifacts remain artifacts, not an explanation of planetary effects. Artifacts type (3) easily explain every puzzle including the apparent disappearance of heredity effects. The probability of this occurring by chance is negligible. Nevertheless social artifacts are still artifacts, not an explanation of planetary effects. They become an explanation only if planetary effects disappear when the artifacts are controlled, as when births are reported by doctors instead of by parents, and the child is ignorant of its birth planets. As yet nobody knows if they do or not, although skeptics might argue that Gauquelin's failure to find planetary and heredity effects in recent births has already put this point to the test. Social artifacts clearly need to be controlled before researchers can proceed further. Includes sources for readers wanting more information.

Part 1 gave a concise illustrated history of the work and findings of the Gauquelins based on their many books and articles. Part 2 takes up the crucial topics of artifacts and how the baffling puzzles created by Gauquelin planetary effects might be explained. As before, "Gauquelin" means Michel Gauquelin (1928-1991) and "the Gauquelins" means Michel and Francoise (1929-2007), his Swiss-born wife and co-worker until 1985. Where source details are incomplete the details will be found in Part 1.

Introduction

As shown in Part 1, the Gauquelin tests of signs, aspects, transits, and astrologers were negative. Tests of diurnal planetary positions were positive but only for eminent professionals and only for the Moon, Venus, Mars, Jupiter, and Saturn. Planetary effects seemed to be linked with occupation rather than character traits, and their effect sizes were tiny, typically around 0.04 when expressed as a correlation. There was no effect for ordinary people such as those who visit astrologers. Heredity effects between parents and children were initially positive but the effect size was barely 0.02, and in later tests the effect seemed to disappear. There were no planetary or heredity effects for the Sun, Mercury, Uranus, Neptune, or Pluto.

Gauquelin's work simultaneously discredited astrology and replaced it with weak planetary effects of no practical use. Despite their tiny effect sizes, planetary effects attracted a huge controversy about whether they were real and (if real) what caused them. In effect there was total disagreement on whether planets could affect people. But planetary effects create far more intriguing puzzles than this, and it is these puzzles that are the real challenge of the Gauquelin work and the real legacy of his astonishing labour. Which is why explanations that address only planetary effects and not the puzzles, such as pineal chemistry (Frank McGillion, *Blinded by Starlight*, Xlibris 2002), reincarnation (Peter Roberts, *Message of Astrology*, Aquarian 1990), and magnetospheric resonance (Percy Seymour, *Scientific Proof of Astrology*, Quantum 2004), are premature and incomplete. In what follows I look at artifacts in the Gauquelin work and their relevance to the baffling puzzles. First some opinions.

Opinions by astrologers

As noted by astrologer Neil Spencer, some astrologers "were lukewarm or plain hostile [to Gauquelin's studies], sensing a threat to astrological order in Gauquelin's marching columns of statistics and a scientific hit squad lurking in the Trojan horse of his planetary graphs" (*True as the Stars Above* 2000:96). Nevertheless many astrologers see Gauquelin planetary effects as the best factual evidence not only for astrology but also for the limitations of science. Some examples:

John Addey, writing around 1980, says "Never again will scientists be able to close their eyes to one of the primary truths about man's relationship to the cosmos" (*A New Study of Astrology* Urania Trust 1996:69). **Malcolm Dean** says "The discovery of planetary influences must surely rank as one of the major scientific achievements of our century. Once the pervasive negativity towards cosmic influences abates, recognition will surely follow" (*The Astrology Game* Beaufort NY 1980:271). **Rob Hand** says they have "no known mechanistic explanation and it will strain the

possibilities of mechanism to find one" (in Mann AT (ed) *The Future of Astrology* Unwin 1987:37), and "I think astrology may in fact be *proof* of [higher] realms, because I don't see any way you can explain the 'Mars Effect' [by] mechanical interaction" (in Philippon G *Astrology in the Year Zero Flare* 2000:118). **Peter Roberts** says "The Gauquelin findings contradict common sense. Ergo something uncommon is needed to understand them" (*The Message of Astrology* Aquarian 1990:109). This led to his reincarnation theory mentioned above. **John Anthony West** says the Gauquelin work "paves the way to a more profound and realistic science: one in which meaning certainly (and consciousness probably) cannot be excluded ... Gauquelin's statistics must be accepted as conclusive ... the single most compelling body of evidence supporting astrology" (*The Case for Astrology* Penguin Arcana 1991:311, 353, 433). **Kenneth Irving** says "lest any skeptic just arrived on the scene should wonder, Gauquelin's actual results themselves have been investigated in detail by many people, independently of Gauquelin, and there remains little doubt about their soundness" (*American Astrology*, 61(11), 51, January 1994). **Peter Malsin** says "Because Gauquelin's methods of procedure were in painstaking conformity with the standards of experimental investigation, and because of the magnitude of his experiments, his findings constitute the strongest experimental case yet made for astrology" (*The Eyes of the Sun: Astrology in light of Psychology* New Falcon 1997:77). **Nick Campion** and **Steve Eddy** say "The Mars Effect, discovered by French statistician Michel Gauquelin, could turn out to be one of the most revolutionary discoveries in the history of science. ... The search for a mechanism in the sense that we understand it may be misleading; perhaps the real explanation must await a breakthrough in the study of consciousness" (*The Art and Science of the Stars* Bloomsberg 1999:166). **Charles and Suzi Harvey** say "the [Gauquelin] observations have replicated again and again with fresh samples of data ... it is time that sceptics embraced the reality of these results and accepted the challenge they present to the prevailing world-view" (*Principles of Astrology* Thorsons 1999:15). **Patrick Curry** says "attempts to explain away Gauquelin's results as artefactual have been unconvincing, and none more so than Dean's most recent effort [an earlier version of this Part 2] ... The Gauquelin effect remains stubbornly provocative for astrologers and scientists alike: the effects too weak to be useful but too significant to be entirely ignorable" (*Astrology, Science and Culture* Berg 2004:72).

In short, these astrologers hold that Gauquelin planetary effects are a primary truth, a major scientific achievement, without mechanistic explanation, uncommon, conclusive, sound, strong, revolutionary, challenging to the prevailing world-view, and stubbornly not ignorable.

Opinions by scientists

The agreement among astrologers is not matched by agreement among scientists. Some examples:

Astronomer **George Abell** says "I cannot imagine a mechanism whereby the [Gauquelin] effect can be produced. [If real it] would constitute a new and exciting frontier of science" (preface to Gauquelin's *Dreams and Illusions of Astrology* Prometheus 1969:viii). Psychologist **Hans Eysenck** says "as far as objectivity of observation, statistical significance of differences, verification of the hypothesis, and replicability are concerned, there are few sets of data in psychology which could compete with these observations. ... there is something here that requires explanation" (*New Behaviour* 29 May 1975:246-249). Later, with psychologist **David Nias**, he adds "the only way in which these results will be invalidated will be by failure to replicate. Because of the number of successful replications already conducted [by Gauquelin], this appears to be a very remote possibility. Rather the task is to explain how the planets could possibly be related to character (*Astrology Science of Superstition?* 1982:209). Psychologist **Graham Wagstaff**, commenting on this view, says "surely even the most informed and impartial observers would have to question whether replications by the same investigators, no matter how well conceived, justify the conclusion that the effects have been shown to be repeatable beyond all reasonable doubt" (*Bulletin of the British Psychological Society*, April 1983:131-132). Bayesian statistician **I.J.Good** says "I tried to dwindle the Mars effect, partly by allowing for 'special selection' of planet and attributes, and managed to get the Bayes factor down to about 60, but faced with the Saturn, Jupiter, and Moon effects, this approach will clearly not undermine Gauquelin's results" (*Journal of the American Statistical Association* 98, 697-698, 1987). Physicist **Anthony Garrett** says "It cannot be ruled out that a single planet affects only top European sports stars, but a mechanism which does this and nothing else is utterly implausible, except apparently to Gauquelin, who already concedes that half the planets do nothing (*British & Irish Skeptic* Sep/Oct 1988:5). Philosopher **Paul Kurtz** says "Regretfully, it is difficult to accept Gauquelin's thesis when he not only formulates the hypothesis of a planetary effect but is intimately involved in the assembling of data" (*Skeptical Inquirer* Winter 1992:161). Psychologist **Suibert Ertel**, after re-analysing three tests of the Mars effect by Belgian, American, and French skeptics, says "Evidence for the Mars effect, as obtained by the skeptics under their own control, is now abundant. The next step would be to give up believing that the effect cannot exist" (in Ertel and Irving, *The Tenacious Mars Effect*, Urania Trust 1996:SE-46). Mathematician **Jan Willem Nienhuys**, after checking the data used in the above French test, says "Michel Gauquelin ... displayed a strong bias in a public and crucial test. I cannot see how anyone can continue to maintain that his data are worthy of serious attention" (in Benski et al, *The Mars Effect* Prometheus 1996:142). Astronomer **Percy Seymour** says "critics could not conceive of a mechanism by which these [planetary] results could be understood. [But they] can be understood in causal terms by means of known physical agencies operating in a particular way" (*The Scientific Proof of Astrology* Quantum 2004:226). This was his theory of magnetospheric resonance.

In short, scientists have been divided. In their view Gauquelin planetary effects are variously inexplicable, worthy of serious attention, replicable, questionable, significant, implausible, unacceptable, real, unworthy of serious attention, and explicable in causal terms. Against these conflicting opinions we might bear in mind that our knowledge of planetary effects is not exhaustive, so we cannot know what fresh investigations might bring, especially when few of the above scientists have actually made fresh investigations other than from their armchair. And fresh investigations take time.

For example the Cottingley fairies stood for over 60 years before they crumbled. It took 40 years for the Fox sisters to admit their communications with the spirit world were a schoolgirl prank. Both Piltdown Man and Soal's "watertight evidence" for psi were found to be fraudulent only some 40 years later. It took nearly 60 years to learn that the famous 1919 spirit photograph taken by Dr d'Aute Hooper, and the famous 1934 photograph of the Loch Ness monster, were fakes. It has taken more than 60 years to discover that the sheep-goat and decline effects usually seen as support for ESP in card guessing are due to the effect of personality variables on sequential guessing behaviour that either tends to match (sheep) or not match (goats) the limited probabilistic runs possible in a deck of 25 Zener cards. Even when more straightforward claims attract wide investigation, sorting them out typically takes around ten years, whether positive (eg bacterial causes of ulcers) or negative (eg polywater). In what follows we will see how the above opinions about planetary effects, whether from astrologers or scientists, might be premature.

Concern for artifacts

The word *artifact* has several meanings. In archaeology (where it is usually spelt *artefact*) it is something made by someone, for example a fragment of pottery. In biology it is something seen in tissue, usually under a microscope, that is not present in the living tissue, for example marks due to faulty staining. In psychology it is something not naturally present, a by-product of the procedure, for example the average height of men after excluding tall men would be an artifact of the exclusion. In Gauquelin planetary effects an artifact would be something other than astrology that would give the same result.

In his article in *Journal of the American Statistical Association* 98, 697-698, 1987, the statistician I.J. Good describes how artifacts might play a role in the Gauquelin results as follows (in fact his idea is now known to be invalid, but it illustrates the point): "There is a correlation between month of birth and social class at least in Britain (Smithers 1984), and the top professionals might tend to have wealthy parents. If there is also a correlation between wealth of parents and *reported* hour of birth and a further correlation between hour of day and whether a planet is in key sectors, then one has the beginning of an explanation of a spurious correlation [ie] artifact" (p.698).

Now for a crucial point. Gauquelin planetary effects have tiny effect sizes, and it does not need much of an artifact to produce a tiny effect size. But the sample sizes required to reliably measure such tiny effect sizes are often larger than even the Gauquelin data can provide. For example the typical Gauquelin sample size of $N=2000$ will reliably detect an effect size of around 0.07 (nearly twice the typical effect size), but to reliably detect 0.02 (half the typical effect size) requires $N=25,000$. In effect we tend to be faced with detecting whispers above the roar of city traffic. If we are to proceed at all, we must attend less to individual outcomes and more to the overall picture. What matters is the consistent explanation of planetary puzzles, and whether planetary effects persist when artifacts are controlled.

The Gauquelins and their critics were generally concerned about two types of artifact, namely (1) artifacts of *natural cycles* such as astronomic effects (Mars spends more time conjunct Sun than opposite Sun) and demographic effects (birth rate varies with time and place); and (2) artifacts of *procedure* such as selection bias (use only data that work) and improper statistics (shoot enough arrows and some are bound to hit). Today we can add (3) artifacts of *social behaviour* such as faking by parents (adjust birth data to match a desired astrology) and self-attribution by subjects (adjust behaviour to match astrology). The point is, each artifact has the potential to produce astrology-like effects that have nothing to do with astrology. These artifacts are explored in turn below.

Artifacts of natural cycles (astronomy, demography)

At first critics claimed that planetary effects could be explained as artifacts of astronomy and demography. They pointed out that the expected sector frequency of a planet is not uniform, so it cannot be obtained by simply dividing the number of births by the number of sectors. It depends on *season* (longer days in summer mean more planets above the horizon and thus more in key sectors), *birth rate* (variable during the day and year), *planetary motion* (can be highly non-uniform eg due to retrogradation), and a *particular sample* (for all of the above reasons). These points led to a controversy that raged for more than thirty years before being resolved in favour of the Gauquelins.

The Gauquelins had accommodated these points by an elegant combinatorial approach described in their 1956 *Methodes* book, summarised later in *APP* 3(1), 20-23, 1985, which uses differences in the sector positions of Sun and planet to simultaneously correct for astronomic and demographic effects in the actual sample. But critics took no notice. Furthermore, when Gauquelin's first book appeared in 1955, he had sent a copy with an invitation to verify its results to astronomers such as Paul Couderc and Bart Bok (both highly critical of astrology) and to the Belgian Comite Para (short for the Comite belge pour l'Investigation scientifique des Phenomenes reputes paranormaux), which had been founded in 1949 to investigate paranormal claims. But there was no reply.

When Gauquelin's second book appeared in 1960, he again approached the Comite Para, but they declined on the grounds that new birth data would be hard to find. In 1966 he tried again, pointing out that new data should not be hard to find in sport, simply because hundreds of sportsmen had risen to prominence since his own data collections and were now listed in biographical dictionaries. This time the Comite agreed to make an independent test. Two years later they sent him their initial results for 535 sports champions, which as predicted by Gauquelin showed a strong planetary effect (the planet was Mars, which is why it was later called the Mars effect). Eight years later the Comite published their official report in their journal *Nouvelle Breves* 43, 327-343, 1976. It said they were unable to find any error in the expected frequencies (their discussion occupied 11 pages), but on the suspicion that one existed they claimed the Mars effect was not proven.

The Comite Para report failed to mention they had run additional tests known as counter-experiments in which times of birth were shifted from one champion to the next for a total of ten tests. If the suspected error existed then all ten tests should show a Mars effect. But they did not. The suspected error did not exist. This result was suppressed by the Comite for six more years until 1982, when Gauquelin forced their hand by publishing the details in *Zetetic Scholar* (10:70). But the Comite continued to argue that the expectancies had not been properly established, therefore (despite its own evidence to the contrary) the Mars effect was unproven (*Zetetic Scholar* 10:66). That is, it was due to an unknown artifact.

But interest in the Mars effect was growing. In 1976 Marvin Zelen, professor of biostatistics at Harvard University, pointed out that non-champions born on the same day as champions would show a Mars effect if the effect really was an artifact of astronomy and demography. Gauquelin duly collected 16,756 non-champions born within three days and in the same place as 303 champions picked at random from the Gauquelin and Comite Para data (a minimum of 300 was required for the test to be statistically meaningful) and mailed off to Zelen the 16,756 replies from registry offices.

The analysis was performed by Zelen assisted by philosopher Paul Kurtz and astronomer George Abell, both strong disbelievers in the Mars effect. To their dismay the result clearly supported Gauquelin. It also confirmed that the Comite Para's unspecified error did not exist. In 1977 the Zelen team published the result and attempted to explain it away by pointing to fluctuations in the Mars effect that appeared when the 303 champions were sub-divided, which violated their own requirement that the sample be not less than 300, and was to be expected on purely statistical grounds anyway. Six years later, after pressure from their own critics, they eventually admitted that "Gauquelin adequately allowed for demographic and astronomical factors in predicting the expected distribution of Mars sectors for birth times in the general population" (*Skeptical Inquirer* Spring 1983:77-82). Gauquelin had been right all along.

Artifacts of procedure (bias, data selection, fraud)

Gauquelin was aware of the problems of bias, which is why he always double-checked every result. For example in 1958 he asked his helpers to recalculate the planetary distributions for five professions, and the correlation between his and their results was always between 0.96 and 0.99 (*Les hommes et les astres* 1960:184). Later he had the ACS computer recalculate every birth chart done by hand years earlier. Both planetary and heredity effects emerged slightly weaker, most likely due to inadvertent bias when interpolating by hand from tables, otherwise every result was confirmed (*Correlation* 4(1), 8-24, 1984).

(He also had the computer calculate which kind of sector gave the best results -- those based on the actual rise and set of each planet, which was the approach described in his popular books, or those based on a modified Placidus table of houses given in *Methodes*, which was the approach he actually used in practice, see *Neo-Astrology* 1991:111. The results showed that neither was consistently better than the other. Varying the sector size in steps of half a 36-sector showed that the key sector size in the 36-sector division gave the best results.)

Gauquelin was also aware of the problems of data selection and fraud, which is why he was careful always to use the entire contents of a biographical dictionary, and to publish in both English and French the data for every birth and every experiment. Sometimes the dictionary was in error or the registry office did not have the data, so gaps did exist. But all the data used was there in black and white for anyone to check. He also invited anyone to check his records, including the many thousands of letters received from registry offices, all of which were meticulously organised and freely accessible. In terms of openness he set standards well above those of his opponents.

Following the Comite Para scandal, independent skeptic tests of the Mars effect were made on 408 American data by CSICOP (begun 1977 published 1979) and on 1066 French data by CFEPP (begun 1982 published 1996). Ironically these two tests were no less scandalous than the Comite Para test and merely inflated the controversy they were designed to allay. For example the CFEPP and Gauquelin signed and published (in

Science & Vie October 1982) an agreement on procedure that, among other things, said the CFEPP would keep Gauquelin informed of progress and that every step should receive his approval before proceeding. But over the years, despite his many queries, they kept silent. They broke the agreement.

In summary, the three skeptic groups took every opportunity to plant doubt, to ignore Gauquelin's efforts to control artifacts, and to question his integrity, while neglecting to observe agreed procedures. In general they behaved less like scientists and more like a secret society with an agenda. In 1982, after a careful evaluation of the arguments on both sides, the psychologists Hans Eysenck and David Nias (in *Astrology Science or Superstition*) concluded against the skeptic groups as follows:

"far from showing the impartiality popularly associated with science, critics have gone out of their way to demonstrate bias, prejudice and hostility. ... We have come to the definite conclusion that the critics often behaved in an irrational and scientifically unusual manner, violating principles they themselves have laid down, failing to adhere to their own rules, failing to consult the Gauquelins on details of tests to be carried out, or failing to inform them of vital points of the results. We have not found any similar misdemeanour on the part of the Gauquelins, who seem to have behaved throughout in a calm, rational and scientifically acceptable manner, meeting criticism by appropriate re-analysis of the data, by the collection of new data, however laborious the process might have been, and by rational argument. We do not feel that the 'scientific' community emerges with any great credit from these encounters" (p.202).

Ultimately the documentation involved in the three skeptic scandals occupied an incredible ten feet of Gauquelin's shelf space (*Neo-Astrology* 1991:36). Details can be found in Gauquelin's *Truth about Astrology* (1983:97-114), and at length in Ertel and Irving's *Tenacious Mars Effect* (1996), which includes a 26-page chronology by Jim Lippard of events and publications up to 1995.

But ultimately the skeptic tests are of no consequence, simply because (1) they proceed as if planetary effects other than the Mars effect did not exist, and (2) there are now enough independent replications to show that Gauquelin's findings are much as he specified them more than 40 years ago in his first two books. In short, planetary effect sizes remain tiny but they cannot be explained by artifacts of astronomy, demography, bias, data selection, or fraud. The puzzles remain. Now for artifacts of social behaviour.

Artifacts of social behaviour (faking, self-attribution)

Artifacts of social behaviour were suspected by some, and confirmed by me during eight years of investigations starting in 1991. Essentially they are artifacts due to belief in the popular astrology of the time, much as belief in sun signs today has led to artifacts in the testing of sun signs. In other words artifacts of social behaviour are a different ballgame from the previous artifacts. They also have a better chance of solving planetary puzzles, so they will be described in some detail. What follows is an updated and simplified version of work previously published as cited in the acknowledgements.

To set the context you should be aware that the Gauquelin births are not recent (85% of professionals and 65% of parents were born more than 100 years ago), so modern lifestyles and ways of thinking do not apply. Most of the Gauquelin births occurred during the nineteenth and early twentieth centuries in Western Europe, when living conditions were very different from those today, and when early world views still survived, see Figure 1. It was a time when births were reported verbally to the registry office by the parents, when occupations and eminence tended to run in families, and when some popular almanacs gave the rising, setting and sometimes culminating times of the visible planets. Notice how the last immediately suggests a provocative match to the Gauquelin findings.



Figure 1. Left, the ancient view of a world in the hands of God (which included the man-macrocosm interplay of astrology) was slowly changing to the view, right, beyond the tree of knowledge, of a world in the hands of man. The old view was still around during the Gauquelin births. Today it has disappeared, so we are unable to see the significance that planets once had. Picture is from a 1727 woodcut.

The Gauquelins' *Profession-Heredité. Results of Series A & B* (LERRCP, Paris 1972) is a thick US-quarto-size book of 211 pages in their own typing. Parallel texts in English and French give full details of their planetary and heredity results up to that time. In 1979 in New York you could buy a copy for \$US12. Page 50 gives the numbers of eminent professionals born in each hour for each of ten professions. Inspection reveals that the proportion born at midnight varies greatly from one profession to the next. Gauquelin never mentioned this variation, so could it mean something? To find out, I plotted the largest planetary effect size for each professional group against the proportion born at midnight. Here the effect size is given by $(O-E)/(N-E)$, technically known as Cohen's kappa, where O and E are the Observed and Expected frequencies in key sectors and N is the sample size. Thus for 1095 scientists the largest planetary effect size is for Jupiter and is $(148-180.4)/(1095-180.4) = -0.035$, which is negative because in this case Jupiter shows a deficit in key sectors. Here only magnitude is relevant, so I ignored sign and took the effect size as 0.035.

Since there is no reason to suppose that midnight has anything to do with planetary effects, I expected the plot to look like nothing in particular. In fact it was extraordinary, see Figure 2. There are ten professionals groups plus Mm = military musicians:

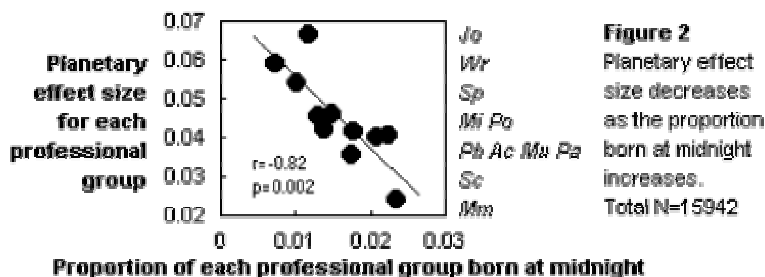


Figure 2 shows that planetary effect sizes tend to increase as the proportion born at midnight decreases. Despite the statistical uncertainty in measuring such tiny effect sizes, the correlation is remarkably strong and highly significant. Gauquelin never mentioned this correlation, yet it had been in his data all along. Could there be something special about midnight? To find out, I plotted the number of professional births in each hour as in Figure 3.

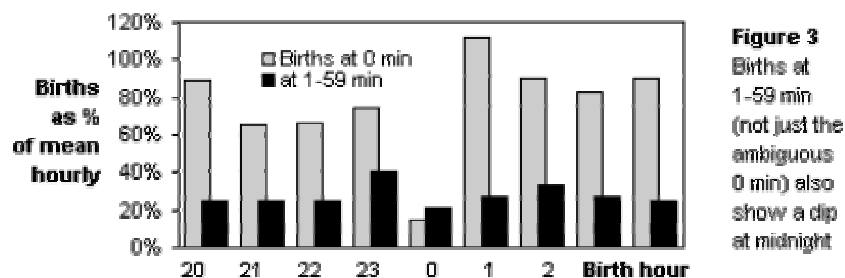


Figure 3 shows that midnight tends to be dramatically avoided. In fact such avoidance appears in many sets of older birth records, so at first sight there is nothing special about the Gauquelin data. The usual explanation is that registrars rounded times away from midnight to avoid ambiguity in their records (days begin and end at midnight, so to which end of which day does a given midnight belong?). But Figure 3 shows that births at 1-59 minutes past midnight also tend to be avoided, even though a similar ambiguity does not apply. Which leads to an interesting question: Could an additional factor be involved in this avoidance of the whole midnight hour? For clues I looked at the number of professionals born on each day, and found more surprises as shown in Figure 4.

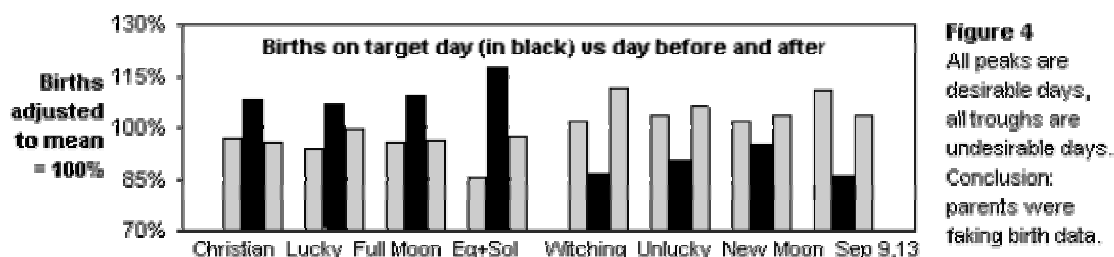


Figure 4 shows that, compared to the day before and the day after, more professionals are born on days that European folklore says are desirable such as the 7th, and fewer on undesirable days such as the 13th. The difference between the target day and the adjacent days averages 12% of their mean births per day, so in broad terms a 12% peak will be produced if 4% of day-before births and 4% of day-after births are moved to the target day, or 1 in 25 of the births on those days. Similarly a 12% trough will be produced if 4% of target births are moved to the day before and 4% to the day after, or 2 in 25 of the births on that day. This might suggest there was more pressure to avoid an undesirable day than to select a desirable day. Or it might merely reflect the arithmetic -- it was easier to avoid an undesirable day (choice of two alternatives) than select a desirable day (choice of one alternative).

In such work it is of course important to avoid using occasions where folklore is inconsistent, for example midday was held to be desirable in Quercy but undesirable in Alsace (Gelis, *History of Childbirth* 1991:198). Here we know that the days shown in Figure 4 are consistent because on average each result is in the same direction for 9 out of 10 professions, never less than 8 out of 10, whereas if there was no consistency it would average 5 out of 10 purely by chance. The binomial p for each result ranges from 0.04 (8 out of 10) to 0.001 (10 out of 10), so they show the sought-for consistency mentioned earlier.

The above results are supported by Suitbert Ertel (*Correlation* 20(1), 30-36, 2001) who found that 884 French priests and 1506 Belgium Benedictine monks showed a 39%

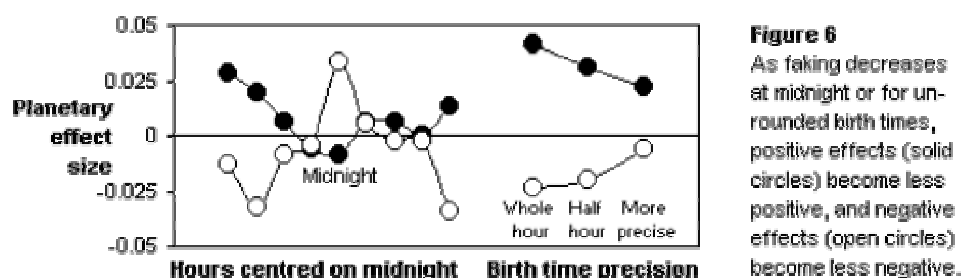
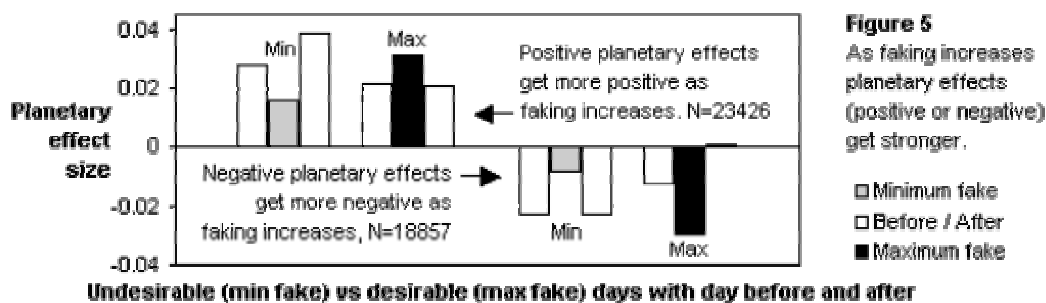
excess of births on Christian feast days. The difference is large and in the expected direction, but was dismissed by Ertel because it failed to reach significance, even though it was unrealistic to expect significance when the sample size on feast days was so small. His dismissal is a good example of how failing to consider consistency can lead us astray.

The results of Figure 4 are clearly not due to chance. They show that parents were faking (ie adjusting) birth data to suit prevailing beliefs, which in those days was easy. Thus in France after the French Revolution of 1792, and subsequently in the other Gauquelin countries, the father of each new child became legally responsible for registering its birth date and time at the nearest town hall. The father had to be accompanied by two friends to confirm that the child was his, and by the child itself. There was no medical certificate as is routine today, and most likely the two friends would not have witnessed the actual birth, so the father could easily adjust his report without detection.

In the case of witching days (witches sabbats) such as the dreaded *Walpurgisnacht* (30 April) the avoidance was understandable given the massive witch hunts that for three centuries had terrorized Western Europe. Furthermore, because the midnight hour was universally the witching hour when witches were proverbially active (for example in Shakespeare's *Hamlet* it was "the very witching time of night, when churchyards yawn and hell itself breathes out contagion to this world"), some people might have avoided reporting a midnight birth because it was connected with witches. This of course would be in addition to the registrar's efforts to avoid ambiguity.

Such fakings or adjustments (which in some early articles I called tamperings) are clearly a *potential* artifact in anything such as Gauquelin planetary effects that depends on birth records. But to be an *actual* artifact they need to be related in some way to planetary effects. Yes, parents are faking birth data, but do planets come into it? To find out we can apply tests based on the following consideration, which was kindly suggested to me by Suitbert Ertel:

Faking will be *minimum* on avoided occasions and *maximum* on preferred occasions, simply because there is no point in faking an occasion that nobody wants, and every point in faking an occasion that everybody wants. Avoided occasions are undesirable days such as the 13th, and avoided times such as midnight. Preferred occasions are desirable days such as the 7th, and adjusted times such as rounded birth times. In other words, if faking is related to planetary effects, we expect planetary effects to be *smaller* for births on undesirable days, for births at midnight, and for births with unrounded (ie unadjusted) birth times; and *larger* for births on desirable days, for births at hours other than midnight, and for births with rounded birth times. This expectation is tested in Figures 5 and 6. Here the planet or planets for each professional group are those showing the highest positive or negative effect sizes.



Figures 5 and 6 shows that in every case our expectation is confirmed. As faking and adjusting increase, planetary effects (whether positive or negative) get stronger. The results around midnight in Figure 6 are less reliable than the others due to small sample sizes, nevertheless the reversal in profile between positive and negative effects is striking evidence that midnight is related to planetary effects. We can check this by comparing professionals born with or without their relevant planet in key sectors (the former show planetary effects, the latter do not), so if planetary effects are related to midnight avoidance the former should have fewer midnight births (ie fewer unfaked births) than the latter. And they do: 49/3892 or 1.26% vs 185/12050 or 1.54%. In other words the answer to our key question is yes, planets do come into it. So we can conclude that an actual social artifact (not just a potential one) exists in Gauquelin planetary effects. It exists due to belief in the popular astrology of the time. More on the actual belief later.

Do not imagine that implausible levels of faking are needed to generate the Gauquelin results. In fact to generate the mean observed effect sizes given in Part 1 (0.043 for planetary effects or 0.016 for heredity effects) only 1 in 30 or 1 in 60 births need faking. Both levels are notably less than the average of 1 in 15 actually present in the day-faking of Figure 4, and are certainly no higher than today's level of faking among Asian parents (see next section). So they are not implausible. The same economy is true of Gauquelin's inadvertent bias in reading Placidus tables, where only 1 biased reading in 750 is enough to create the observed small decrease in effect size between the hand-calculated and computer-calculated results. Of course, if faking occurs then the time reported by parents will differ from the actual time. This point is explored next.

Direct evidence for faking

In 1959, as part of a large study of birth times (see next section), Francoise Gauquelin compared the registered times with hospital records for "about 100 Paris births" spread over 1928-1950 (*Population* 14, 683-702). Actual sample sizes are not given, but she says that two-thirds of the births during 1928-1934 showed differences averaging 19 minutes, most of them due to rounding -- hospital time was recorded to within 5

minutes, but the town hall rounded 80% of births to the hour or half hour. Only 5% of the differences were less than 15 minutes, but 15% (1 in 7) were between 1 hour and nearly 3 hours (p.696), which of course is not explained by "rounding to the hour." After 1935 only one difference (of 10 minutes) was observed, but again the sample size was not given.

The Gauquelin professionals are older and less urban than these Paris births, so for them the extent of differences could well be higher. Francoise Gauquelin considers differences between hospital and registry office to be inevitable when the registry office is receiving a birth report from a "declarant who had not even witnessed it" (APP 9(1), 34, 1993). Nevertheless the differences do suggest a lack of concern about accuracy that faking parents could use to advantage. Furthermore, if 1 in 7 of her fairly modern cases can involve an adjustment of 1 to 3 hours, or roughly one sector, then the 1 in 30 required to explain planetary effects for eminent professionals, or the 1 in 60 required to explain heredity effects, are not inconceivable.

Indeed, even today parents in the East still fake birth data due to belief in popular astrology. For example according to Chinese astrology women born in a fire-horse year will have unhappy marriages and are likely to murder their husbands. In the most recent fire-horse year (1966) Japanese births were a staggering 25% less than in adjoining years (Kaku, *Annals of Human Biology* 2, 111-115, 1975). Conversely an earth-dragon year is said to be auspicious for marriage, birth, and new business ventures. In the most recent earth-dragon year (1988) Chinese births in Malaysia showed an equally staggering 24.0% rise over the previous (earth-rabbit) year, while in Singapore the rise was 25.9% There was no effect among the non-Chinese population, which confirms its astrological origin (Goodkind, *Population and Development Review* 17, 663-686, 1991).

The above effects seems large because they relate to only a small part of the sample, namely those giving birth in that particular year. In terms of the whole population the corresponding effect sizes are about 0.04, closely similar to planetary effect sizes, which adds to the plausibility of a link between social artifacts and planetary effects. Indeed, when the event date is easier for people to select, the effect size can be much higher. For example in Vietnam the (50% of) years considered to be desirable by Chinese astrology attract 57.6% of marriages vs 50% expected, an effect size of 0.15 (Thang and Swenson, *Journal of Biosocial Science* 28, 367-377, 1996). This tells us that the power of astrological beliefs should not be underestimated. Further examples of faking are given later under "Why fake?".

The Gauquelins and social artifacts

The Gauquelins were aware of superstitious beliefs, such as those favoring even hours over odd hours, and in most birth records "there must have been superstitious rounding or shifting of the day and time of birth. Probably more in older than in recent times" (F Gauquelin APP 9(2), 29-33, 1993). But they felt this was unlikely to mimic planetary effects. Blur, yes, mimic, no. Gauquelin's justification for this is explained at length in *L'heredite planetaire* 1966 in the section where he discusses the reliability of family birth records:

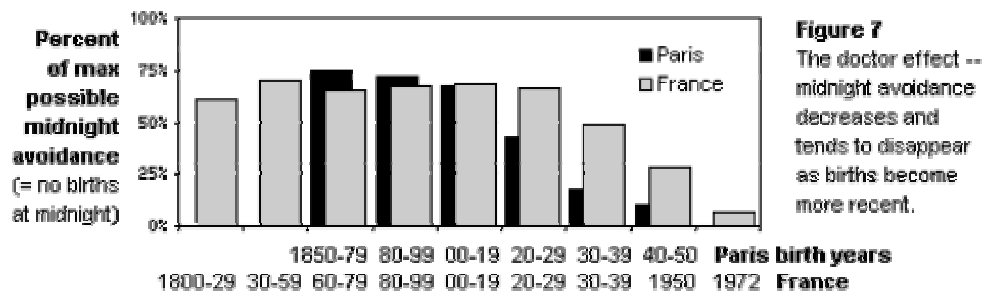
"At the time of our previous work [with eminent professionals], it was objected several times to us that registry office information was not reliable enough for our statistical studies. There could be a family member whose birth was declared in a false way, either for reasons of *convenience* (children born the evening of December 31 are sometimes declared born the morning of January 1), or of *lateness* (if the birth is not declared

within three days then an interminable procedure must be followed unless the registry official shifts the birth to bring it within the deadline), or of *superstition* (certain parents feel reluctant to declare a birth as having taken place on Friday, or on the 13th, or worse still on Friday the 13th! They try to avoid bad fate by advancing or moving back the date of birth). Such cases occur, of course. But we are surprised at the importance that some people attach to a false declaration when a hundred others are perfectly correct. One cannot prevent some errors being introduced into very large sets of data. What matters is whether the errors are numerous enough or large enough to cause fallacious results. Nowadays false declarations made at the registry office are extremely rare. For a rather long time already [he does not say how long], the doctor who notes the birth writes a certificate that must be presented to the registry office for recording the birth. Thus the family almost never has the possibility of changing the birth hour or date. Also the registry official would be naive to make concessions for lateness or superstition" (pp.170-171).

He then cites the 1959 study by Francoise that looked at 6372 birth records 1928-1957 from a large Paris hospital and 10,878 birth records 1860-1950 from registry offices near the hospital. Hospital birth times were recorded to the nearest five minutes but registry office times were sometimes rounded to the nearest hour or half hour. Nevertheless the birth time distributions were closely similar; repeat requests to registry offices showed that transcription errors were extremely rare; and (as already noted) comparison of about 100 registry office records 1928-1950 with the original hospital records showed that the average error in time was only one-eighth of the average time spent by a planet in a key sector. Furthermore her results were "based on the same documents as those used in the first heredity experiment. The validity of these [heredity] data is thus confirmed" (p.171).

He also notes: "The documents coming from provincial areas are in general less precise [than in Paris] and contain more birth times rounded to the hour. And often birth times of 0am [midnight] are reported as 11pm or 1am, but this does not make the record less usable statistically, provided the change ahead or behind is not too large" (p.171). This is because a planet generally spends 2-3 hours in a key sector. All of the above refers of course to his heredity studies.

For eminent professionals a similar discussion of social artifacts occurs in *Les hommes et les astres* (pp.169-171) but omits all mention of superstition, and even this reduced discussion is omitted from Gauquelin's later books in English. In other words Gauquelin was aware of the avoidance of midnight and of the 13th, and of superstitious effects in general, but felt they were quite unimportant. Ironically they now provide important clues about the strange behaviour of planetary and heredity effects. For example, as births are reported more and more by doctors and less and less by parents, there is a progressive reduction in the avoidance of midnight. I call this the "doctor effect", and its effect on births in Paris and in France as a whole is shown in Figure 7.



In Figure 7 the avoidance measure is derived from the mean count for 11pm and 1am minus the count for 0am, and is effectively 0% if 0am is not avoided and 100% if 0am is completely avoided. The Paris results are for the 24,948 family births gathered by the Gauquelins for their 1966 heredity experiment. The France results are for the 7952 French professionals gathered through 1960, with two additional data points for 1950 (French census N=834,893 cited by Francoise in her 1959 study p.684) and 1972 (a representative sample of 4330 natural French births from *Journal of Interdisciplinary Cycle Research* 10, 195-205, 1979).

Figure 7 shows that the level of midnight avoidance for Paris births starts to decrease around 1920 and tends to disappear after 1950. France as a whole follows about 10-15 years later, which suggests that the old reporting procedures tended to persist in provincial areas. For the Gauquelin professionals in other countries the decrease starts around the same time as in France, or a little later (it is hard to be sure due to small sample sizes in these later years).

Between 1800 and 1920 there is little change in midnight avoidance. But there is a four-fold increase (to 50%) in the proportion of birth times not rounded to the hour (Ertel, *Correlation* 9(1), 20, 1989), no doubt due to the increasing availability of accurate clocks. So the doctor effect seems unrelated to the precision of reporting. As we shall see, the doctor effect provides important clues about planetary connections. But first a look at Gauquelin's heredity findings.

Heredity findings

Gauquelin's first heredity experiment published in 1966 in *L'heredite planetaire* showed that parents born with a planet in key sectors tended to have children born with the same planet in key sectors, albeit with an even tinier effect size than for planetary effects proper. Also, over his three heredity experiments, the effect disappeared, the effect sizes being respectively 0.016, 0.009 and -0.001 despite the increasing number of parent-child comparisons of 16,034, 18,298 and 33,120. Unless otherwise stated, the following findings are for Gauquelin's first heredity experiment.

The strongest heredity effect was for Venus, which echoed the Venus effects then recently discovered in eminent professionals, followed by Mars and the Moon, with Jupiter and Saturn equal last. This is almost the opposite of their importance for eminent professionals, and seems at first sight to be in keeping with what social effects might predict for families -- except the order of importance did not replicate in the two later experiments. As for faking, I found that the births show much the same faking as for professionals, except the preferred days are now family-related with a distinct gender influence. For example, children tended to be born on the same date, weekday or hour as their same-sex parent, and therefore on the same date, weekday or hour as their siblings, see Figure 8.

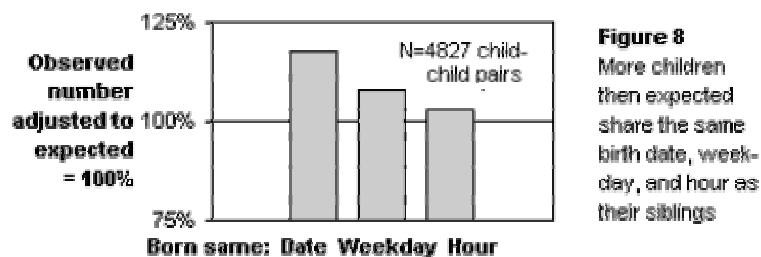


Figure 8 suggests that a small proportion of parents wanted more uniformity among their childrens' births than was allowed by nature. This may reflect the sort of traditions that led to particular weekdays being chosen for events such as weddings. Interestingly, among parents overall there was no obvious avoidance of witching days, at first sight explainable by the reduced rural emphasis in urban Paris. But closer inspection in terms of gender was revealing -- females avoided these days whereas males did not, which is consistent with authority figures in witch trials being entirely male and the accused being mostly female.

Gender influences also emerged in the heredity effects (ie planets in key sectors) passed on by parents to their children. Gauquelin had observed that the key sectors were generally interchangeable, that is, parents with a rising planet could have children with either a rising or culminating planet. In fact rise-rise and culmination-culmination links are slightly stronger than mixed links, which is compatible with the presence of social artifacts. Also compatible are the mean gender-specific effect sizes shown below, calculated as phi coefficients for 2x2 data. Here the sample size N's are large enough for the differences to be meaningful:

Father-Son	0.025	N=3888	Mother-Son	0.020	N=4455
Father-Daughter	0.004	N=3419	Mother-Daughter	0.018	N=4272

The effect size between fathers and sons is six times larger than the effect size between fathers and daughters, which in those days made social sense. Or as Lady Catherine de Bourgh says in Jane Austen's *Pride and Prejudice* (1813), "daughters are never of much consequence to a father." But the differences tell us more than this. Gauquelin had seen parent-child effects as confirming the reality of planetary effects. He had found that fathers and mothers contributed roughly equal amounts of planetary effect to their children, which suggested a link with genetics. But he did not make the same-sex and opposite-sex comparisons shown above; or perhaps he made them but did not report them because their utility was obscured by his use of significance levels rather than effect sizes. As we have seen, the Gauquelins were aware of social effects but saw them as unimportant. However, genetics predicts equal contributions regardless of sex whereas social effects predict unequal contributions. So we have the classic situation of two rival hypotheses. In this case the winner is social effects.

Back to the doctor effect, the effect of births being reported more and more by doctors and less and less by parents. It seems reasonable to assume that opportunities for faking will follow the same pattern as the doctor effect in Figure 7. So if social artifacts are linked to heredity and planetary effects, both should tend to disappear in recent times as births are reported more and more by doctors and less and less by parents. Figure 9 shows how the heredity effect size does indeed decrease after the 1920s more or less in tune with the doctor effect shown in Figure 7.

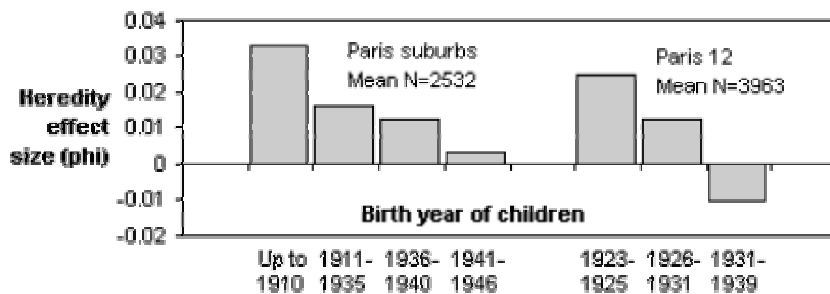


Figure 9
Planetary links between parents and children tend to disappear as births become more recent

Unlike the Paris-born families, the professionals were born across five countries, and here the doctor effect does not occur until after the 1930s. Alas, insufficient professionals were born in these years to allow a reliable test. But later data collected by Gauquelin showed that "the Mars effect in sports champions born after 1950 tends to disappear" (*Truth about Astrology* 1983:176), so he predicted "a disappearance of the Mars effect for athletes born in recent years" (*Correlation* 9(1), 28,1989), which of course is in tune with the doctor effect shown in Figure 7. More on this later in the sections starting with "Why fake?".

Cluster analysis

There is one final test we can make. It follows the approach of Suitbert Ertel (in Tomassen et al, *Geo-cosmic relations*, Pudoc, Wageningen 1990:255-266), who had thirty students sort the Gauquelin professionals into alike groups; for example painters and musicians seem more alike than painters and military men. He wanted to know if their verdict would match the verdict produced by planets; for example the strongest planet for painters and musicians is Saturn whereas for military men it is Jupiter. He compared verdicts by submitting them to cluster analysis, which displays the components in trees where the shorter the branch the closer the similarity. The results are shown in Figure 10.

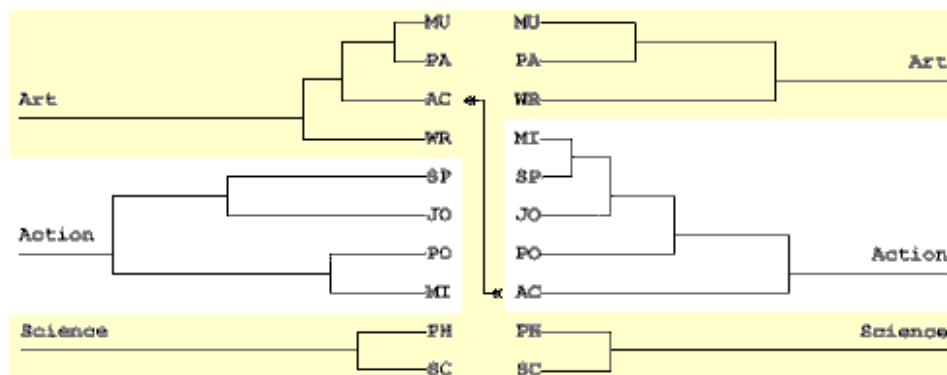


Figure 10. Gauquelin's ten professions grouped by Ertel's 30 students (left) and by planetary effect sizes for five planets (right) show the same three broad clusters Art, Action, and Science. Only actors appear in different clusters.

Figure 10 (left) shows that Ertel's students identified three broad clusters, which he labelled *Fiction*, *Practice*, and *Knowledge*, which I have re-labelled *Art* (musicians, painters, actors, writers), *Action* (sports champions, journalists, politicians, military men), and *Science* (physicians, scientists). At right is the cluster analysis using planetary effect sizes for the five Gauquelin planets; it shows the same three broad clusters, the only difference being that students located actors as shown. Even random data will give a tree, and for effect sizes as tiny as these there will be statistical uncertainties anyway,

so what matters is the number and content of the broad clusters, not the order of components within them. In each case the *Action* and *Science* clusters eventually join, leaving *Art* notably independent from the rest, which independence is in agreement with the results of research for the Strong Vocational Interest Blank described in Appendix 2 of Part 1. Ertel concluded that planetary effects are not haphazard but conform to human views.

In our own test we want to know if the student's verdict matches the verdict produced by social adjustments. The results of the relevant cluster analyses are shown in Figure 11.

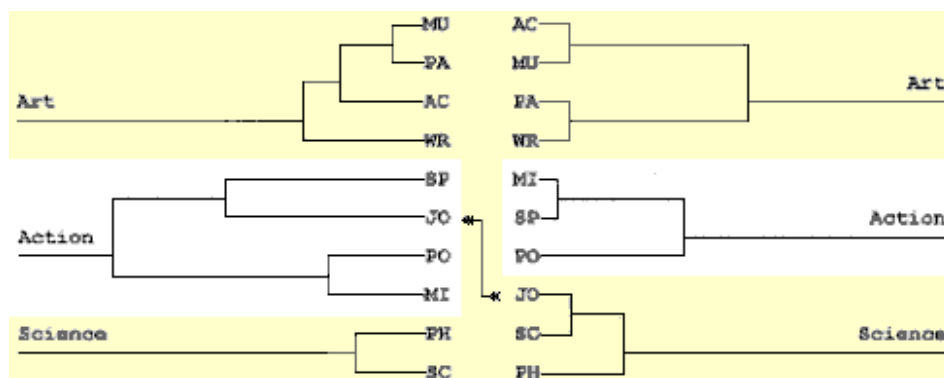


Figure 11. Gauquelin's ten professions grouped by Ertel's 30 students (left) and by number of births on 55 desirable days per year (right) show the same three broad clusters Art, Action, and Science. Only journalists appear in different clusters.

Figure 11 (left) shows the same student clusters as in Figure 10. At right is the cluster analysis of each professional group's preferences for 55 desirable days each year taken from Figure 4, namely Christian feast days, 1st-3rd-7th of month, equinoxes and solstices. If the faking to achieve desirable birthdays is unrelated to profession, we expect to see clusters at right that are haphazard in number and content. In fact they form the same three broad clusters as at left, the only difference being that students located journalists as shown. And *Action* and *Science* eventually join as before.

More to the point, the desirable-day clusters in Figure 11 are similar to the planetary clusters in Figure 10. Furthermore, cluster analysis of the avoidance of undesirable days gives the same three broad clusters and much the same result. We therefore conclude that planetary effects are not haphazard but conform to human social adjustments. Which confirms the earlier conclusion that an actual social artifact exists in Gauquelin planetary effects.

Planetary information

But how could planetary effects conform to human social adjustments if parents did not know where the planets were? This used to be the standard argument against any kind of social artifact in the Gauquelin data (I used it myself many times). But the argument is invalid. People did know where the planets were. Their rising and setting times were given in popular almanacs as shown in Figure 12.

♂ geht rechtl. auf m
in ♄, et steht Abde.
am Westhimmel, da
sein Untergang gegen
1/27 Uhr erfolgt.
♂ wird am 17. im ☉
rückl. und geht am 1.
um 1/2 10 Uhr Abends

— VÉNUS : Etoile du soir jusqu'au 19 sept. :
se couche le 1^{er} janv. 53 m. et le 24. 1 h. 2 m.
apr. le ☉: brille dans la const. du Capricorne.
— MARS : Visible tous les S. dans la const.
du Bélier : se couche le 21 à 1 h. 43 m. M. —
JUPITER : Visib. toute la nuit dans la const.
des Gémeaux; se couche le 21 janv. 1 h. 51 m.
av. le lever du ☉. — SATURNE : Visib. dans
le ciel du M., dans la const. de la Vierge. —

♄	♅	♆	♇
rise	sets.	rise	sets
11 51	1 36	1 21	19
11 11	1 12	0 46	10 21
10 46	0 48	0 32	10 18
10 20	0 25	0 16	10 15
9 54	midn.	midn.	10 8

Figure 12. Examples of planetary rising and setting times in 19th century almanacs. From left: Leipzig 1871, Paris 1895, Boston 1815. Gauquelin found that eminent professionals born in America showed planetary effects just like those born in Europe. The last illustrates how American almanacs, like European almanacs, could give planetary rising and setting times.

Not every almanac gave such information but those that did were enough for the purpose. Thus of the 56 European, UK and US 19th century almanacs I was able to examine, mostly one issue per title, almost all showed the sign the Moon was in for bloodletting, taking medicine etc, and most showed aspects between the Moon and planets for weather forecasting. All showed the rising and setting times of the Sun and Moon. More than one third listed the rising, setting, and sometimes culmination times of the visible planets, and another third gave information on planetary visibility during the year. The rest gave no direct planetary information, but positions could of course be inferred from the daily listing of Moon-planet aspects, especially conjunctions.

But how could parents know how to fake, given that astrology says that key sectors (= cadent houses) are weak, not strong? This too used to be a standard argument against social artifacts. To solve this one you need to look at what everyone was reading, namely almanacs, not at what few people were reading, namely astrology books (in Europe serious astrology had been effectively dead since 1700).

The most popular European almanac ever was *Le Compost*, short for *Le Grand Calendrier et Compost des Bergers* (The Big Calendar and Compilation of Shepherds), generally running to more than 150 quarto pages of which one-fifth was devoted to popular astrology. Here shepherd means the Good Shepherd and every man who works. It was first published in France in 1491, and other than the calendar part it was being printed largely unchanged more than 300 years later with equally long-lasting translations in other countries. In her survey of French almanacs, Genevieve Bolleme says "*Le Compost* was not only the model of almanacs but also the best expression of the popular mentality ... the level that the other [almanac] texts tried to approach" (*Les almanachs populaires aux XVIIe et XVIIIe siècles*, Mouton, Paris 1969:41). Relevant excerpts from the first edition (which are repeated in later editions) are shown in Figure 13.

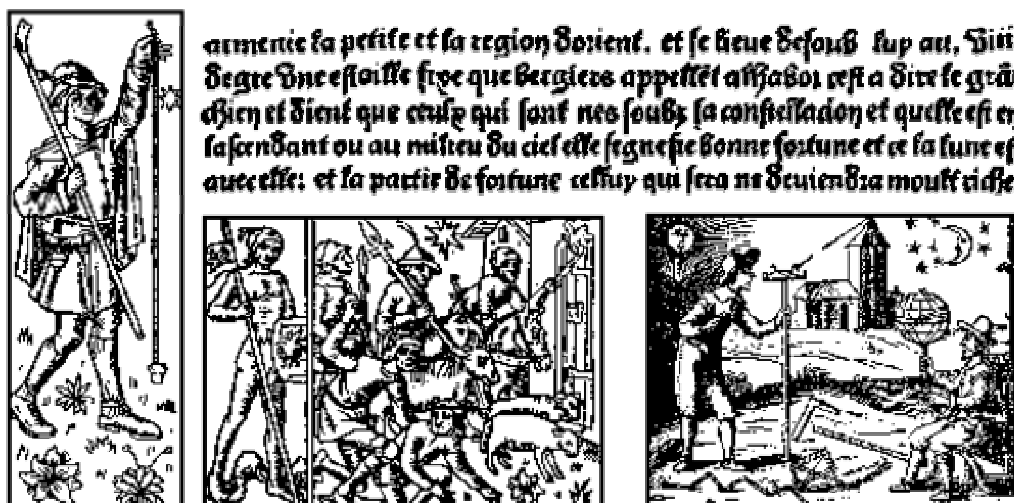


Figure 13. The text and first two woodcuts are from *Le Compost* 1491. **Line 4** of the text (highlighted) says a body is strongest *quelle est en l'ascendant ou au milieu du ciel* (when it is rising on the horizon or culminating in the middle of the sky). **Left:** finding the culminating point with a plumb bob to establish the vertical, note the star just past culmination. **Middle:** Mars rules *la guerre* (battle, see text, next paragraph but one). **Right:** a Dutch almanac 1671 shows how to survey the sky with a plane table. At right an astrologer holds an armillary sphere showing the ecliptic and other celestial circles that are needed when surveying the sky.

Figure 13 shows how closely *Le Compost* matches Gauquelin's planetary findings. What people were reading closely matched what Gauquelin observed. Even so, they did not need *Le Compost* to prompt their interest in rising and culmination. Rising echoed the rising of the sun, hence earthly and heavenly greatness (light is a frequent biblical metaphor for Jesus). Culmination signified something at its highest power, just as "the culmination of our efforts" does today. A planet exactly on the horizon was generally invisible and was therefore without power. Thus in 1657 Placidus (of house division fame) argued that "the stars, where they do not rise, are inactive" (*Primum Mobile* 1.4, Cooper translation). And just as moving past the rising point brought planets into prominence, so did moving past the culminating point. Conflicts of analogy would be out.

As for the alleged planetary influences, Gauquelin shows in *Neo-Astrology* how they have stayed much the same from Babylonian times, a quite remarkable longevity. Each is a dramatic vignette of easily recognisable vice or virtue, so it is unsurprising that planetary meanings (but not sign meanings) have passed into everyday speech, as in solitary, lunatic, mercurial, venereal, martial, jovial, and saturnine. According to the *Oxford English Dictionary*, these words all date from 1500 or earlier, at least in English. The same vignettes appear in *Le Compost*. For example the man born under Mars shall be "Du tout s'adonne a faire guerre ou un grand chemineur par terre" (always addicted to battles or a great goer by the earth), which would seem to make it the planet of choice for a family with traditions in military service or competitive sport.

Recall that Gauquelin had found Mars prominent at the birth of military men and sports champions, Jupiter prominent for actors, Saturn for scientists, and the Moon for creative writers. He had also noticed that most military men and sports champions are martial, most actors are jovial, most scientists are saturnine, and most creative writers are moonish (his word for day-dreaming). All of which led him to conclude that planetary influences were real. As mentioned earlier, he was aware of superstitious beliefs but felt they would merely blur planetary effects rather than create them. He never mentioned 19th century almanacs during our many discussions, nor do I remember seeing any in his library. They are mentioned briefly in some of his books, for example in *Astrology*

and *Science* he notes how the invention of printing allowed "a popular and practical form" of astrology to be "spread in the form of almanacs", which he then dismisses as "produced by people who knew little for people who knew nothing" (1970:109). In *Neo-Astrology* he mentions almanacs only as a survival channel for popular astrology during the 18th century (1991:112).

Why fake?

But why fake? This is a crucial question. If we really believe that certain days or times are auspicious, we can hardly believe that faking will change anything. On the other hand, if we do not believe, why bother? We might of course see faking as merely helping an imperfect world unfold as it should. But look at why we might want to avoid witching days or midnight. Even if we saw nothing wrong with a witching time, other people (and the child) might disagree, which could have dire consequences. So we fake.

Similarly, if we can fake an auspicious birth date, or a planetary indication of greatness in a chosen occupation, it could have useful consequences. Being suitably destined in the eyes of the child and others has advantages. Our own beliefs do not come into it. The same motivation exists today when hotels omit 13 from floor and room numbers lest their occupancy be affected (the same applies in Japan where the unlucky number is 4 rather than 13), and when psychologists control for the expectations of experimenters.

Indeed, even in modern data the effects of faking are often clearly visible. For example 101,971 respondents replying to an ad in five US women's magazines in 1985-86 showed 83% fewer births than expected on 1 January, most likely to gain tax advantages made possible by tax authorities making no cross check with birth certificates, and 27% more births than expected on 14 February (St Valentines Day). The largest deficit (5%) of any date was on the 13th (*APP* 10(1), 26-29, 1994). Individual cases are harder to find because faking birth data, like tax evasion, seems unlikely to be admitted in public or in autobiographies. Nevertheless the birth of eminent mystery writer Georges Simenon was reported as a day earlier than its actual Friday 13 February 1903 because his mother considered it to be "too hard a fate for her sweet newborn baby" (*F Gauquelin APP* 9(2), 29-33, 1993).

Other social artifacts

My findings suggest that two other social artifacts could exist, one arising from the availability of planetary information, the other from the incidence of faking.

The first is self-attribution, seeing ourselves as having the qualities that something (here astrology) tells us to expect. Self-attribution would be relevant wherever almanacs and popular astrology were common, which seems to have been most places. The presence of faking in the family data (see the earlier section "Heredity effects") indicates that at least some people knew their own birth planets. If they also knew what the planets meant, which seems likely (otherwise why bother with birth planets?), they might adjust their behaviour (or at least their self-image) to suit, just as people today are known to do for sun signs. Self-attribution is not needed to explain eminence effects simply because eminence tended to run in families, so children would tend to have it already.

But could self-attribution generate a planetary effect size of 0.04? For sun signs the effect size vs personality is typically 0.09, and the effect size vs job choice is possibly around 0.02. So a role for self-attribution in planetary effects is not inconceivable. We could deny it only if planetary effects persisted when planetary meanings were not known, but such data is not available for the Gauquelin professionals as a whole,

although hints may appear in a few individual biographies. In short, enough self-attribution could exist in planetary effects to be a serious artifact but we cannot know for sure.

The second potential social artifact might arise wherever social beliefs were strong. Thus if social beliefs were strong enough to persuade parents to fake, they might also be strong enough to favour children who by chance had the right birth data, for example by helping them take up the relevant profession. The effect might be tiny, but so are planetary effects. More importantly, the stronger the social beliefs, the more the faking, and also the greater the help for unfaked births. In short, the level of social artifacts in the Gauquelin data could exceed the level of visible faking, but again we cannot know for sure.

All we can say is that these other social artifacts are not implausible. If nothing else, they warn us not to dismiss any hints of faking in the Gauquelin data, for such hints (and there are plenty of them) could be the tip of an iceberg. Now for those baffling planetary puzzles.

Can planetary puzzles be explained by artifacts

Part 1 identified numerous planetary puzzles for both astrology and science, whereas the present Part 2 has identified three sources of artifact -- natural cycles, procedure, and social behaviour. Which brings me to the crucial question, namely to what extent can planetary puzzles be explained by artifacts? To find out, the table below lists the main puzzles and whether each can in principle be explained by each artifact. It is here that our concern for consistency should pay off -- the more a given artifact can explain the puzzles the more likely it will also explain planetary effects (which would be bad news for astrologers).

Eleven puzzles for astrology	Can artifact explain puzzle?		
	Cycles	Proc	Social behaviour
Why diurnal position not signs or aspects?	Yes	?	Yes see below (1)
Why trad weak positions not strong ones?	Yes	?	Yes was popular belief
Why occupation and not character?	No	?	Yes see below (2)
Why only five planets?	No	?	Yes was popular belief
Why is eminence important?	No	?	Yes see below (3)
Why can highest eminence decrease effect?	No	?	Yes see below (4)
Why are effects so small?	Yes	?	Yes not everyone faked
Why Moon and not Mercury for writers?	No	?	Yes see below (5)
Why no effect for 6412 psychotics?	No	?	Yes not a profession
Why Venus inconsistent in heredity?	Yes	?	Yes see below (6)
Why no effect for Uranus, Neptune etc?	No	?	Yes not visible (see 7)
Eleven puzzles for science	Cycles	Proc	Social behaviour
Why no link with size and distance?	No	?	Yes see below (7)
Why no link with the Sun?	No	?	Yes see below (8)
Why is effect at birth and not conception?	No	?	Yes was popular belief
Why birth when physical effects are 24/7?	No	?	Yes was popular belief
Why larger effect for rounded birth times?	No	?	Yes see below (9)
Why does it disappear for induced births?	No	?	Yes see below (10)

Why a geomagnetic effect?	No	?	Yes see below (11)
Why a heredity effect? belief	No	?	Yes was popular
Why is heredity enhanced by both parents? belief	No	?	Yes was popular
How can it confer evolutionary advantage? advantage	No	No	Yes by social
Why an effect in the first place? belief	Yes	?	Yes was popular

The above table shows how artifacts of **natural cycles** (astronomy and demography) are unable to explain most of the puzzles. Furthermore, when these artifacts are controlled, planetary effects do not disappear. So these artifacts are artifacts, not an explanation of planetary effects.

Artifacts of **procedure** (bias, data selection and fraud) might in principle explain almost every puzzle. But no matter how hard we try, it would seem impossible to pick or invent data that would simultaneously fit every puzzle all the time. It would be like trying to please all the people all the time. The diversity is simply too great. (This is not to say that such data could not exist, only that we could not directly pick or invent it, especially if like Gauquelin we had to calculate everything by hand.) Furthermore, when these artifacts are controlled, planetary effects do not disappear. So these artifacts are artifacts, not an explanation of planetary effects. The same applies to the theories of McGillion, Roberts, and Seymour -- they may in principle explain a broad as-above-so-below effect but they do not explain all the puzzles, so they cannot be an explanation of planetary effects.

The situation is rather different for artifacts of **social behaviour** (faking and self-attribution). As shown in the last column, these artifacts easily explain every puzzle simultaneously. For example, the supposed conflict between astrology and the Gauquelin findings is no more than the conflict between astrology and popular beliefs. Between popular beliefs and the Gauquelin findings there is only agreement. As for the items (1-11) referred from above:

(1) Diurnal position was the popular belief. There is no effect for signs or aspects because in almanacs they were linked with seasons or weather. In any case the required adjustment (days or weeks) is too great to be feasible.

(2) The planetary link is with occupation and not character because that was the belief in those days. Planetary themes today tend to focus on character traits but in those days the focus was on occupation. First, it was a dominant part of family tradition. Thus a military family would want their new son to be a great soldier rather than, say, a stable extravert. Second, only occupation could feasibly be shown in woodcuts.

(3) Eminence is important because occupation effects will be strongest where family traditions are strongest, where the match between planets and occupation is closest, and where the need to be suitably destined is strongest, as in eminent families. The role of family traditions and eminence is confirmed by Francis Galton in his 1869 book *Hereditary Genius*, where he showed that great men produce more great sons than do average men. Based on the work of others, Gauquelin concluded the same: "In general terms, two-thirds of famous people originate from five percent of the population comprised primarily of the wealthiest and most intellectual people. A professional proclivity is transmitted from generation to generation" (*Cosmic Influences* 1976:60).

(4) Gauquelin's original finding was quite definite: more eminence, more planetary effect. When Ertel measured eminence by counting citations in reference books, the finding was generally confirmed. But in a few cases (eg Saturn for scientists) the effect first increased with increasing eminence and then decreased, even though other planets for the same profession showed no decrease -- a baffling puzzle indeed (*NCGR Research Journal* 27-31 Spring 1989). The Gauquelins noted that Ertel's samples tended to be small and inappropriate, and that this could explain the results (same issue 33-36). But so can social artifacts. Men of the very highest eminence, namely those who are geniuses, tend not to follow family traditions in the way that men of ordinary eminence do. For them the faked planet would

tend to be the wrong planet, so links with the correct planet would tend to decrease, whereas links to planets that included the faked planet would show no decrease.

(5) There were numerous reasons why the Moon was more important for creative writers than Mercury, which is traditionally linked to communication rather than creativity. Thus the Moon rules feelings and watery ink, the planetary man in *Le Compost* shows it ruling the head (seat of the intellect), the Egyptian Moon god Thoth was the inventor of speech and writing, Aristotle said the brain was humid and therefore subject to the Moon (hence the term lunatic), and the Moon is highly visible whereas Mercury is usually invisible.

(6) Venus showed the strongest positive effect in the first heredity experiment but was among the weakest or most negative in the second and third experiments. But the other Gauquelin planets were equally variable in heredity, for example Saturn was among the weakest in the first two and strongest in the third. Such extreme variability was not observed for the professionals but is to be expected for families, where (unlike the professionals) there is no fixed planetary theme, so the order of planets is likely to vary from one set of data to another.

(7) As noted in Part 1 Figure 10 (transit of Venus), size is not a factor in astrology. Nor is distance. What matters is mythology, which is why Venus is seen as pleasant and harmonious despite having a permanent weather forecast of 450C under 90 atmospheres of carbon dioxide and a fog of sulphuric acid. Nor is Venus seen as changeable despite varying in brightness. Visibility is not important in astrology today but it was in the days of *Le Compost* when (obviously) only the visible planets were known. Even after Uranus (1781) and Neptune (1846) were discovered, 19th century almanacs tended to mention only the visible planets. Furthermore the finite speed of light means that Jupiter or Saturn are not visible on the horizon until they are actually about 10 or 20 degrees above it, yet their peak sector positions do not differ by these amounts from those of the other Gauquelin planets. What matters is the apparent position of visible planets, not their actual position or some other physical variable.



(8) There is no link with the Sun because it was the exclusive indicator via sign position of seasonal tasks to be performed on the land. In *Le Compost* this woodcut shows the circle of 12 signs outside a circle of 12 pictures showing seasonal tasks; and woodcuts for each month show monthly activities such as harvesting in August, each with the relevant sign attached. This left the five visible planets, whose positions could be found in almanacs or by looking at the sky. Except for the Moon, rising times are stable enough for a week or two, therefore good viewing conditions on a particular day were not needed.

(9) Why is the planetary effect size for birth times rounded to the hour twice that for precise birth times? (See Figure 6). This is like saying the better we tune our radio the worse the reception. It is not what we expect. No astrologer, no skeptic, not even Gauquelin would have predicted such a bizarre result. But faked times do not need to be precise. What matters is the planet's general diurnal position, not its exact diurnal position, so the precision to which clocks would normally be read is not needed. Rounded times are good enough, and as a bonus they do not raise registry office suspicions like a precise birth time might. In other words faking increases rounding and also increases planetary effects.

(10) Why do planetary effects disappear when the birth is induced or surgically assisted? Gauquelin had noted how "the Mars effect in sports champions born after 1950 tends to disappear" (*Truth about Astrology* 1983:176). He attributed this to medical intervention, which had upset the natural timing of birth and therefore (in his view) the natural planetary links. But as shown in Figure 9, planetary links between parents and children also disappeared around 1940-1950 even though there was no evidence of medical intervention, for which Gauquelin had no explanation (*Correlation* 5(1), 36-37, 1985). However, the doctor effect (births being reported more and more by doctors and less and less by parents) meant a progressive end to faking other than self-attribution, especially where intervention occurred since this would nearly always be in a hospital. Which would explain the decline in planetary effects for both sports champions and families. After all, the idea that faking is being prevented is more plausible than the idea that all hospitals and all midwives are intervening medically in all births. Also, the re-establishment of astrology in the 1930s meant a gradual end to popular beliefs and their match with the Gauquelin findings whether by faking or self-attribution. Had Gauquelin used effect sizes instead of significance levels, it is conceivable that he would have reached the same conclusion.

(11) Gauquelin found that high levels of geomagnetic activity at birth had no effect on the planetary links with profession but seemed to increase the planetary links with parents. Suitbert Ertel used a more sensitive approach and found no geomagnetic effect for either profession or heredity (*Correlation* 9(1), 5-23, 1989). Nevertheless a

geomagnetic effect is not incompatible with social artifacts, for example it could conceivably influence the inclination to fake in the same way that it is alleged to influence heart attacks, traffic accidents, migraine severity, and so on.

Readers of *Correlation* 19(2), 20(1), 20(2), 21(1), 21(2), 23(1) will be aware that, according to nearly 90 pages of dense argument by Suitbert Ertel, with nearly 50 more pages on his website <http://www.psych.uni-goettingen.de/home/ertel/>, social artifacts cannot possibly exist. Nevertheless the close match between social artifacts and every one of those 22 puzzles should be pause for thought. Indeed, if we assume that the probability of scoring a yes purely by chance is 50%, the probability of scoring 22 yesses purely by chance is 0.5^{22} or $p=0.000,0002$. In reality the probability of scoring a yes purely by chance is likely to be much less than 50%, so the probability of scoring 22 yesses purely by chance is likely to be much less even than $p=0.000,0002$. After all, if it was actually easy to explain those 22 puzzles, someone would have done so long ago.

Social artifacts are not an explanation

But no matter how close the match between social artifacts and those 22 puzzles, and no matter how negligible the probability of this match occurring by chance, social artifacts are still artifacts, not an explanation of planetary effects. They become an explanation only if planetary effects disappear when the artifacts are controlled, as when births are reported by doctors instead of by parents and the child is ignorant of its birth planets. As yet nobody knows if they do or not, although skeptics might argue that Gauquelin's failure to find planetary and heredity effects in recent births (see item 10 above) has already put this point to the test. But one thing is clear -- social artifacts need to be controlled before researchers can proceed further with Gauquelin's astonishing findings.

Ironically if social artifacts do turn out to be an explanation, it follows that, contrary to what most critics thought, planetary effects in historical data are to be expected, so their absence would be more surprising than their presence. Finally a bonus. The existence of artifacts of social behaviour in the Gauquelin data makes it a valuable new resource for sociologists studying the nineteenth century. It seems unlikely that this data, which took such heroic effort to collect, will ever be equalled. Examples of how quite complex beliefs and family relationships can be explored are given by me in the reference cited below (2000:33-37).

Acknowledgements

The idea of searching for social artifacts came after talks between Michel Gauquelin, Suitbert Ertel, Rudolf Smit and myself in Utrecht in January 1991, four months before Michel's tragic death. At the time I never imagined the work would take eight years to complete, but such is the challenge of Gauquelin puzzles. It required endless visits to libraries and accumulating over 10 kg of photocopies. Of the specialised libraries in London other than the British Library, those of the Folklore Society, the Warburg Institute, and the Urania Trust were key resources. Since then a further year in total has been spent tidying loose ends and performing further tests.

Thanks are due to Peter Niehenke for the donation of DAV data; to Colin Miles for the donation of Astrocalc software for calculating planetary positions; to Rudolf Smit for donating various Gauquelin data books; and to the late Michel Gauquelin for donating since 1975 copies of his findings as they were published, and for many discussions and unfailing assistance during the fifteen years of our acquaintance.

For helpful comments or for help with obtaining material, thanks are due to Susan Blackmore, Christopher French, Arthur Mather, David Nias, Mike O'Neill, Peter Roberts, Wayne Spencer, Mike Startup (all UK); to Barry Beyerstein, Ivan Kelly (Canada); and to Francoise Gauquelin, Jacques Halbronn, Wout Heukelom, Francesco Maiello, Arno Muller, Rudolf Smit, and Robert van Gent (Europe). Especial thanks are due to Suitbert Ertel (Germany) for providing data and reference material, for untiring help with data cleaning, for critical comments, and for suggesting additional tests.

Finally thanks are due to Wout Heukelom for inviting my English invasion of his Dutch journal *Astrologie in Onderzoek*, renamed for the occasion *Astrology under Scrutiny*, in which the full technical details of social artifacts were first published with 300 references in Volume 13:1-72, November 2000. Includes a critique by Suitbert Ertel 73-84 and my response 85-87. Contact this website for information on how to obtain copies including a four-page update published May 2002 covering further tests, errata, and 14 inadvertently omitted references. An abridged and more readable version of the above is in *Skeptical Inquirer* May/June 2002:33-38, with a challenge by Ertel and my response in *Skeptical Inquirer* Jan/Feb 2003:57-59,65.

The Gauquelin work 3

Response to Ertel et al

Geoffrey Dean

The uncensored version of my letter in *Correlation* 23(2), 53-57, 2006.

Abstract -- Article consists of Geoffrey Dean's January 2006 letter to *Correlation* replying to articles by Ertel, Kollerstrom, Douglas and others on Gauquelin matters in 23(1). It restores the 60% (including crucial paragraphs) censored by the *Correlation* editor in 23(2) and displays them in a different colour. It describes how a Dutch publisher started a definitive Ertel-Dean exchange free of avoidable mistakes, and how Ertel's withdrawal in favour of *Correlation* led to precisely the disregard for readers that the Dutch publisher had wished to avoid. It surveys the issues Ertel raises in his total of 80+ *Correlation* pages. Most of the issues have been raised and answered before, so it contains little (other than issues of defamation, censorship, and malice) not already on this website. In a reply to Dean's letter, Ertel ignores crucial results such as Dean's heredity findings (half his total findings!), his cluster analyses, and the astonishingly close match to every one of the many Gauquelin puzzles.

Planetary effects and related matters in *Correlation* 23(1)

Letter to the editor of *Correlation* from Geoffrey Dean

The parts censored by *Correlation* (60% of the word count) are shown in blue.

Suitbert Ertel's article "Gauquelin planetary effects - brought down to earth? On Geoffrey Dean's dealing with stubborn facts" in *Correlation* 23(1) has a revealing history. In 2003 Wout Heukelom, the Dutch publisher since 1986 of *Astrology under Scrutiny* (AuS), the journal that originally published my Gauquelin findings, was keen to have an exchange on my findings between Ertel and myself that was free of avoidable mistakes such as misunderstandings and missed references, and which would update the Ertel-Dean exchange in *Skeptical Inquirer* January/February 2003. He was also keen that issues raised by one side should not be evaded by the other side. His aim was a single definitive exchange that was to the point, free of mistakes, and free of evasion. The interests of his readers would come first.

So Heukelom asked Ertel and I to present our arguments and responses side-by-side in two columns, Ertel's on the left and mine on the right, for subsequent publication in AuS. Now according to Ertel's article in *Correlation* 23(1), Ertel would not be allowed to respond to my remarks and was even required to "renounce commenting on [Dean's] remarks in a last word". In fact Heukelom required us to recycle the exchange, changing whatever was required in response to the other, until it was as considered and as final as possible. Contrary to not being *allowed* to respond, Ertel was *required* to respond,

and to keep responding, until the exchange stabilised, thus eliminating any need for last words. As Heukelom explained, "In this way a never-ending series of articles and counter-articles would be avoided. A welcome result for both publisher and readers!" I accepted immediately, Ertel less immediately, and a start was made about two years ago.

Concern for the reader

Unfortunately Ertel decided that responding to my comments was intolerable (no matter that responding to each other's recycled comments was the whole idea), and insisted that the format should be his article, then my response, then his last word. This of course would allow the very things (avoidable mistakes, evasion, endless counter-articles) that Heukelom wished to avoid. So Heukelom said no, the interests of his readers came first. Ertel's response to that decision was a series of emails claiming there was a conspiracy against him and that it was his right to have the last word. No matter that the format was equally fair to both sides, and that it was the publisher's right to specify the format for his own publications. The following excerpts from Heukelom's emails to Ertel illustrate what Heukelom was up against:

26 October 2004: "Your e-mails of 14 October 2004 and subsequent days give me a feeling of deep dismay. ... At first it was yes [to the two-column format with recycling] in the first months of 2004 ... then no, next an almost-yes, and after that again a no. ... Your changing points of view and your e-mails written to third parties indicate that I can hardly trust your statements". **3 December:** "In fact, now you are not agreeing at all, notwithstanding your repeated statements that you have agreed already. ... it is your response that is preventing the start of a new project". **4 December:** "You are discussing my conditions instead of meeting them. Without meeting my conditions there will be no new project. Your discussion does not succeed in changing my conditions". **6 December:** "It was you who rejected my offer. ... it appears that you are only able to meet your own conditions, despite the fact that you have repeatedly stated that you had agreed with my conditions". **7 December:** "It is you who is making serious problems, for the second time, now. ... my conclusion has to be that you do not like a result of a discussion with Geoffrey at all".

Readers can see for themselves how entirely fair the two-column format is, and how it puts their interests first, by emailing [Wout Heukelom via this website] and asking for a pdf file of the completed part of the exchange (three A4 pages with Ertel's recycled text on the left and my recycled response on the right).

Avoidable mistakes

The end result of Ertel withdrawing from the exchange has been the publication in *Correlation* 23(1) of more or less the same article that was previously on Ertel's website and which in turn was a revision of an earlier article (with the slightly different sub-title of "On Geoffrey Dean's outmanoeuvring stubborn facts") that was the starting point for our exchange in early 2003. This repeat in *Correlation* 23(1) fills twenty-seven pages despite Ertel having already filled fifty-five *Correlation* pages on the same topic, and despite the editor saying in 21(2) that "As space is restricted in the journal, this debate will be extended to the *Correlation* pages of the Astrological Association website when necessary". The latest article perpetuates a multitude of avoidable errors that were being corrected in the exchange. It also misrepresents my position, ignores crucial findings, and fails to address the whole picture just as a sun sign reading fails to address the whole chart. Ironically almost all the issues it does raise have been raised (and

answered) before, so it contains little that is new. In other words the result is precisely the disregard for readers that Heukelom wished to avoid.



Figure 1. How Rob Pudim, cartoonist for the *Skeptical Inquirer*, saw the exchange between Ertel and myself in the January-February 2003 issue pages 57-59 and 65. The cartoon is on page 57. The ball is labelled GN for Gauquelin. Player no 1 is Ertel, 02 is Dean, 55 (after 1955, date of Gauquelin's first book) is Tampering.

Early in 2005, when the exchange was still taking place, albeit slowly due to Ertel's resistance to Heukelom's conditions, Ertel's website announced that his article would be submitted to *Correlation*. So Heukelom emailed Nick Campion, intellectual head of the AA, asking "whether there is some kind of misunderstanding in by-passing *Astrology under Scrutiny* in this way". He pointed to potential problems for *Correlation*, such as the article's avoidable mistakes and evasions: "from what I have seen so far of Geoffrey's responses, Suitbert's arguments against Geoffrey's findings (for example that there is no evidence for Gauquelin-like beliefs) can highly be questioned. ... more worrisome, Suitbert's article contains many ad hominem against Geoffrey, as the sub-title, now slightly changed to 'On Geoffrey Dean's dealing with stubborn facts', shows immediately. I think the outcome for Suitbert (and for *Correlation* if it reprints his article, and no doubt also for *Astrology under Scrutiny*) could be embarrassing. I suspect Geoffrey ... might even sue the Astrological Association for defamation, it being presumably easier for him to sue a British publisher than a German website. ... I would like to solve this problem as soon as possible. One way out might be for *Correlation* to join *Astrology under Scrutiny* in jointly publishing the Suitbert-Geoffrey exchange". On Campion's advice, Heukelom passed his concerns to the *Correlation* editor, where they evidently fell on deaf ears.

I appreciate that readers might be thoroughly confused, if not thoroughly bored, by what is now a total of more than eighty *Correlation* pages (almost two whole issues!) devoted to avoidable mistakes about my findings, given that I reported my findings not in *Correlation* but in journals unlikely to be read by the ordinary *Correlation* reader. My problem here is that Ertel's article is flawed well beyond sorting it out in a letter for readers unfamiliar first-hand with my findings. The best I can do is identify some of the flaws and then refer interested readers to a website where they can find the information and freedom from distortion so conspicuously missing from Ertel's article.

Untruths

In his preface Ertel says "In AD 2000, the AuS editor sent me a formatted hardcopy, 72 pages, ready to go to print, and granted me the opportunity, within a fixed 10 days' deadline, to submit critical comments on Dean's work". Now, before the AuS article

appeared, Ertel had always been among the first to receive drafts of my work, the major ones being in April 1991 and July 1995. He received the AuS draft on 12 July 1999, and emailed that it had "arrived today. I browsed and read parts of your interesting paper and was amazed by seeing so many new results". This was fifteen months before it went to press in late October 2000.

Previously Ertel had always commented on my drafts, which resulted in many improvements, and had also provided data, reference material, and untiring help with data cleaning. But this time he declined to comment, preferring "to postpone discussion of more profound matters until your [article] is published" (email of 25 July 1999), explaining to the editor Rudolf Smit "I would like to write a critical article on Geoffrey's [article] which should be published in the same issue" (email of 19 January 2000). Later, in response to my request for his usual valuable comments, he again declined: "I have not gained the impression that I can make convincing suggestions for improvement" (email of 18 April 2000). This was six months before the AuS deadline in October 2000. All the important arguments, figures and tables were in the draft of July 1999. The implication that everything was suddenly sprung upon Ertel with a straightjacket of 10 days is not correct. Indeed, readers may be surprised to know that Ertel's claim of 10 days' notice had been repeatedly challenged during the exchange, and Ertel's own emails (such as those cited above) had been repeatedly cited to show his claim was incorrect. But despite the evidence of his own emails, his *Correlation* article still perpetuates the untruth.

Ertel's article perpetuates other untruths that have been repeatedly brought to his attention. For example, right at the start of section 2.0 where it introduces my ideas, it says "Dean maintains that G-effects are due to three modes of human manipulation". But I maintain no such thing. What I actually maintain is quite different, namely:

"I claim only that social effects [ie artifacts] exist in the Gauquelin data which need to be controlled before we can proceed further" (*Skeptical Inquirer* Jan/Feb 2003:59). The point being that, unless controlled tests indicate otherwise, "the existence of social effects [artifacts] does not deny the existence ... of genuine planetary effects" (*Skeptical Inquirer* May/June 2002:37).

The same applies of course to any artifact. Thus we can claim (correctly as it happens) that astronomical and demographic artifacts exist in the Gauquelin data, and that personal bias has affected Gauquelin's manual calculations, but we cannot claim they explain planetary effects unless the effects disappear when such artifacts are controlled. Early critics made this mistake and were proved wrong - the effects did not disappear when such artifacts were controlled, even though they may have seemed like a plausible explanation at the time. I am not about to make the same mistake.

Non-existent hypothesis

The untruth about my claiming to explain planetary effects is reinforced by repeatedly referring to a supposed "parental tampering hypothesis" of mine, i.e. to a hypothesis whereby planetary effects are supposedly explained. But I have no such hypothesis to explain planetary effects. It does not exist (which of course is inconvenient for Ertel's claim that I fail to meet the onus of proving it). Readers may be astonished to learn that I have been complaining to Ertel about this untruth since 1995,

but to no avail. Equally to no avail was my pointing out the same untruth in a one-page letter eventually published two issues late in *Correlation* 21(1), despite which the editor Pat Harris continued to repeat in 21(2) that I am trying "to explain all positive [Gauquelin] results". By contrast

the editor of *Skeptical Inquirer* (SI) had no trouble noting how Dean "is careful not to claim he has explained the Mars Effect; he claims only that the Mars effect involves social effects [artifacts] that need to be controlled before we can proceed further" (SI May/June 2002:1).

We might presume that SI has every interest in explaining away the Mars effect, yet its editor had no trouble getting it right.

Why then cannot others get it right? Instead of addressing claims that I actually make, for example by having a title such as "No, there are no social artifacts in the Gauquelin data", Ertel's article changes what is essentially an exploration into a series of nonexistent claims and hypotheses, which ironically are then presented in the context of "stubborn facts".

Similarly it is not true that self-attribution "implies lifelong belief in neo-astrology, above all by eminent professionals", that "Dean did not provide direct evidence [of parental tampering]", that "Dean preferred to interpret midnight avoidance as due to fear of spooky effects", and that "Dean does not provide any document as proof that such [neo-astrology] belief existed".

Not only are these statements untrue, the correct state of affairs is clearly indicated in my cited articles. For at least two years it has been there in black and white.

Nor is it true that I could "definitely ... find out" how much self-attribution existed among long-dead Gauquelin professionals (at least not until there is a hot line to the departed), and that evidence for self-attribution is totally lacking, given that Goethe for example had an astrological description of his delayed birth and felt that it may have contributed to his success. As for parents not shouting "Wow, Gauquelin has found us out!" - apart from the supposed secret being public for several centuries, why should they shout anything?

Sun sign columns have long been discredited but to my knowledge none of the Jonathan Cainers, Russell Grants, and Shelley von Strunkels of this world have shouted "Wow, we have been found out!"

Misleading statements

Ertel complains I did not reply to his queries about how many eminent professionals believed in neo-astrology. But my 2001 AuS update and 2002 SI article had explained how they did not need to believe, so the queries are meaningless, like asking how many angels are needed to make an apple fall. For the same reason the arguments about "profession-specific" channels for the transfer of neo-astrology beliefs, and the conclusions from Ertel's Table 2, are also meaningless. Ertel complains that Dean declined "to rank the empirical tests of his claim", where the supposed claim was the same non-existent hypothesis as above.

When someone declines to listen to what you are saying there is clearly little incentive to participate (which of course is just one more of the situations that Heukelom's approach was designed to avoid).

My dates for witches' sabbats are said to be contradicted by the nine Bachtold-Staubli volumes, which are wrongly claimed to be my "main source". Bachtold-Staubli is an

exhaustive compilation of folklore from every region of Germany whereas we are more interested in beliefs across Western Europe. Very often beliefs can vary with region and can sometimes conflict, for example midday was held to be a desirable birth time in Quercy but undesirable in Alsace. Also, some authors tend to confuse X Eve with the Evening of X, which is a day later. So my dates were those confirmed by authoritative witchcraft texts. For example in his *The History of Witchcraft and Demonology*, Montague Summers devotes a whole chapter to the witches' sabbat, the chief of which "throughout the greater part of Western Europe ... was the Eve of May Day, 30 April; in German famous as *Die Walpurgisnacht* ... The time at which these Sabbats began was generally upon the stroke of midnight" (which marked the beginning of each day) and generally "lasted till cock-crow" (which heralded the dawn). So it is incorrect to say I should have used 1 May instead of 30 April. Similarly for the other dates. Thus it is said I should have used 23 April instead of 22 April, but Summers says "In many parts of Europe where the Feast of St George is solemnized with high honour and holiday the vigil (22 April) is the Great Sabbat of the year".

Ertel's article quotes a medical informant, a professor of gynecology, as dismissing my idea of perinatal control, without obstetric drugs, as "laughable". But who said drugs and other interventions were unavailable? In his scholarly and erudite *History of Childbirth*, the French medical historian Jacques Gilis devotes a whole chapter to "hastening the hour of deliverance" by "a rich pharmacopoeia" where the midwife's intervention "tended to become the rule". Midwives tended to favour a hastened delivery, doctors a longer natural one. When labour was slow, the woman might try to hasten it by climbing up and down stairs, or a man might be called in to shake her violently, as if filling a sack with grain.

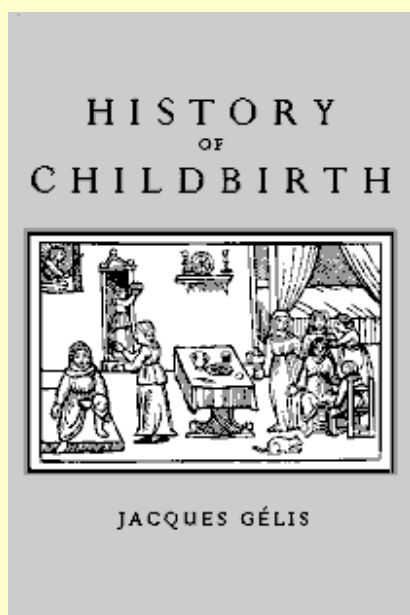


Figure 2. In the 16th and 17th centuries the French word for "to give birth" was *s'accoucher*, a reflexive verb indicating that the woman played an active role. Subsequently the word gradually became *accoucher* indicating a loss of initiative in favour of the obstetrician. For birth was one of those moments when evil forces could intervene. A person could cross their arms or legs in a certain way, handed down from antiquity, and block the labour. Cover illustration of Jacques Gelis's book is from Ovid's *Metamorphoses* Venice 1497. It tells the story of Alcmena's labour being blocked in this way by Lucina. When Lucina (far left) is persuaded to uncross her arms and legs, Alcmena (right) immediately gives birth to Hercules.

Ertel's article devotes four pages to dismissing witching causes of midnight avoidance only to confirm it in his Figure 1. Maybe "the dashed curve does not show much of a dip", but nevertheless it does show a dip where no dip should exist in the absence of witching causes. My original Gauquelin plot is said to involve kappa (it doesn't) and to

have been "picked arbitrarily as support for his hypothesis" (it was picked to show how effects had been visible in the raw data from the start).

Two whole pages are devoted to duplicating abstracts of five Ertel papers previously published in *Correlation* 3-4 years earlier with scarcely any mention of my published responses that identified fatal flaws in each.

Ertel's five arguments with my response in parentheses are briefly as follows: Dean's requirement that superstitious beliefs be stronger in rural areas is not supported by the results for 7,952 French professionals. (There is no such requirement.) On Christian feast days the excess births for 2,390 priests and monks was not significantly more than for 15,942 professionals. (The excess was 39% and 13%, both in the expected direction.) Superstition declined steadily from 1800 to 1950 but the avoidance of unlucky days etc did not, therefore avoidance is not a valid measure of belief. (So people avoided unlucky days because they were non-believers?) Friday the 13th is not especially avoided. (As pointed out by Edgar Wunder in *Correlation* 20(1) Friday the 13th was not a European belief until after 1945.) Planetary effects should be weaker on faked days, not stronger. (So the more the faking the less the effect?) Adding other planets should increase the correlation with avoidances due to the extra information but it does not. (Why should adding non-relevant planets provide extra information? Nevertheless, as shown in my original AuS reply to this point, as more and more planets are added to the mix, the correlations do not end up all over the place as implied by Ertel. Some decrease, some increase, but without exception their direction remains the same, which should not be if avoidance was unrelated to planetary effects.) A total of 320,817 hospital births in 1987-1994 showed a strong midnight avoidance, disconfirming any link with witches. (The avoidance was only of the witching *minute* 0:00, not of 0:01 onwards, despite a tendency to round to the nearest five minutes, so it was only to avoid ambiguity. If anything it supports nineteenth century beliefs about the witching *hour* 0:00-0:59.)

Ertel's Table 3 (essentially a repeat of a table he had presented in AuS 2000) looks at my observed correlations between (1) day avoidance and (2) midnight avoidance and planetary effect size. It claims that the correlations tend to be in the wrong direction, thus denying a connection with planetary effects. But as I previously pointed out in AuS 2000, the analysis is futile because we have no sure way of predicting how a belief in astrology should vary with a belief in other things. Should lucky days correlate positively with Jupiter but negatively with Saturn? Is a full moon day good because traditionally good or bad because favoured by witches? The best we can do is treat any correlation as suggestive and proceed from there.

Ertel's article says that my claiming 1038 French Academicians showed fewer births on the 13th (N=32) than expected (N=38) "is not true". OK if you believe that 32 is greater than 38.

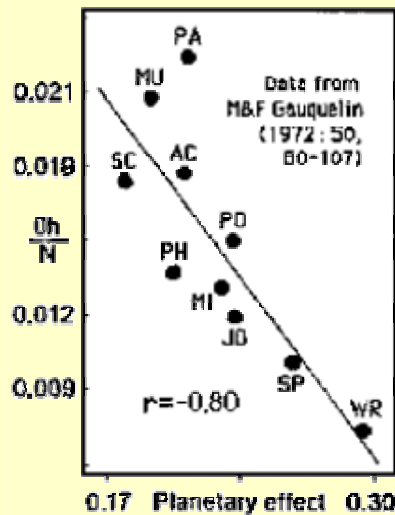


Figure 3. Inspection of the Gauquelins' *Profession-Heredité*. Results of Series A & B (Paris 1972) reveals something they never noticed -- strange irregularities in the number of pros born at midnight. At first sight there seems no reason to suppose that this has anything to do with planetary effects, so when the proportion of pros born at midnight ($0h/N$) is plotted against the maximum planetary effect in key sectors, calculated as $|Observed\ frequency - Expected|/Expected$, we expect to see nothing in particular. In fact we get the astonishing result shown at left (correlation between $0h/N$ and planetary effect is -0.80 , $p=0.005$). Planetary effects increase as the proportion of midnight births gets less and less, and it prompted my search for social artifacts in the Gauquelin data. This graph was among several graphs on Gauquelin-related work presented by me and Arthur Mather at the AA's Kepler Day in London in November 2004.

Ad hominem

The article's subtitle refers to "Dean's dealing with stubborn facts", so the target is me rather than my findings, which means the approach is necessarily ad hominem. The same is evident in the title "On Wunder's supporting Dean's cause" in 20(1). Although these "stubborn facts" are nowhere defined, the text refers to Dean "continuing to spread his blunder", generating "an unbounded outflow of quixotic speculations", only sometimes observing "a genuine act of precaution", backsliding to "uncorrected Gauquelin data", even "data arbitrarily predated". An entire section has a series of ad hominem on how "Dean maintains claims despite contradictions".

If I was as dishonest, incompetent, and deaf to criticism as the article claims, readers might wonder why so many reputable people were willing to provide help and comments - a total of eighteen, most of them leading players in the field, are acknowledged in my AuS and SI papers. If nothing else the ad hominem insult these people by implying that they too are self-deceived and proceeding improperly.

As it happens, my AuS draft of July 1999 was sent to numerous colleagues including Ertel. Their comments were always acted upon, as the editor Rudolf Smit will verify. However, I could not act on Ertel's comments because he declined to respond. Ertel also

declined to correct errors in his AuS response when I pointed them out (Dean 2000:86). The situation is described by Smit in his letter to Ertel of January 2001: "rather than act on [Geoffrey's comments], in the sense that you would indeed rectify your mistakes, you did nothing important ... not even after our asking again. You said (email of 14 October 2000): 'No, I did not make changes. Of course not. I do not approve of making changes to one's advantage (except correcting simple errors)'." Smit saw this as meaning "changes to Geoffrey's advantage". Smit adds: "What I also am very unhappy about is the way you wrote your critique. I got you so far that you were willing to replace 'abortive attempt' by 'erroneous attempt', but that did not take away the fact that there were still quite a few sneering remarks in Geoffrey's direction ... whereas Geoffrey in his rebuttal remained courteous and complimentary".

Overall picture

As if avoidable mistakes were not enough, Ertel's article becomes even more reader-unfriendly when it fails to describe the tests it dismisses, and when it ignores crucial results such as my heredity findings (half my total findings!), my cluster analyses, and the astonishingly close match to every one of the many Gauquelin puzzles. All of the above flaws -- avoidable mistakes, misrepresentation, wrong statements, obscurity, and crucial omissions -- would have been glaringly apparent to anyone familiar with my articles. That the editor and referees allowed these flaws to escape into print is curious.

At this point I could cite many more escaped flaws but enough is enough. Suffice to say that, had Heukelom's recycled two-column format been followed, this space-wasting time-wasting lunge and riposte -- all accurately predicted by Heukelom -- could have been avoided. That it was not followed suggests that the editor and publisher of *Correlation* do not share Heukelom's concern for the reader.

Let us accept that planetary effect sizes are tiny. Even Gauquelin's sample sizes, huge by normal standards, are barely enough to detect them without swamping by noise. So if we are to proceed at all, we need to look less at isolated instances of significance (the approach favoured in Ertel's article) and more at the overall picture. As the psychologist Jacob Cohen (*American Psychologist* 1994, 49, 97-103) puts it, "The ritual dichotomous reject-accept decision, however objective and administratively convenient, is not the way any science is done", by which he means that science aims to increase understanding, not to make precipitous yes/no decisions.

In fact surveys of psychology studies suggest that significance tests have led to a staggering 60% of conclusions being wrong, mostly due to Type II errors, yet we thought that only $p=0.05$ or 5% could be wrong, the last being Type I errors (JE Hunter, *Psychological Science* 1997, 8, 3-7). So we could be better off tossing a coin, error rate 50%, than making conclusions based on significance tests, error rate 60%. Or as John Tukey (the pioneer of exploratory data analysis) once said, it is better to be approximately right than exactly wrong.

When we look at the overall picture, the significance of individual components is no longer an issue, because if they are actually nonsense then the overall picture will make no sense. But in this case the overall picture does make sense. Contrary to the assertion in Ertel's article that the overall picture "if defined at all, is complex and diffuse", the overall picture could hardly be simpler and clearer. Indeed, its close match to every baffling puzzle posed by Gauquelin's findings (a point ignored by Ertel's article), plus Gauquelin's failure to find planetary effects in births after 1950 when most social artifacts would no longer apply (ditto), should alone prompt serious attention.

The overall picture complete with a statistical test ($p<0.0001$) was briefly presented by me and Arthur Mather at the 2004 Kepler Day and can be found in more detail in my

article *The Gauquelin Work 2. Opinions, Artifacts, Puzzles* on [this website] under "Gauquelin". The article includes new results and plenty of easy-to-understand graphs, all in plain English, and covers considerably more than social artifacts. The website (updated in December 2005) also has a concise history of the Gauquelin work illustrated with photographs, plus more than fifty readable articles of interest to the working astrologer.

Kollerstrom's article

Kollerstrom's article "How Ertel rescued the Gauquelin effect" starts by referring to me as "doyen of US sceptics", which might be true of people like Carl Sagan but certainly not of me, and then entirely ignores my Gauquelin articles despite their pointed relevance to his theme. For example my 2002 SI article concludes from new evidence (ironically the same evidence that Ertel's article wishes to dismiss as "untenable") that "the Gauquelins had found a real effect" and that "data selection and fraud can be rejected", which conclusions received none of the usual negative reactions whenever Gauquelin is vindicated, not even from hostile critics such as Dommanget, Kurtz, Nanninga, and Nienhuys, a situation so at odds with previous experience that one wonders why Kollerstrom should ignore it.

Similarly my AuS article, for the first time in any publication, lists the effect sizes for all planetary effect replications, which information was also presented as a graph (actually a meta-analysis of 35 studies of planetary effects) by me and Arthur Mather at the 2004 Kepler Day attended by Kollerstrom. We noted that: "Most of the 35 effect sizes lie outside the 80% confidence limits, so we are dealing with an effect genuinely different from zero. The mean absolute effect size is 0.044, which translates to a hit rate of 52.2% (as opposed to a chance hit rate of 50%) for the 0.006% of the population who are eminent. Applied pro rata to the general population, the hit rate is 50.0001%. You might like to wonder why 25% of all *Correlation* articles since it began in 1981 and 30% of this conference time should be devoted to a hit rate of 50.0001%". Readers might also wonder how a hit rate of 50.0001% justifies Kollerstrom's suggestion that all articles on planetary effects be re-published together, and how it justifies his description of planetary effects as "a scientific demonstration of human destiny". At Kepler Day we also showed how global consideration of Gauquelin puzzles is essential to any understanding of planetary effects, but no hint of this appears in Kollerstrom's article.

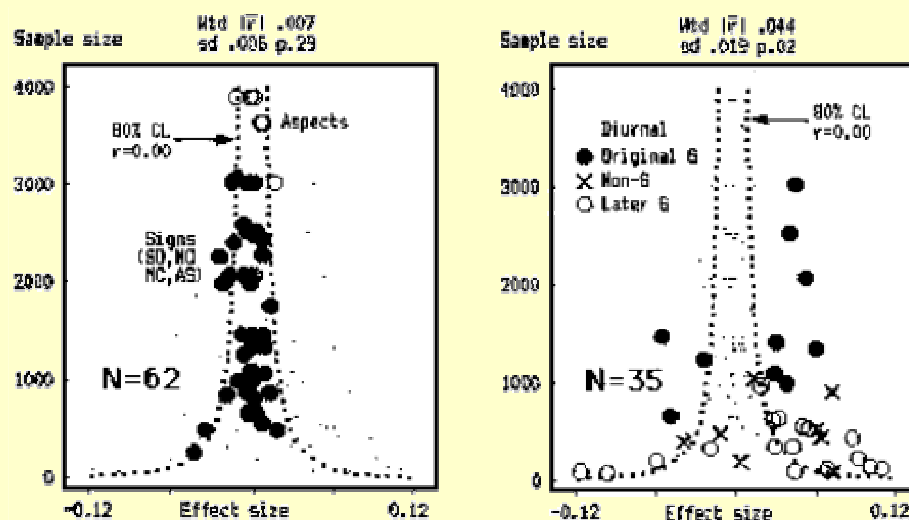


Figure 4. The meta analysis presented at the 2004 Kepler Day.

Right: 35 studies of planetary effects as described in the text.

Left: 62 Gauquelin studies of signs and aspects show a different picture with no excess of effect sizes outside the 80% confidence limits.

Kollerstrom speculates on the reasons for Gauquelin's suicide. Four months before his suicide, Gauquelin, Ertel and I stayed for two days with Rudolf Smit at his house in the Netherlands. Rudolf and I were privy to private and personal Gauquelin matters, and it has long been clear to us that there are more plausible reasons for Gauquelin's suicide than skeptics' accusations of cheating.

Douglas's article

Douglas's article "Replication of a Saturn Effect with firstborns" provides various hurdles for the reader. For example the text description of Figure 1 does not correspond to Figure 1, the key sector totals easily read from Figure 1 do not correspond with the total cited in the text, the reference "Douglas (2004)" refers to a *Correlation* article that seems not to exist, his sample size of 277 does not have the power to reliably detect effect sizes typical of planetary effects, nor is it large enough to justify the use of approximations for expectancies. Thus when I took the Gauquelin data for 15,942 professionals and subdivided it into samples of $N=277$, the mean Saturn expectancy by Gauquelin's exact combinatorial method was 60.4 sd 8.1. The approximation gives 58.8, but the killer of course is the high sd.

Douglas bases his approach on birth-order differences uncovered by Sulloway's heroic Gauquelin-style research reported in his 1996 book *Born to Rebel*. In a world where siblings compete for attention, siblings quickly learn what to do even when parents try to treat them alike. These learned strategies affect the rest of their lives. Thus laterborns who have learned to question parental authority in order to disadvantage a firstborn tend to end up as adventurous and rebellious adults. Sulloway estimates that typical mean correlations between birth order and the Big Five personality dimensions can reach

up to 0.2 (with IQ it is near zero), but only when the effects of social class and sibship size are controlled. If they are not controlled, as in Douglas's study, the correlation disappears. Which may explain why Gauquelin's own (uncontrolled) studies of birth order reported in his 1988 book *Planetary Heredity* led to his conclusion that "planetary heredity is not affected by birth order".

As an example, when these controls are in place, laterborns tend to be less anxious and less conforming than firstborns. Nevertheless, in one of the largest studies ever made of birth order effects, Eysenck and Cookson found negligible correlations between birth order and EPI scores in 4000 eleven-year-olds, even though they controlled for sibship size but not social class. Their study (not cited by Sulloway) is in *British Journal of Educational Psychology* 40, 117-131, 1969. They used the EPI rather than the traditional parent or teacher ratings because ratings can give spurious effects due to stereotyping, a point unaccountably not mentioned by Sulloway. To be sure, Sulloway uncovers many areas other than personality where birth order effects can be substantial, even dramatic, albeit with the same proviso about confounds, leading to his generalisation that laterborns are "born to rebel". But caution is still needed. Thus Eysenck himself, whose autobiography is *Rebel with a Cause*, was not a laterborn. Unless we impose the controls specified by Sulloway, we might do worse than attend to Ernst and Angst's 1983 book *Birth Order* (a review of more than 1000 birth order studies), which concluded that differences in personality due to birth order are of "little general importance, although birth order still may be an important environmental factor for some individuals".

Wackford's article

Readers should heartily endorse Mike Edwards's "a very large THANK YOU" to Mike Wackford for his scholarly sorting out of what Donald Bradley aptly called the "vexed question" of house division. Nevertheless the traditional interpretation of these now unvexed houses remains at odds with the Gauquelin planetary findings endorsed by Ertel, Kollerstrom, and Douglas. Hopefully we might look forward to further scholarly articles by Wackford that address this further vexed question.

Brady's article

On pages 68-69 there is a letter from me about Brady's article "The Australian parent-child astrological research project" in *Correlation* 20(2), which research had been stimulated by Gauquelin's heredity work. An accompanying note from the editor says that no response from Brady has so far been received but "may be available for a future issue". The note fails to mention that I sent the letter to *Correlation* in August 2002, over three years ago, and that various chunks have been censored. The usual reason for deletion is lack of space, but this cannot apply here because the letter is followed by almost a full blank page. There was also censoring of an earlier 1999 critique by me of Bagley's eight-page article in *Correlation* 18(1) in which I concluded it was uninformed and said nothing that could not be said more clearly in half a page. Although the editor had invited my critique, it was nevertheless censored (Bagley was then her supervisor at Southampton University). Incidentally, when as a referee I had pointed out serious flaws in Bagley's paper, none were corrected, nor did Bagley reply to my emails. As for Brady's article, judge for yourself. Here are the main censored bits, all of which would easily fit within the blank space:

A word on utility. Even though signs are probably the most disconfirmed factor in astrology, and would be immediately dismissed out of hand by whole-chart purists, Brady's eight hypotheses are so restrictive that they could not possibly be useful. Indeed, according to Dr Patrice Guinard's *Astrology: The Manifesto*, glowingly reviewed

in the same issue, they are not even believable. Dr Guinard asserts that astrology arises from the psychic state of the person and is therefore not open to statistical enquiry. So statistical studies (such as Brady's) are "a caricature of any truly respectable psychological research", and their authors are incompetent "know-it-alls in lab coats" who represent "just one more species in the roster of parasites on astrology" (quotes are from his CURA website). Curiously, no hint of these anti-*Correlation* sentiments appeared in the glowing review. But back to utility. ... Even these best effects [of Brady's] are of no practical use whatever ... which did not stop the front cover claiming they could be "the stuff of which astrologers' dreams are made". ... In passing, readers might note that the statistical errors would have been spotted by any first-year statistics student, which hardly reflects well on the expertise of *Correlation*'s referees, or on the editorial claim that the results are "a potentially important finding for astrology".

When a scientific journal promotes on its cover an article that, as it stands, is essentially meaningless (and this despite *Correlation*'s editorial in 19(1) announcing that Brady had provided the Research Group for the Critical Study of Astrology at Southampton University with copies of her raw data "so that the group could subject it to different tests which would give further insight into the results she had discovered so far"), then I think something is wrong. (The editor was of course also RGCSA's administrative assistant.) I think it is clear that censorship in both cases was not on scientific grounds but on political grounds. That is, while criticisms of articles are said to be encouraged, criticisms of referees, editors, editorial policy, and anything involving vested interests, will be censored.

The issue of the resulting poor intellectual standards was aired in a joint letter submitted to *Correlation* in late 2000 by myself, Rudolf Smit and Wayne Spencer, all of us professional editors, and published early in 2002 in 20(1). We pointed out that the AA's policy on referee recommendations is that "the author is not bound to follow them" (this was stated in an email to us from the editor in late 2000), which policy would seem to allow the semblance of rigour without the actual rigour, and that "conspicuously lower standards [in *Correlation*] were now a reality". The editor welcomed the letter, at least in public, and announced changes such as making referees anonymous (which also makes referees publicly unaccountable, hardly a progressive change), and how "factual errors must obviously be corrected". But in the five years since then, no improvement in standards seems to have occurred. If they had then Ertel's article in its present form, and arguably Kollerstrom's and Douglas's articles in their present form, should have been returned for improvement.

Appendix: Dean's reply to Ertel's rejoinder

In *Correlation* 23(1), 7-33 (2005) Ertel hoped that his paper would be his closing critique of my exploration of social artifacts in the Gauquelin data. It was not to be. In *Correlation* 23(2), 58-61 (2006), in response to my heavily censored letter, the *Correlation* editor allowed him to add a rejoinder of four pages (bringing his total to 86 vs my total of barely 6) that focussed on four points:

(1) Dean's letter lacks precision. Since 60% was censored, what does Ertel expect?

(2) Dean's claims about witching days are incorrect because sabbats began at the stroke of midnight, ie at 24h, therefore a sabbat on 30 April actually occurs on 1 May. So all my tests of sabbats are one day out. But midnight was everywhere seen as the start of the day, not its end. (It still is, as when the stroke of midnight announces the new year.) So a sabbat held on 30 April would begin at 0h on 30 April, not 0h on 1 May. Any

authoritative treatise on witchcraft will confirm this. For example the recent *Cassell's Dictionary of Witchcraft* has seven pages on sabbats (2002:406-412). It notes that "by 1500 sabbats had become a central feature of witchlore and the basis of countless prosecutions" (p.408). Sabbats began at midnight and their end was "reputedly signalled by the coming of dawn or by the sound of the first cock crowing" (p.412). It is clear that a sabbat on 30 April is not going to be happening in the hours before dawn on 1 May.

(3) The 13th is more obvious than say Mars rising, so its avoidance should be more pronounced than planetary effects, but it isn't. There are three problems here. (1) Who said the 13th had to be as meaningful as Mars in 18-19th century folklore? (2) Who said the 13th is more obvious? After all, you can see Mars in the sky but not 13ths. (3) Avoidance is not a fair comparison because the expectancy for 13ths is about $N/30$ whereas the expectancy for planets in plus zones is about $N \times 8/36$ or $N/4.5$. This means that, even if nobody was born on the 13th, 13ths could not reach an avoidance effect size that is typical of planets.

Ertel adds that there is no noticeable effect for day of week, as in "Sunday's child is full of grace", which he says casts doubt on whether people tamper with birth dates. I dealt with this in detail back in 2000. The problem is simple: the attributes on which the days are based are linked to the planets, so the attributes should be the same everywhere, but in fact there is much variation. As one example among many, Bachtold-Staubli gets Wednesday right but mixes up most of the rest. Even Ertel gets it wrong (it is Tuesday's child that is full of grace). Such mix-ups indicate that the links between days and planets did not persist, even if they were rightly understood, probably because they were not useful. After all, every almanac tradition such as zodiac man involved the Moon or planets in the visible here and now, which made more sense than something invisible.

(4) Ertel still claims that he was set an impossible deadline for responding to my 2000 paper. This was fully addressed in the censored parts of my letter. The *Correlation* editor would necessarily have known this yet allowed Ertel's comments to stand.

Ertel concludes with yet more defamation, namely that I propagate views "despite a plethora of factual contradictions", ie tell lies. What Ertel does not do is address the absolutely crucial points that I listed in my letter under "Overall picture", but how could he when the *Correlation* editor deliberately censored them? In legal terms the AA council, its intellectual head Nick Campion and its editor Pat Harris are now liable to charges of not merely Defamation but also Malice.

Francoise Gauquelin 1929-2007

Two tributes with pictures

Suitbert Ertel and Geoffrey Dean

Expanded versions of two tributes that originally appeared in *Correlation* in 2008.

Abstract -- Francoise Gauquelin (1929-2007), former wife of Michel Gauquelin, shared his vigour, his insistence on adequate data and tests, and his readiness to abandon wishful thinking in the light of empirical findings. These

tributes by two of her collaborative researchers cover her joint work with Michel on planetary and heredity effects, her successful journal *Astro-Psychological Problems* and other publications, CORA, French skeptics, RAMS, and her solo work on heredity, character traits, aspects, and matching tests. She showed how determination and the scientific spirit can prevail over the challenges posed by astrology. If she saw further than most it was not because she stood on the shoulders of giants but because, like Michel, she stood on the shoulders of data. In various letters she said: "For me, your contradictory results are not shocking ... Affect and feelings must be ignored ... Search facts by objective methods is more valuable than theory". With Francoise's final passing we have lost an extraordinary contributor to the Gauquelin period of astro-psychological research.

Search facts by objective methods

Suitbert Ertel

Marie Francoise Schneider-Gauquelin, born 19 June 1929 at 4:00 am in Neuchatel Switzerland, passed away on 10 August 2007 in Joigny in the Yonne region of France. This was sad news for those who knew her well, especially researchers of neo-astrological problems with whom Francoise had collaborative relations (as I had from 1985 to 1998).



Francoise Gauquelin at the 1981 London Research Conference
Right: with Charles Harvey and Michel Gauquelin

Formal qualifications

Francoise obtained a diploma in Psychologie de l'Education at the University of Geneva, under Jean Piaget's guidance. At the Psychological Institute of the University of Sorbonne, Paris, she graduated in Psychotechnique and Psychopathologie, and at the Sorbonne Institute of Statistics she obtained a diploma in Statistique in 1960, by the thesis *L'heure de la naissance*. Francoise (and Michel) thus graduated from universities, but did not attain a PhD -- this title was wrongly attached to their names in the list of consulting editors of *Correlation*.

Curriculum of the Gauquelin Investigations

In 1985, when I first contacted her, Francoise sent me a copy of her Curriculum of the Gauquelin Investigations, in which she describes the 1950s and 1960s as follows:

1952-1955: Following the same course in Applied Psychology at the Sorbonne as me, Michel [Gauquelin] made my acquaintance and we fell in love. His first positive results [obtained in 1950 using 576 births from *Index Biographique*

des Membres de l'Academie de Medecine 1820-1939] impressed me, but did not convince me. So we started investigation of a second group of famous medical doctors. The outcomes were the same, which impressed me very much. ... My contribution at that stage can be described as bringing order and finishing up what was unfinished, like a good secretary or apprentice. Michel had a leading role, for I knew very little about astrology. He acknowledged my contribution by marrying me in 1954, and I gave the money for publishing *L'influence des astres* in 1955 [Michel's first book].

Subsequently Francoise intensified her cooperation with Michel, which in 1957 resulted in their joint in-house publication *Methodes pour etudier la repartition des astres dans le mouvement diurne*. Her Curriculum continues as follows:

1956-1960: Michel's first book having aroused much criticism, I suggested to take advantage of my knowledge of foreign languages for collecting data in other European countries, in an attempt to replicate the French findings. So our summer vacations were spent in Italy, then in Germany, then in Belgium and Holland where we went from town to town. Michel, armed with a dictionary, copied lists of new famous professionals at the public library, while I pleaded at the main Registry Office for the permission to look up birth times in the records. ...Back home, Michel did the calculations of planetary placements and I the computations of planetary placements in sectors.

The first heredity project

Between 1960 and 1964, after her graduation in Statistique, Francoise says she collected a large amount of the data for the Gauquelin heredity project, the results of which were published by Michel in 1966 (*L'heredite planetaire: Notre naissance et l'horloge cosmique*, Denoel Paris). The book does not mention her contributions, but the English translation published by ACS in 1988 (which also contains the two later heredity experiments) contains the acknowledgement: "I am grateful to Francoise Gauquelin for her invaluable help with the gathering of birth data in the first series of planetary heredity experiments" (page v). She also appeared as co-author with Michel of their 1970-72 in-house publication *Birth and planetary data gathered since 1949. Series A: Professional notabilities. Series B: Hereditary experiment*.

Astro-Psychological Problems

After her separation from Michel in 1982, when she published a monograph *Psychology of the Planets* (ACS 1982) alone under her name Francoise Gauquelin, to which Michel wrote a benevolent foreword, she went on to launch a new journal *Astro-Psychological Problems: a quarterly research journal*. In 1985 its name was changed to *The Schneider-Gauquelin Research Journal: Astro-Psychological Problems*, published three times a year, with a further change in 1986 to *Astro-Psychological Problems: The Schneider-Gauquelin Research Journal*. From 1988 it was published twice a year.

Eysenck Research Seminars

The late 1980s were Francoise's most prolific years. She managed to build on Professor Hans Eysenck's interest in astrology by organising with the help of local authorities what she called Eysenck Research Seminars. These took place in Long Beach California (1986), Freiburg Germany (1987), and Naples Italy (1988), with surprisingly different attendances (respectively about 25, 50-100, and 400-500) that, according to Francoise, reflected the local organisational abilities. Despite the poor attendance at the first Seminar, it resulted in the formation of a Committee for Objective Research in Astrology (CORA), with Eysenck as Chairman and other renowned scientists such as Marcello Truzzi and Victor Benassi as members.

Francoise's tribute to Michel Gauquelin

When Michel Gauquelin died on 20 May 1991, Francoise wrote: "I think we owe him a great debt for his productive ideas, the hard work with which he demonstrated them scientifically, the tenacity with which he defended them when they were under attack of skeptics, and I continue the work in the same spirit" (APP 8(1), 5, March 1992).



Michel and Francoise Gauquelin c.1970

Diverse contributions to a research anthology

Besides the many articles that Francoise published in *Astro-Psychological Problems*, she found time to make additional contributions, two of which deserve particular tribute: First, she submitted to a seminal book *Astrological Research Methods*, edited by Mark Pottenger (1995), seventeen condensed articles on various topics of Gauquelin research.

Overcoming French skeptics

Second, and no less notable, is her article of defense against the attempt by French skeptics to defame the Gauquelin approach. The skeptics had collected, with apparent selection bias, new birth data of sports champions. In 1991, at a Euro-Skeptics conference in Amsterdam (Nienhuys 1992), I assisted Francoise by presenting an analysis of the skeptics' data, pointing out methodological bias that Francoise had correctly suspected (Ertel 1995).

To Francoise's delight, my role in this endeavour to find "The Truth about Astrology" (the title imposed by the publisher of Michel's 1983 book) was essentially successful. The basic Gauquelin claim, the correlation between birth frequencies in rise-culmination sectors and professional eminence, had stood my objective tests. Data of French renowned physicians, collected independently of the Gauquelins with the help of my colleague Arno Muller, showed the Mars and Saturn deviations beyond doubt. So the characteristics for physicians known from the early Gauquelin work were replicated (Muller & Ertel 1994).

No links with character traits

On the other hand, disappointingly for Francoise, I was unable to find evidence of links with character traits, the hypothesis that character traits were part of the correlations between natal planetary positions and professional success (Ertel 1990). It was disappointing for Francoise because her 1982 monograph had been based on this hypothesis, which I was now able to explain by unnoticed artifacts. Nevertheless, in true scientific spirit, Francoise attempted to test my findings, but was unable to finish her study due to ill health, see below.

Heredity non-replication

Another empirical backlash that Francoise had to cope with in her last period of independent research was the non-replication, in 1984, of the results of the two Gauquelin heredity experiments, the first published in 1966 and the second in 1977. Michel himself had been confronted with this unexpected failure despite using a huge new sample of 50,942 births that allowed 33,120 parent-child comparisons, almost as many as the two previous experiments combined. He saw the non-replication as puzzling but hoped that a further replication would provide an explanation, so that "One day we will know the truth about planetary heredity" (*Planetary Heredity*, ACS 1988 page 63).

Francoise's response

In 1989 Francoise's response was to begin collecting, with the help of others, more heredity data from Nogent in the south-western outskirts of Paris, where births were less subject to medical intervention than in Paris itself. After two years she had 1721 new parent-child comparisons that showed inconsistent results. Only the Moon showed a significant parent-child correlation in the expected direction. She concluded "Did this happen just by chance, and will the other planets catch up with [the Moon] when more data are collected and analyzed? As the continuation of the experiment is already under way, we will soon know" (*APP* 8(1), 11-21, March 1992).

Two years later, in *App* 10(1), 3, March 1994, Francoise writes:

Around me two large new data collections are piling up: one for the necessary rechecking of the Gauquelin heredity hypothesis ... the other for testing the presently much discussed and reviled character traits hypothesis. ... I have to obtain, from new friends here, new research programs, one at a time. Otherwise I would have to work out by hand again the outcomes of thousands of new data, which I certainly did not have time to do in the middle of moving back from San Diego to Paris.

Unfortunately progress was slow. In *APP* 11(1), 8-17, March 1995 (the last issue before ill health forced her to cease publication), Francoise argued in favour of the character trait hypothesis, even though she did not have new results. As for her new heredity experiment, there is no information on her latest results, so we shall never know how they were turning out.

Aspects

A third research challenge to which Francoise responded was Michel's and my failure to find aspect relationships between planets at the birth of eminent professionals. She thought that our negative results were due to inappropriate operational definitions and tried a different approach, essentially by including aspects to the Ascendant and MC, which Michel and I had excluded because they were confounded by diurnal effects, but without bringing the controversy to an end.

Search facts by objective methods

I discussed all these issues with Francoise and was impressed by the amount of vigour and endurance that she spent on them. I was no less impressed by her readiness, eventually, to abandon in the light of contradicting observations what I saw as wishful thinking. She wrote to me in various letters: "For me, your contradictory results are not shocking ... Affect and feelings must be ignored ... Search facts by objective methods is more valuable than theory".

Francoise dedicated her life, passionately, to scientific goals; her list of references contains no less than 70 titles. Nevertheless, in her daily social interactions, she retained humanity, a unique mixture of wit, temperament and charm, which made the

relationship with her stimulating and congenial. With Francoise's final passing we have lost an extraordinary contributor to the past Gauquelin period of astro-psychological research.

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End of an era

Geoffrey Dean

Following the untimely death of Michel Gauquelin in May 1991, the death of Francoise Gauquelin in August 2007 marks the end of the Gauquelins' heroic scientific investigations into astrology. They were not the first to investigate astrology but they were the first to do it rigorously with large samples. I met them at numerous conferences, the first in New York in 1976, then at their laboratory in Paris several times, and exchanged much correspondence. In *APP* 8 (1), 4-5, 1992 Francoise describes how their joint investigations began:

I first met Michel at Paris University where we were both students in psychology, at the time a still little known science in France. This allowed us later on to make a successful career as editors of series of books popularizing the main discoveries in psychology. But to Michel, getting to know better this new science was not an end in itself. It was rather a way to learn how to explore with correct scientific methods the astrological theories which had intrigued him and fascinated him since a very young age. [He had] tested the influence of zodiac signs, transits, aspects, with no results whatsoever. Also, innovative astrologers like Paul Choïnard, Karl Ernst Krafft, Leon Lasson had published books energetically asserting that they obtained significant results with their collections of data which Michel was unable to confirm with fresh data. This showed him how difficult it is to properly evaluate astrological hypotheses and induced him to look for proper training at the university.

Michel's acknowledgement

In his "Confession in the Form of a Prologue" (*Cosmic Influences on Human Behavior*, Stein & Day 1973 pages 17-20), Michel Gauquelin recounts how Francoise contributed to his early studies:

On the university benches [in 1952] I met Francoise [Marie-Francoise Schneider], my future wife. She was my first listener, my first reader and above all, my first critic. She advised me to write a book setting forth all the labor I had performed in secret. It was to be the "antiastrological" summary of my statistics and the nugget of gold. "And so", she said, "people will read you and criticize you. Then you will know if you have truly found something and if it is worth the trouble of continuing". At the age of twenty-five I wrote that book [*L'influence des astres*, finalised in August 1954 and published with Francoise's financial help in 1955] and I found that it was worth the effort to continue.



Right: Rue Amyot in Paris in 1981. The Gauquelins' home and office was upstairs in the big apartment block on the right. **Left:** their library of about 300 books. Some were highly technical and often rare, others were standard astrology works that could be found in any good astrological collection.

Early days

Francoise arrived on the scene after Michel had finished his study of traditional chart factors, which he described as "a considerable inquiry in the testing of astrological rules with large and varied samples. It is necessary to stress that the results demolish astrology more than they might appear ... because they attack not the claims of particular authors but the most elementary bases of the doctrine itself" (*L'influence des astres* 1955 page 62). Francoise was not directly involved in the writing of Michel's first two books (the second was *Les hommes et les astres* published in 1960). But she had helped with some of the work, and her own official studies were in related areas, especially her study of birth hours (*L'heure de la naissance*, *Population* 14, 683-702, 1959). Later, when the focus was on planetary and heredity effects, the two Gauquelins became a highly productive partnership that lasted for more than twenty years until their separation in 1982 and divorce in 1985. A son Daniel was born in April 1967.

Astro-Psychological Problems

Limited by her separation from Michel, but encouraged by the success of *Correlation*, Francoise launched the journal *Astro-Psychological Problems* in December 1982 to provide a forum for the discussion of Gauquelin matters within its formal aim "to report empirical research into astrology", later "to report statistical investigations of astrology ... purely astrological articles will not be published". She published in English because it was more widely read than French. Issues consisted of photocopied A4 pages of typing done on her manual typewriter, a style that was not replaced by computerised wordprocessing until late 1993. Her first editorial in *APP* 1(1) asked readers "to be indulgent for errors of style, but very critical for errors of reasoning or of investigating a hypothesis. The criticisms, suggestions, corrections, will be acknowledged and discussed here with -- I hope -- an open mind. Each opinion has a value. But the liberty to criticize [is] the most important attitude for good scientific work".

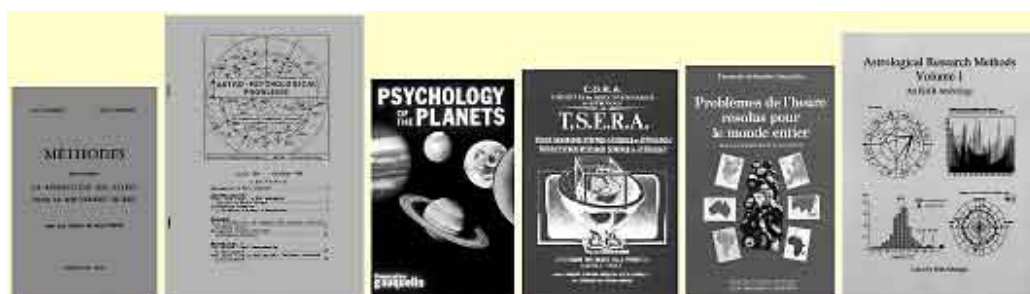
Francoise's many contacts within Europe, and her fluency in French, English, German and Italian -- which had been helpful when the Gauquelins were collecting birth data in Italy (1956), Germany (1957), Belgium and Holland (1958) -- led to *APP* having a strong European content. Her insistence on the statistical approach led to many discussions of methodology (many more than in *Correlation*) and to a vigorous correspondence averaging nearly three letters per issue, nearly always accompanied by a reply from Francoise showing her clarity of expression and vast research experience.

***APP* and NCGR**

In 1989, following Francoise's temporary move to the USA, *APP* was published by the

NCGR as alternate research issues of its quarterly *NCGR Journal*. But rising costs soon reduced four issues a year to two issues a year, leaving no room for *APP*. In 1991, after only three joint issues, Francoise returned to France and began publishing *APP* again in its original format until 1995, when ill health forced her to discontinue. Today copies are hard to find but a full listing of *APP*'s contents, plus two editorials and comprehensive abstracts of seventeen important articles, are available in *Journal Cumulative Contents* elsewhere on this website.

The thirty published issues of *APP* contain more than half a million words and nearly sixty empirical studies roughly equally divided between Gauquelin and non-Gauquelin areas. About half the latter gave positive results as judged by their author, but not as judged by Francoise and others, who often uncovered artifacts. Daniel Gauquelin appears twice (aged 18, 19), each time as co-author with Francoise of an article on elementary statistics. There was friendly co-operation with the other peer-review research journals (*Correlation* and the Dutch *Astrologie in Onderzoek*), and often the same authors could be found in all three.



Some publications. From left: **(1)** *Methodes pour etudier la repartition des astres dans le mouvement diurne*, the Gauquelins' first collaboration published in-house in 1957, sets out methods for calculating diurnal expectancies; it is divided into three parts, of which the second part (ways of calculating sector positions) is by Francoise. **(2)** The first *APP* (34 A4 pages) published in December 1982; originally it appeared photo-reduced to A5 but readers preferred it full-size. **(3)** *Psychology of the Planets* (ACS 1982, 110 pages) describes the Gauquelin character trait research. **(4)** Papers presented at the third Eysenck research seminar in astrology, Naples 1987, co-edited by Francoise (Pegaso, Milan, 320 pages). **(5)** *Problemes de l'heure resolu pour le monde entier* (Editions de La Grande Conjunction 1987, revised 1991, 360 pages) gives time changes for over 200 states and countries, some of it based on input provided by *APP* readers. **(6)** *Astrological Research Methods* edited by Mark Pottenger (ISAR 1995, 467 pages) has seventeen concise articles (37 pages) by Francoise. Not shown are the thirty Gauquelin technical publications totalling over a shelf-metre of A4, of which seven are by Michel, one is by Francoise (*Traditional Symbolism in Astrology and the Character Traits Method*, 1980, 54 pages), which was the precursor of her *Psychology of the Planets*, and the rest are by both jointly.

Doing everything herself

Except for the three joint NCGR issues, Francoise did everything herself -- compiling, editing, writing, typing, photocopying, stapling, addressing, and mailing. The circulation is not recorded in *APP* but was probably about 150, equivalent to a stack of A4 nearly half a metre high per mailing. While astrologers talked, and talked about talking, Francoise (like Michel) delivered.

Golden years of research

Francoise was frequently at astrological research conferences worldwide, either with Michel or, after his death, on her own. The interest in their research peaked in the early 1980s before their separation, when they appeared with notables such as John Addey, Charles Harvey, and Neil Michelsen, all sadly no longer with us. Those were the golden years of research, when astrology still held promise of results commensurate with its claims, but which slowly faded during the 1990s as the hoped-for results failed to eventuate. Part of the problem, to which almost everyone contributed including the

Gauquelins, was an emphasis on significance at the expense of effect size, which is tricky -- a trivial effect can be elevated to significance by a large sample but it is still a trivial effect. Perhaps the ultimate irony occurred after Michel's death when astrological tributes appeared using chart factors that Michel had earlier shown to be without validity.

CORA

In 1986 Francoise became the first secretary of Eysenck's CORA (Committee for Objective Research into Astrology), which was set up to counter the generally poor quality of astrological research by providing free advice. Only a few inquiries were received each year, most of which did not proceed further. Following Eysenck's death in 1997, CORA continued for a short while, then lapsed due to the drying up of even this meagre interest.

RAMS

In 1991 Francoise, together with Suzel Fuzeau-Braesch (1928-2008) and two other French researchers, founded the French research group RAMS, short for Recherches Astrologiques Methodes Statistiques, or Astrological Research with Statistical Methods, see *APP* 8(1), 2, March 1992. The idea was a simple one: starting in September 1992, with Francoise as editor, RAMS would publish a journal that would replace *APP*. But Francoise left shortly afterwards because in her view RAMS was pursuing research areas that the Gauquelins had shown to be fruitless, rather than areas that promised positive results. The first issue of the new journal *Les Cahiers du RAMS* eventually appeared in April 1993 with the *S* now standing for *Scientifiques*.

Recent writings

Among Francoise's most recent and valuable contributions were her clarifying answers to questions about registry offices and birth registrations in *APP* 9 (1,2), 1993, which were of great help to my own discovery of social artifacts in the Gauquelin data (which nevertheless confirmed the reality of planetary effects, see elsewhere on this website); and her concise articles on data, statistics, and the latest findings in the anthology *Astrological Research Methods* (ISAR 1995). Here the typical practising astrologer's objections to statistics would not "survive a conversation with a good statistician" (page 111), and are in any case accommodated by matching tests using the whole chart, even though Francoise's own matching test of German astrologers had given results that were "totally disappointing" (page 238).

A rare look at recognition

There is also a rare look at the recognition achieved by the Gauquelins' heroic studies:

I have personally been most often treated with consideration and respect; I have been helped by learned colleagues who kindly refused any monetary compensation for their efforts from me; I have been invited to tempting conferences for free; and all because it is known that I [and Michel] devoted, for free, much time and effort to the vindication of astrological tenets (page 78).



London Research Conference, November 1996. From left: Peter Niehenke, Françoise Gauquelin, Rudolf Smit, Frank McGillion, Jane Lee, Theodore Landscheidt, Mick O'Neill, Nick Kollerstrom, Pat Harris.

Last speaking appearance

The London Research Conference of November 1996 was Françoise's last speaking appearance in the UK. She replied to various technical objections, thanking Suitbert Ertel for confirming the reality of planetary effects, but disagreeing with his negative findings about character traits, see *Correlation* 15(2), 5-7, 1996. But she looked ill and was clearly not well. My last letter from her was dated December 1996. Subsequent correspondence was not answered. In 1997 aged 68 she moved to an old people's home in Joigny 130 km southeast of Paris, where she died on 10 August 2007, forgotten and neglected by astrologers worldwide until now. If nothing else she had shown how determination and the scientific spirit can prevail over the challenges posed by astrology. If she saw further than most it was not because she stood on the shoulders of giants but because, like Michel, she stood on the shoulders of data. Her example will be sorely missed.

