Book Reviews

Astrology under Scrutiny: Close encounters with science

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Astrology under Scrutiny is the first coffee-table book for astrology sceptics. It's a high-quality hardback book of over 200,000 words, printed on glossy paper, and accompanied by detailed graphs, photographs and illustrations.

Astrology under Scrutiny (AuS) is divided into four sections: (1) Summaries of the best 110 articles from Dutch astrological research journal *Astrologie in Onderzoek (1977-2003),* (2) *Astrology My Disaster* by Rudolf Smit, (3) the history of the lifework of the Gauquelins[1], and (4) the largest (containing over 60% of the content): *The case for and against astrology*. Most of this last section is so controversial that it deserves more than a general review in *Correlation.* So the focus of this article is *The case for and against astrology,* referred to herein as *The Case.*

Proposers of *The Case*: Geoffrey Dean and his team

Four leading reviewers of astrological research, Geoffrey Dean, Arthur Mather, David Nias and Rudolf Smit (former editor of *Correlation*) are credited as editors of *The Case.* Dean is also guest editor and principal compiler of the book as a whole. Given Dean's history as a relentless champion of astrological scepticism over almost forty years, and the leading published researcher of astrology tests, we have to credit him as the mastermind in either word or deed behind this and almost all other organised critiques of astrology since 1985. It would be impossible to review this book without reference to this background. Although I find Dean's opinions about astrology resolutely partisan, he has always been a most courteous, helpful, stimulating and persuasive email correspondent.

Every field attracts the arch-critic it deserves. Theists have Richard Dawkins. Astrologers have Geoffrey Dean. Given the choice, I would prefer Dean. Dawkins' foray into astrology focused on the soft target of Sun Sign columns and his own misconceptions, such as precession; Dean gives astrologers scope to improve. He knows the mechanics of astrology, the arguments, and many astrologers personally. Where anti-astrology 'self-styled sceptics' believe debunking is simply declaring that astrology is rubbish, Dean provides argument, logic and evidence – often from astrologers. Dawkins, however, is more open about his objectives. The authors of *The Case* could have followed his example with a title like *The Astrology Delusion* instead of the deceptively neutral *The case for and against astrology*, but chose not to.

The Case invites comparisons with Dean and Mather's seminal book, *Recent Advances in Natal Astrology* (1977) *(RA).* Although self-published, the production of this new title is

[1] The word Gauquelin refers to the combined and individual work of Michel and Françoise Gauquelin.

superior. The format is unusual but efficiently organised into sections marked in outline numbering style and an index on the outside back page (like *Recent Advances*). Apart from some (in my opinion) convoluted content, I found most of it lucid with descriptive sub-headings and helpful (although sometimes minutely detailed) technical diagrams.

Astrology under Scrutiny (AuS), and in particular *The Case* section, is more readable and more entertaining than *Recent Advances.* However, for reasons which will be explained, it can no longer claim to be science. It is also not as useful to astrologers as *Recent Advances (RA). RA* was an unparalleled resource, although it is now outdated. Dean's noteworthy embryonic study on unaspected planets in *RA* stands as an example of promising research, but its omission from *AuS* suggests this experiment may never leave the "file drawer".

Most of the content of *Astrology under Scrutiny* will be familiar to those who have read *Recent Advances* (Dean & Mather 1977), *Astrology: Science or Superstition* (Eysenck & Nias 1982), Dean's published papers, Smit's website: astrologyandscience.com, and *Astrology in the Year Zero* (Phillipson 2000:124-166). Yet in the form of this compilation, with the addition of 110 article outlines translated from Dutch, the whole of *AuS* is considerably greater than the sum of the parts.

Their case in a nutshell

The central contention of the book is that hundreds of scientific tests (p.137) have shown that astrology is no more than finding faces in the clouds. Any effects found in experiments are very small and can be accounted for by sampling error, publication bias or other artifacts. It then outlines the fundamental problems with astrology and attempts to account for why this cognitive illusion has been so tenacious in the minds of astrologers and the public.

The core myth: "Hundreds of scientific tests have solved the puzzle."

The authors state that critics who claim there has been very little research using accurate charts misrepresent the facts. They counter that a great deal of research has been done, but fail to quantify their answer.(p.146) They are pushing a pernicious myth, yet one that is critical for their argument to appear to have any scientific basis.

So the query that must be put to the authors is*: "Please list the hundreds of empirical tests that support your case."* Flawed tests, or those with small samples (N<100) or those based on Sun Signs, or simply a test of the proficiency of just one astrologer by conjurer James Randi, do not count. Besides those involving Dean, the Gauquelins, the New York Suicide Study (Press 1977), the 'Redhead studies' (Hill 1988 & 1996) and the Carlson Test (1985), there are not more than a handful. The lack of support for Charles Harvey (p.146) for seeking superior empirical tests is counter to scientific practice.

"Most astrological research is marred by errors in methodology and statistical treatment. It would seem that such methodological errors are made not only by astrologers, but equally by critics who attempt to disprove astrological claims." ~ Hans Eysenck & David Nias (1983)

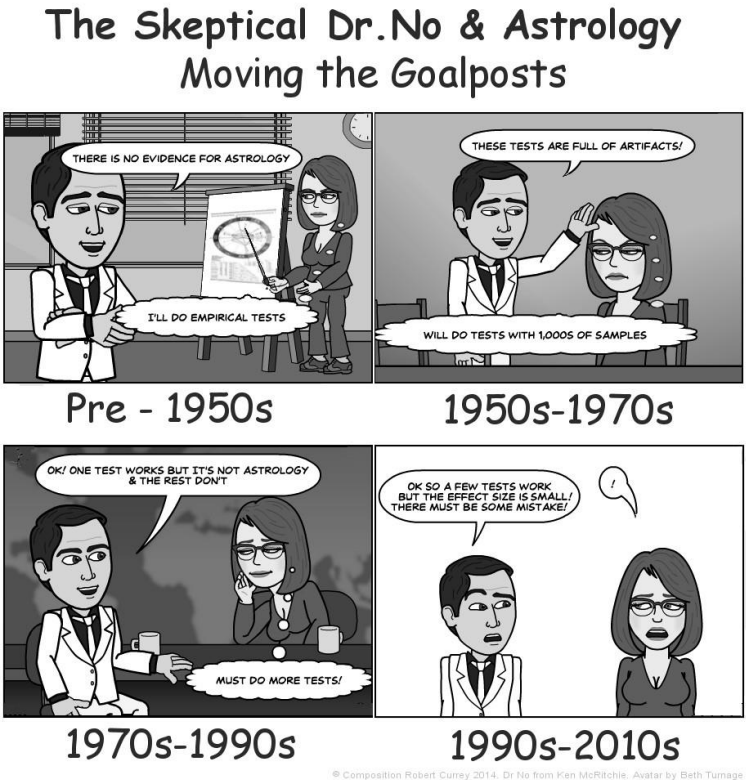
Has research into astrology dramatically improved since this assessment by Professor Eysenck and Dr Nias in 1983? The *AuS* authors claim it has declined since 1985 (Rise and Fall of Research pp.186-7). While the quantity may have gone down, the quality has gone up, producing a number of results with significantly low p values supporting astrology. To counter this trend, Dean and his authors resort to meta-analyses (pp.222-234) where effect sizes (measured in Pearson's *r* and Cohen's *kappa*) is the common 'arbiter of validity' rather than p values. This enables small or flawed experiments that might otherwise be rejected, to be merged to dilute the global equation.

Meta-Analysis of matching birth charts to owners

A meta-analysis is useful to assess a single hypothesis from a number of tests where there is homogeneity between techniques being tested. Dean's meta-analysis of astrologers' ability to match birth charts to their owners, known as the Vernon Clark type tests, reverses this guiding principle.

The most prominent study (Narlikar 2009) tests the identification of 'mentally handicapped' children using Indian or Vedic astrology. Dean assisted in this, the largest and least astrologically successful experiment listed. In his paper, Professor Narlikar leads by asserting that Indian "*astrology is fundamentally different from both Chinese and Western astrology*." So to mix the two systems in this way introduces an unacceptable level of methodological diversity.

It's not simply about methodology. If Dean's analysis seeks to measure how well astrologers can match birth charts, it should be based on what astrologers claim. Predicting intellectual disability, accidental death, suicide, inclination to murder (which accounts for over a quarter of the tests) is not part of the current Western astrological practice. Of course, these subjects are worthy of research. Some have shown high effect sizes in favour of an astrological hypothesis, but they are exploratory and should not be used to judge the *practice* of astrology.



One of two double-blind tests where twenty-eight astrologers ranked 115[2] charts is included in the meta-analysis (Carlson 1985). However, when the authors narrowed their selection, they discarded it for being a "lower-quality test" without giving any explanation. The authors list the effect size as 0.017 but Ertel (2009) has shown it to be 0.15. Also, the separate rating test of 100 charts in the Carlson study which was statistically significant is not included – Ertel states the effect size is 0.10 and p = .037 (2009)

Other results that show a positive effect size favouring astrology are dismissed by the authors as being due to sampling error and publication bias. In fact, history shows that the reverse is more likely. The sceptical movement has had a long record of manipulating data and suppressing inconvenient results, despite its claims of ownership of the scientific high ground. The authors, to their credit, do not disguise the scientific misconduct of Comité Para, CSICOP[3] and its founder Paul Kurtz and the CFEPP[4] (pp.108-113). What is not

[2] Carlson stated up to 28 astrologers and both 114 and 116 subjects, 115 has been used. (Currey 2011)
[3] CSICOP – Committee for Scientific Investigation of Paranormal now renamed CSI – Committee for Skeptical Inquiry.

included is the inexcusable sampling error in the CSICOP-sponsored Carlson test. Two tests with different sample sizes were combined and then split into smaller groups to remove the significant results.[5] Furthermore, anyone looking for evidence of publication bias should consider Dean & Kelly's Time Twin Test[6] (pp.237-241) and Dean's study of unaspected planets, which both remain unpublished.

Astrologers are much less inhibited about publishing negative results. Perhaps this is because they do not place such a high value on scientific validation and they are not reliant on funding.[7] As the authors of *The Case* point out, "*scientific research is of interest to only a minority of astrologers*" (p.187). Unlike CSICOP's publication *The Skeptical Inquirer*, *Correlation* and other astrological research journals have a history of publishing both positive and negative astrological studies. A classic example is the New York Suicide Study (1977) – an experiment that has been universally praised (Eysenck 1982:82) (Dean 1977:560) – where the three astrologers were unable to find any significant correlations. Even though it could have been quietly shelved, the NCGR Journal duly published the disappointing results.

So despite the inclusion of low-quality studies (by Dean's own admission), those with fundamentally different techniques to Western Astrology and those with a hypothesis that does not correspond to claims from typical astrologers, and despite omissions and the misreporting significant effect sizes, the authors doggedly insist "*Astrologers are unable to match birth charts to their owners better than guessing".*

Using White Swans to camouflage Black Swans

This goes beyond the mishandling of data; the authors follow a logic bypass. Scientific validity is not determined by democracy. To rephrase John Stuart Mill (1843) on inductive logical fallacy: No amount of observations of white swans can allow the inference that all swans are white, as the observation of a single black swan is sufficient to refute that conclusion. In the case of astrological research, the black swan results cannot be hidden or dismissed as publication bias, sampling error or low effect size. An effect in a large sample is notable. Often in science initial small effects can be refined into large effects. Marie Curie's extraction of radium from pitchblende started with a tiny effect and required years of refinement. Yet it's hard for astrologers and other researchers to do this without funding.

In the meta-analysis that measures subjects' ability to select their own natal charts, two studies stand out with the largest sample sizes: Wunder (2002) and Carlson (1985). Wunder's study shows a small positive effect size (.055) in favour of astrology and Carlson's shows a negligible effect size (.005). Wunder's results are taken from "*personal communication*" (presumably with Dean) and are as yet unpublished.

The results of self-selection in the Carlson study, however, are well documented, and suffer from two problems. The first is that the control showed a significant and inexplicable

[4] CFEPP - Comité Français pour l'Étude des Phénomènes Paranormaux

[5] P-values decline when samples of the same population are smaller.

[6] The Time Twin Test was mentioned in Dean & Kelly (2003) as *"(Dean forthcoming)".* I am unable to find a reference to publication of this experiment in a peer-reviewed journal as promised.

[7] Carlson, Narlickar and Randi were funded.

surplus in favour of astrology, and the second is that the subjects were unable to identify their own self-reported psychological profiles. This was reason enough for Carlson to rule out this particular test and to assert that "*Until and unless such a self-recognition ability can be shown, we conclude that subject selection of astrologically-derived information is a poor test of astrology*." (Carlson 1985)

In the years since this failure of a widely-used California Psychological Inventory, psychological analyses have adapted so that reports contain enough cues to enable self-recognition. This does not change the fact that participants given a psychological profile were unable to do with self-reporting what they were being asked to do from their birth chart without self-reporting. Yet, as we will see, the astrologers were able to match participants with their charts to a significant level.

Another problem with chart matching studies is that – as the authors correctly point out – many people know their Sun Sign, which may influence their choice. However, if researchers remove Sun Sign descriptions, they remove the heart of the horoscope. Alternatively, if you make choices with the same signs, the descriptions of Mercury and Venus can mislead those looking for Sun Sign descriptors. And, if you remove those who know about their Sun Sign, you are left with a sample who neither know nor care about self-reflection.

Lunar 'effects'[8]

It is not possible to assess the validity of the Lunar 'Effects' Plot (p.232) because the "50 typical lunar studies" are not cited. Publishing this type of controversial graph with the claim "*the studies provide no clear evidence for lunar effects*" without supporting evidence undermines credibility.

What we do know is that most lunar tests plotted on the graph took place pre-1985.[9] Any future reprint of *AuS* would need to be updated to include more recent experiments that provide clear evidence supporting lunar 'effects'. For example, in the past few months alone, there's been publication of research that supports a correlation between the lunar cycle and sleep patterns [ES 0.46] (Cajochen 2013)[10] and lunar phase and cardiovascular functions of the body (blood pressure and heart rate after exercise). (Chakraborty 2013)

Red Hair & Mars Rising

A more general meta-analysis (p.233) encompasses "*Nelson, red hair, Pluto, serial killers, time twins"*. This combines a strange mix of results without specific references, although studies are labelled on the graph. It is confusingly predominated by ten nodes plotting Nelson's forecasts of shortwave radio quality from the 1950s. Is this relevant here?

[8] I put the word '*effects'* in inverted commas as all that is being tested is evidence of correlation and not lunar causation.

[9] The authors state that 37 studies are published in Rotton & Kelly (1985) and the rest are "retrievable online".

[10] An on-line study of Cajochen's results claims the effect sizes (converted from Cohen's *d* from 0.59 (changes with sleep quality) to 0.80 for time to fall asleep increased by 5 minutes. See Lunar Circadian Rhythms. http://www.gwern.net/Lunar%20sleep

The correlation of red hair and Mars Rising (within 30° of the Ascendant) shows support for astrology in four tests. Yet the authors claim that the results "*failed to replicate as the sample size increased*." This is not correct. The larger the sample size, the higher the effect size with the largest study of 500 resulting in an effect size of 0.12 and an exceptional p value of $1.67 * 10^{-8}$. All the results of four tests were in the right direction. When the researchers (Hill 1988 & 1996) combined the confirming hits of Mars near the ascendant with the disconfirming frequency of Mars within 30° of the descendant, the probability is significant in all four tests and the effect sizes are much higher.[11] This data was also not included in the meta-analysis.

So, besides the "Mars-Redhead Tests", the remaining major studies in the book are Gauquelin (and replications), Carlson (rating and ranking tests), "*Can astrology predict E and N?*" (Dean 1985) and the New York Suicide Study. Three of the five have so far yielded evidence consistent with astrology.

Even the negative conclusions from the New York Suicide Study may be due to an artifact. The 311 suicide victims were split into three sub-groups based on the year of the suicide. If there is an astrological factor in suicide, such a major event should in theory show up in an individual's transits. Transits impact different natal charts in different ways each year. Yet the suicide data were judged by the lack of replication between the three smaller year-groups compared to the controls. However, for astrology to be valid, there should be differences between the three suicide year groups, not similarities.

Dean who was supportive of this experiment praised the division of data (Dean 1977:560) even though the belief that splitting samples simulates replication is specious.

There is more credibility when three astrologers cannot identify correlations, than when Dean fails to see a pattern in his Time Twin data. After all, it's sceptics' inability to detect patterns that makes them sceptical.

So we are left with Dean's study: "*Can astrology predict E and N?*" (1985) Given that the three largest groups of studies have shown support for astrology, a meta-analysis of all major studies would move Dean's result towards the edge of the 50% confidence limit (displayed as an inverted funnel on the graph). According to the authors' argument, anything beyond this threshold could be dismissed as publication bias and sampling error. Of course, the 'E & N' test results could be accounted for by many factors including Dean's conclusion that astrologer's were unable to predict E (extaversion) and N (emotionality) as measured by the Eysenck Personality Inventory in birth charts.

Dean's test relies on comparing charts using psychological measurements. The evidence from the Carlson test (see comments above) suggests there are issues with matching charts to these profiles – most especially before the 1990s. These are different measures and any divergence doesn't make one correct and the other incorrect. In addition, Dean's selection of only the extreme 6.66% instead of one third as is customary in this type of psychological

[11] The control showed 17% Mars rising (<30°) and 16% setting, and of the 1,452 redheads 23% had Mars rising and only 13% had Mars setting. The slight difference in the controls account for the fact that there are slightly more births with Mars rising due to more births near sunrise.

test meant that the astrologers had to analyse outliers instead of typical cases. Rather than comment further, Dean has kindly promised to send copies of some of the papers from the experiment.

Omission of Inconvenient Data

While the authors were compiling this book, they had some shattering news. It concerned what was the most rigorous experiment that underpins much of their case and is the basis for many negative opinions about astrology that are crammed into their book. This is the already mentioned, famous Carlson Double Blind Astrology test – the only astrological experiment to be published in one of the world's most prestigious science journals, *Nature*, in 1985. Carlson's negative results featured prominently in major newspapers around the world. According to Google Scholar, Carlson's paper has been cited sixty-seven times – this compares with seventeen citations for *Recent Advances*.

Shawn Carlson's tests involved up to twenty-eight astrologers who attempted to match charts for up to 116 subjects. (Currey 2011) His conclusion that there was a "*strong case against natal astrology as practised by reputable astrologers*" (Carlson 1985) has been criticised by three professors: Hans Eysenck (1986), Joseph Vidmar (2008) and Suitbert Ertel (2009). In 2009, Ertel demonstrated that the astrologers were able to 'confidence rate' matches with natal charts in a blind test to a probability level that cannot be dismissed as chance. (p=.037)

The Carlson results as assessed by Ertel put two key sceptical propositions into question:

1. The design and claims of the experiment accepted by the scientific community (Maddox 1994) were that astrology could be falsified. However, if astrology is falsifiable and falsification fails, it crosses Karl Popper's demarcation from pseudoscience to science. Astrology cannot be both falsified and 'unfalsifiable'. (p.145 Taleb & p.158)
2. These participating astrologers achieved their significant results in disadvantaged conditions without seeing or blaming artifacts (p.282-284), without hidden persuaders (p.284-288), without the Placebo Effect (p.288), without charging a fee (p.288), without communal reinforcement (p.288), without having to make astrology look good (p.289) or the client feel good (p.289), without cues like body language or cold reading (p.289-210), without the Barnum Effect (p.291), without hindsight bias (p.291), without making the client fit (p.294), without stacking the deck (p294), without confirmation bias (p.294), without selective memory (p.295) and without complexity (p.295).

   Astrologers are, of course, prone to illusion, but evidently only some astrologers and only some of the time.

Why was the U-turn in the Carlson test omitted from this book? Dean happened to have been in California at the time of the experiment and advised Carlson. Paul Kurtz – founder of CSICOP (now CSI), of which Dean is a Fellow – proudly spoke of the involvement of his sceptical organisation in the experiment. (Kurtz 2006) Later I discussed my analysis of the tests and Professor Ertel's review of the data in email exchanges with Dean.(Currey 2011) So the principal compiler of the book knows the history of the experiment well.

In preparing this review, I emailed Dean about the omission of the full story of the Carlson experiment. He responded:
"In the Case section, the research is assessed where possible at the meta-analytic level, not at the individual study level, although a few individual studies are described to illustrate procedures. Hence no Carlson."

By "*a few individual studies*", Dean appears to be referring to his own sceptical studies. Dean did however intimate that 'Carlson' might be included in the next update. Whether he will feature Professor Ertel's analysis that shows results favouring astrology, and update the rest of the comments, data and graphs accordingly, remains to be seen. For the practice of astrology, the review of the Carlson test is every bit as significant as the Gauquelins' statistical evidence. It is in my view a very serious omission.

Divination

The authors state that many astrologers have turned their backs on scientific testing (p.170 & p.255). They cite astrologers such as Lee Lehman (trained as a botanist) and Bernadette Brady (a former microbiologist), who question the value of statistical methods in astrology. Although the book makes much of artifacts, it never addresses the real limitations of testing archetypes empirically and replicating unique circumstances.

This trend, described as "*The retreat from testability*" (p.170), coincides with what the authors term the "*The retreat into divination*". Divination (p.255-273) presents a challenge for those who believe that science has a monopoly on truth. Diviners claim that supernatural forces are beyond measure, the intent must be pure, the results are context specific and the co-participation of diviner and subject is essential. With the observer effect, empirical testing and falsification is almost impossible.

The authors' response is to focus on the ghoulish details: the examination of entrails and the invocation of divine agents: angels, demons or gods. This is illustrated with Roman augurs divining by watching chicken behaviour. This is not an argument, but a combination of an appeal to emotion fallacy and a straw man fallacy. It's not science and it's not astrology.

Natural Astrology

In his influential book *The Moment of Astrology* (2003), Geoffrey Cornelius controversially defines judicial astrology as subjective and divinatory, and natural astrology as objective and causal.

Natural astrology includes celestial correlations with the natural world such as the oceanic and earth tides, volcanic and seismic activity and astro-meteorology. This division goes back to Ptolemy's era. Although natural astrology is the part of astrology that is most amenable to empirical tests, only two experiments from half a century ago were selected for inclusion in *Astrology under Scrutiny*. Dean and his colleagues then hail their lack of scientific basis as another failure of astrology. On an astro-meteorological study they state that "*the Jupiter Pluvius Effect (Bradley 1957), would, if true, rank among the most remarkable in astrology*" and Nelson's study of radio waves and planets are listed among other areas that are tested for "*evidence for astrology*".

So why have the authors omitted to include any of the many successful published studies that support natural astrology in *Astrology under Scrutiny?* Are they setting up a selective belief in "astrology of the gaps" so that, once a theory has been validated scientifically, it cannot possibly be considered astrology? Some of the missing studies include weather: Brier (1964), Ding (1982), Cerveny (1997-2010), O'Mahoney (2006), Varshneya (2010), Scofield (2010); earthquakes: Tamrazayan (1968), Zhao, Han and Li (2000) and Johnston (2008), the sunspot/planet/life interrelationship: Brown, Webb & Bennett (1958), Seymour (1997)[12], Wainwright (2004), Hung (2007) and Wilson (2008) and many scientific studies on celestial correspondence with flora and fauna such as Fuzeau-Braesch (2007).

The Origins of Astrology: Observation or Invention?

There are many other instances in *The Case* section where rationalisation is being used to justify beliefs. Section 26, The Discovery of Astrology, concludes that "*astrology could not possibly be based on observation"* and "*that it was less discovered than made up*". The arguments are convoluted and tenuous, but most of all misreport the history.

Assyriologists such as Abraham Sachs (1988) and Francesca Rochberg-Halton (1993), document over 600 years of Babylonian astronomical diaries. Star-gazing scholars recorded their nightly observations of celestial movements and terrestrial events on clay tablets in cuneiform script.

Perhaps the authors' overarching ideology would become scientifically unsound if it was revealed that astrology was at least in part developed in an empirical way through observation and the accumulation of an ancient database.

Quote mining and circular reasoning

The book is replete with disparaging quotations and negative anecdotes about astrology. While the sources of these quotes may be reliable in their own scholarly fields, it is clear that many are not in a position to pontificate about astrology. Those authors who have 'dabbled' in the last thirty years are likely to have been informed by the prolific output of the 'omnisceptic' himself, Dean. This has resulted in a dangerous circularity where the misinformers use the misinformed to justify further misinformation – a vicious circle.

The authors cite Wikipedia (p.138 & p.260). Yet the main article on Wikipedia on astrology devotes two paragraphs to Dean's conjecture and research. This page, like many 'fringe topic pages' on Wikipedia, has been compromised by sceptics.[13]

So the reader must navigate through an almost biblical deluge of chastisement which swamps the real criticisms of astrology. Yes, there are valid criticisms, but most of the

[12] One sentence is included on Percy Seymour. (p.120)

[13] Evidence of circularity surfaced in 2013 when it was revealed that a team of 120 'guerrilla skeptics', sponsored by sceptical organisations, had been covertly working behind the scenes to manipulate the content of Wikipedia, including astrology, to favour their ideology. See Susan Gerbic Guerrilla Skepticism on Wikipedia JREF Workshop. See http://www.astrologer.com/tests/wp.htm

arguments put forward throughout the book could equally apply to many of the hard and soft sciences, and in particular the practice of medicine. All this doesn't negate the criticism but it calls for greater perspective and balance.

Of course criticising the critics does not absolve astrology of some very real criticism. Astrology is an unregulated profession. The authors use this fertile ground to collect many radical and contradictory beliefs and statements by astrologers.

The 110 Best articles in *Astrologie in Onderzoek*

The 110 best articles comprise philosophical commentary on astrology and astrological practice, various experiments, reviews of books and conferences. The contributors to *Astrologie in Onderzoek (*AiO) journal (1977-2003) appear to have been an active community in the Netherlands and their output will be a valuable resource for those interested in astrological research.

The tone is predominantly sceptical. Any experiment that shows promise is quashed by a closing comment, presumably added later by the authors of *AuS*. Sometimes this is reasonable. Most of the experiments work with small sample sizes or larger samples that lack times of birth.

Astrologie in Onderzoek claims a level of impartiality that surpasses *Correlation* or *APP* in France. However, this standard of neutrality is not reflected in most of the 110 articles. For example, Wout Heukelom's review of three large-scale tests (p.42): Carlson (1985), Dean (1985 & 1986) and McGrew and McFall (1990) claims that "*He (Heukelom) plays the role of a devil's advocate who criticises both astrologers and scientists."* Although these studies have many faults that have been documented in *Correlation* (Vidmar 2008) and elsewhere, Heukelom lists seven points that reiterate the researchers' criticisms of the astrologers. By not criticising the three experiments, the editor of *Astrologie in Onderzoek* reveals himself to be partial towards the sceptical researchers.

The most bizarre and incongruous article is Rudolf Smit's analysis of the charts for the birth and death of Jesus Christ.(p.28) He works with a crucifixion day of Friday, 3 April 33 AD – a date proposed by a number of scholars (Humphreys 1985). Critics have long pointed out that a total solar eclipse could not coincide with a crucifixion around the feast of the Passover because that date is set by the full moon after the March Equinox. This new theoretical date compromises by selecting a less dramatic lunar eclipse. Smit, who by this time, (1988) is sceptical of astrology, tests five predictive techniques (eclipses, progressions, directions and solar returns) and finds that four converged at 16:06 on 3 April 33. The cosmic irony is that within a few months the precision of Smit's rectified time is cast into doubt after Dutch astronomers recalculated the value of deceleration of the Earth's rotation known as Delta T or ΔT for that period. (p.33)

Smit and the Placebo Effect

Rudolf Smit, in his section *Astrology My Disaster*, relates how he suffered three years of clinical depression after he became disillusioned with astrology. Astrologers might like to keep this in mind before embarking on the same journey. Smit is candid and sincere in relating this sad tale. It gives great insight into the mental processes of an astrology sceptic.

What surprised me was that a professional astrologer could be shocked to discover he could obtain "correct readings from wrong charts".

Just imagine if every doctor packed in their practice when a patient made a speedy recovery despite misdiagnosis and the wrong prescription. This is the Placebo Effect that has become a recognised and valuable tool in medicine; it would be naïve not to expect it to apply to astrology also. But to illustrate the Placebo Effect in the book, instead of using a salubrious example like medical practice, the authors chose to cite a witch doctor (p.288).

Equally, when Carlson confirmed that "*the test subjects were unable to select their own CPI (psychological) profile at a better-than-chance level*" in *Nature*, should psychologists abandon their field? Carlson, though sceptical of astrology, advised that "*We cannot use the result to rule against the astrological hypothesis..."* (Carlson 1985) If a self-completed report on your known traits is impossible to recognise, it is arguable that you would be no better a judge of a report on your potential and hidden talents. Yet, as stated, remarkably the astrologers were successfully able to match the profiles with the charts in a blind test. (Currey 2011)

Before becoming a professional astrologer, some critical thinking and study is necessary. Books by Michel Gauquelin and *Recent Advances* (and now *Astrology under Scrutiny*) should alert the would-be astrologer to the possibility of false attribution to fake horoscopes. Clients who seek to discover their identity from a consultation are unlikely to reject an incorrect analysis since they commissioned the consultation <u>because</u> they have no strong model of themselves for comparison.

But to be fair, Smit's recant was more complex than this. His epiphany came in 1984 from an anonymous paper (p.20) that summed up an analysis of astrological counselling by none other than Dean himself…

The authors try hard to explain why otherwise normal individuals should pursue an interest in astrology, based only on subjective evidence, anecdote, ancient tradition and belief. So it would not be unfair for us to speculate as to why the authors themselves devote so much energy to the thankless task of trying to prove a negative.

Smit cannot stay away from astrology and his chronic cognitive dissonance suggests that disproving astrology can become a form of therapy to relieve uncomfortable ambivalence. Confirmation bias and groupthink reassures the convert that the decision was right. It is known as 'post-purchase rationalisation' or 'Buyer's Stockholm Syndrome'. Besides the authors, astrological converts (including, like myself, sceptics who become astrologers) and religious converts, experience this. This explains why most astrologers and most scientists who have never 'switched sides' are indifferent to the whole debate.

The Gauquelin Research and the Parental Tampering Conjecture

Where the book has most value is as an illustrated history providing insight into an intriguing phase of astrological research. This period really starts with Michel Gauquelin as a seven-year-old in pre-war Paris in 1936, and lasted up until about a decade ago. From what I know of the complex chain of events, the account seems clear and informative. It is also impartial in documenting the dirty tricks of various sceptical groups. But, as with all

historical narrative, it is also subjective, and this resulted in a critical omission: Suitbert Ertel's critique of Dean's theory of parental tampering with children's birth data.

Dean's outlandish hypothesis emerged at a time of almost universal consensus that Gauquelin did indeed find an effect in spite of over thirty years of sometimes bitter wrangling with sceptics. The Gauquelin effect size may not be large (.03 to .07) (Gauquelin 1988), but it is significant and replicated. It may not be part of astrological practice, but it is consistent with astrological planetary principles.

Dean speculates that Gauquelin's results can be accounted for by parents who were sufficiently inspired by celestial lore from almanacs to falsify the birth times of their newborns or by self-attribution.[14] He supports this with his translation from a popular almanac *Le Grand Calendrier et Compost des Bergers* of 1493:
"Degre d'une etoile fixe que Bergiers appellet AlKabor c'est a dire le grat chien et dient que ceux qui sont nes sous la constellacion et quelle est en l'ascendant ou au milieu du ciel elle signefie bonne fortune ..."

Dean translates only part of this Medieval French as persons *"born under a* ***planet or star above*** *the horizon or culminating are most fortunate."* However, the full translation suggests a different meaning:

"Degree of a fixed star which the Shepherds (star gazers) call Al Kalb that is to say the Greater Dog and say that those born ***under the constellation*** *and which is* ***on*** *the ascendant or* ***at*** *the midheaven signifies good fortune ...".* This refers to the constellation Canis Major which includes the brightest star in the night sky, Sirius, the Dog Star. The constellation is not on the ecliptic and there is no reference to planets above the horizon or west of the Midheaven.

One would think that after eight years of research (p.73), Dean might have selected a quote that upholds his case. Even if supportive quotes exist in some obscure almanac, there are endless loose ends and few satisfactory answers.

Why would parents seek to conform to Gauquelin's neo-astrology (discovered over half a century later) and not traditional astrology?[15] What would possess a family of rational scientists to lapse into superstition by falsifying their son's horoscope so he could become the next Louis Pasteur? Why would any parent fake a birth time to position what was then known as a 'malefic' planet such as Mars or Saturn near key horoscopic positions for their newborns? And if so, why place them just past the Midheaven and not on the Midheaven? Why would they do this for some planets but not for the Sun whose astrological significance was considered hugely important[16] and position is most easily worked out? How could parents know how to lie in proportion to their infant's future eminence in the field appropriate to the planet? Why did they not tamper with birth times of their less

[14] And the possibility of self-attribution by subjects.
[15] In *L'influence des Astres* (1955) Gauquelin argued that what he was demonstrating was not evidence of astrology, but some other celestial influence.
[16] On page 63 *AuS "... astrologers in the 1920s consider (sic) sun signs to be more important than any other chart factor."*

prodigious offspring? What made parents collect precise data from almanacs and then mysteriously round it to the nearest hour or half hour when they turned up at the town hall to register the birth? How could this strange conspiracy to defraud the authorities occur throughout continental Europe and the USA and yet there is zero evidence that it ever occurred?

And which almanacs contained these strange instructions? I went through a number of French, British and American almanacs with the help of astrological archivist and historian, Philip Graves. Some featured astro-meteorology and mundane astrological forecasts. The French *Almanach Astrologique* (1856) sounded appropriate for Gauquelin's subjects, but the astrology was limited to satirical Sun Sign interpretations and preference was given to natural phenomena like tidal tables. Some British (therefore unlikely to have influenced Gauquelin's samples) almanacs contained rising and setting planets (including Uranus) but the advice was how best to view them with a telescope and not on how to use astrology to make your newborn an eminent professional.

How does Dean's brainchild account for the replication of Gauquelin's theory with still births for German nobility over five centuries [p=0.0004 ES=.105] (Müller 1993) or in the highly significant [p<.000001] retrospective correlation of angular planets and personality traits in 500 pedigree dogs (Fuzeau-Braesch 2007)? Would Dean now have us also believe that Parisians are falsifying their pet's birth times?

On the plus side, Dean's unlikely scenario gives an alternative account as to why Gauquelin's correlations in both eminence and heredity drop off after 1950 when birth records were more reliable (p.112 & p.128). However, this subtle single-factor time-sensitive correlation that only appeared in exceptional cases may have been weakened by induced and caesarean births, as Gauquelin believed. So the 'Mars Effect' can now only be demonstrated objectively in combination with other small 'effects' – which were undetectable by Gauquelin's single factor approach. This is more in line with astrological practice where an astrologer attempts to synthesise around fifty configurations in a chart.

If we apply Occam's Razor, as the authors suggest (p.351), then the plausibility lies somewhere below astrology but above the myth of delivery of babies by a stork. Yet it cannot be ruled out as impossible, as solid evidence could one day appear. By pushing what is no more than an unfalsifiable post-hoc fantasy as a viable theory, Dean risks putting all his work, including valid criticisms of astrology, into question. As a belief it offers a comfort zone for those who hate astrology more than they love science. It is a safe haven for denial of Gauquelin's black swan – a swan that refutes the belief that all swans are white.

Who will read Astrology under Scrutiny?

Astrology under Scrutiny may appeal to the receptive sceptical audience, comprised of over 100,000 subscribers to *The Skeptical Inquirer*, *Skeptic* (US) and *The Skeptic* (UK).

However, astrological practitioners are advised that this book will not provide many astrological innovations that may enhance their practice, although there are some insights. (see Tarvainen 2014) However, greater awareness of hidden persuaders and artifacts will raise the quality of their practice.

If you have done any research into astrology or have studied the history or cultural impact of astrology, the tendentious content of *AuS* will at times get you reaching for your red pen.

Yet addressing the criticism, understanding experimental limitations and pitfalls and separating fact from fiction will make you a better astrologer, researcher and scholar. I found most of the content very stimulating and would recommend it to those with the capacity for critical thinking to know there is more to this story. It provides definition to the sceptical case. Without this book, astrology and scientism would co-exist in ever-receding universes. Some astrologers might like to be in that state, but it's not my vision of progress … and astrology needs to advance to help a wider audience.

Although some points in the book are laboured and others are confusing, there's plenty to challenge your mind. Just when you think you cannot bear to hear another whinge about astrology, you hit some wonderfully redeeming sections. There's even humour with cartoons and cuttings, notably from Kim Farnell's *Impractical Astrologer*. This is followed by sections outlining the benefits of astrology (pp.330-334 & pp.339-340). Here the authors put up a better argument than any astrologer has ever provided. Of course these benefits apply only so long as you don't blow it by daring to claim that astrology is real.

Regrettably, the case *for* astrology is mostly packed into a few pages tucked away at the end and dwarfed by hundreds of pages presenting and supporting the authors' case against astrology. My estimate is that the content ratio (For vs Against) is 1:30 and this cannot claim to be an objective scientific presentation of a debate which has raged for over five hundred years.

Nevertheless, if you've read this far, then this book should be on your shelves.

Conclusion

Although *Astrology under Scrutiny* is about astrology, it is not an astrology book since there are few astrological claims and few revelations that advance astrology. Nor is it science, since it falls short of its own stated standards. Evidence is selected to favour only one point of view. Inconvenient facts and opposing views are ignored or dismissed. Personal opinions without expertise, and unreliable anecdotes, are presented uncritically. When advocacy masquerades as science, it increases a growing public sense of disillusionment with the claims of scientists. But until a more balanced book comes out, *Astrology under Scrutiny* can claim to be the most informed and informative book of its kind.

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References

Brier, G & Bradley, D. (1964). *The Lunar Synodical Period and Precipitation in the United States*, Journal of Atmospheric Sciences Vol:21:386-395

Brown, Webb & Bennett, (1958), *Comparisons of Some Fluctuations in Cosmic Radiation and in Organismic Activity During 1954, 1955 and 1956*, American Journal of Physiology,

Carlson, Shawn (1985), *A double-blind test of Astrology*, Nature Vol.318, pp.418-425 [5 December 1985]

Cerveny, R. S., Shaffer, J. A., & R. C. Balling Jr. (1997), *Polar temperature sensitivity to lunar forcing?*, Journal of Geophysical Research. 24(1), 29-32.

Cerveny, R. S., & R. C. Balling Jr. (1999) *Lunar influence on diurnal temperature range*, Journal of Geophysical Research. 26(11), pp.1605-1607.

Cerveny, R. S., & J. A. Shaffer (2001), *The Moon and El Niño,* Journal of Geophysical Research. 28(1), 25-28.

Cerveny, R. S., B. M. Svoma, and R. S. Vose (2010) *Lunar tidal influence on inland river streamflow across the conterminous United States,* Journal of Geophysical Research. 37.

Chakraborty, U. & Ghosh, T. (2013) *A study on the physical fitness index, heart rate and blood pressure in different phases of lunar month on male human subjects*. International Journal of Biometeorology. 2013 Sep; 57(5):769-74

Currey, Robert (2011) *U-Turn in Carlson's Astrology Test?* Correlation. Vol 27(2) July 2011

Dean, Geoffrey & Mather, Arthur (1977) *Recent Advances in Natal Astrology: A Critical Review 1900-1976.* Prepared under the aegis of the Astrological Association. Analogic, WA, Australia

Dean, Geoffrey & Kelly, Ivan (2003) *Is Astrology relevant to Consciousness and PSI?* Journal of Studies 10 (6):175-198

Ding & Reiter,(1982) *A relationship between planetary waves and persistent rain- and thunderstorms in China*, Archives for Meteorology, Geophysics and Bioclimatology, Ser.B, 31, pp. 221-252,

Ertel, Suitbert, (2009), *Appraisal of Shawn Carlson's Renowned Astrology Tests*, Journal of Scientific Exploration, Vol.23, #2. pp.125-137

Eysenck, H. J., & Nias, D. K. (1982) *Astrology: Science or Superstition*? London: Temple Smith; New York: St Martin's

Eysenck, Hans (1983), *Methodological Errors by Critics of Astrological Claims*. Opening lecture at third Institute of Psychiatry Conference, May 1983

Eysenck, Hans (1986) *Critique of Double-Blind Test of Astrology,* Astro Psychological Problems, Vol.4, January 1986

Fuzeau-Braesch, Suzel & Denis, Jean-Baptiste (2007) *An Empirical Study of Some Astrological Factors in Relation to Dog Behaviour Differences by Statistical Analysis and Compared with Human Characteristics.* Journal of Scientific Exploration, Vol. 21, No. 2, pp.281-293

Gauquelin, Michel (1988) *Written in the Stars.* Aquarian Press, Wellingborough, UK.

Hill, Judith; Thompson,Jacalyn (1988) *The Mars-Redhead Link: A Scientific Test of Astrology* NCGR Journal, Winter 1988-89.

Hill, Judith (1996) *Redheads and Mars: A Scientific Testimony* The Mountain Astrologer, May 1996, pp 29-40.

Humphreys, C. & Waddington, G (1985) *The Date of the Crucifixion*, Journal of the American Scientific Affiliation 37: 2–10.

Hung, Chin Cheh (2007), *Apparent Relations Between Solar Activity & Solar Tides caused by Planetary Activity,* NASA, Glenn Research Center, Cleveland, Ohio

Johnston, Brian T. (2001) *Planetary Aspects and Terrestrial Earthquakes,* Cura

Kurtz, Paul (2006) *Science and the Public: Summing Up Thirty Years of the Skeptical Inquirer*, Skeptical Inquirer, September 2006 via Skeptical Inquirer Vol.33.4 July/Aug 2009

Maddox, John, (1994), *Defending Science Against Anti-Science*, Nature, Vol. 368, Issue 6468, pp.185 Carlson test is a *"perfectly convincing and lasting demonstration."*

McRitchie, Ken (2004) *Environmental Cosmology*. Cognizance Books, Toronto

Phillipson, Garry (2000) *Astrology in the Year Zero*. Flare Publications, London
Mill, John Stuart (1843) *A System of Logic, Ratiocinative and Inductive*, Harper, NY 8th edition pp.196, 226, 228:
Müller, A., & Menzer, G. (1993). *1145 Angehörige deutscher Dynastien [1145 members of German dynasties]*. Astro-Research Data 4. Waldmohr, A. P.
O'Mahony, G. (2006). *Rainfall and Moon Phase*. Quarterly Journal of the Royal Meteorological Society, Vol:91 pp.196-207
Phillipson, Gary (2000) *Astrology in the Year Zero*, Flare Publications pp.124-166
Press, Nona (1978) *An astrological suicide study*, Journal of Geocosmic Research 2(2) 23-33
Rochberg-Halton, Francesca (1991) *The Babylonian Astronomical Diaries*. Journal of the American Oriental Society Vol. 111, No. 2 (Apr. - Jun., 1991), pp.323-332
Sachs, A.J. & Hunger, H. (1988) *Astronomical Diaries and Related Texts from Babylonia*, Austrian Academy of Sciences, Vienna.
Scofield, Bruce (2010) *A History and Test of Planetary Weather Forecasting,* University of Massachusetts, Amherst.
Seymour, Percy (1997) *The Scientific Basis of Astrology*, W. Foulsham, Slough, U.K.: Quantum, November 1997
Tarvainen, K (2014) *Positive Results in the Book Astrology under Scrutiny*, Correlation 29(2) 2014 pp.41-47
Tamrazyan, G. (1968) *Principal Regularities in the Distribution of Major Earthquakes Relative to Solar and Lunar Tides and other Cosmic Forces*, Icarus, Vol.9,pp.574-592
Varshneya, Vaidya, Pandey, Chimote, Damle, Shekh & Karande, (2010), *Forecasting Rainfall for 2010 of Gujarat based on Astro-meteorology*, Anand Agricultural University, Anand – 388 110, Gujarat, India
Vidmar. Joseph, (2008) *A Comprehensive Review of the Carlson Astrology Experiments*, Correlation, Volume 26 (1)
Wainwright, Glynn (2004) *Jupiter's Influence,* New Scientist
Wilson, I.R.G (2010) *Do peaks in planetary tidal forces acting upon the Sun influence the Sunspot cycle?* The General Science Journal
Zhao, Han & Li (2000), *Variation of Lunar-Solar Tidal Force and Earthquakes in Taiwan Island of China. Earth, Moon, and Planets,* Springer, Netherlands. Vol. 88 pp.123–129