

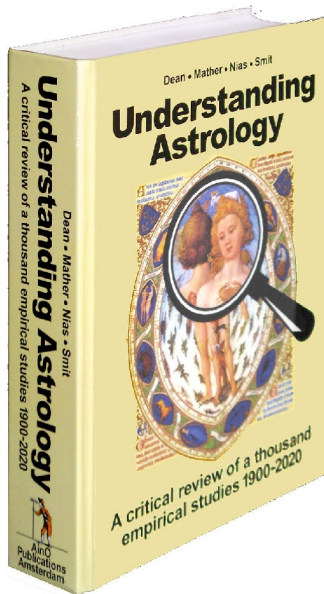
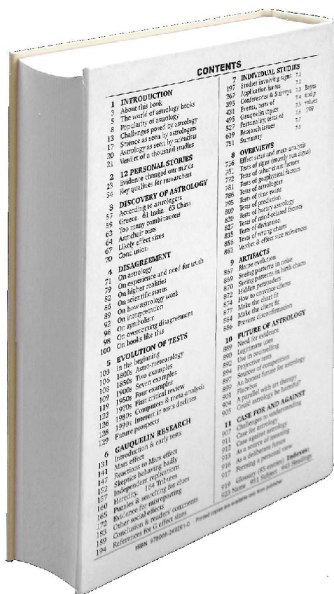
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wout.heukelom@hetnet.nl

Lederambachtstraat 119, 1069 HM Amsterdam, The Netherlands



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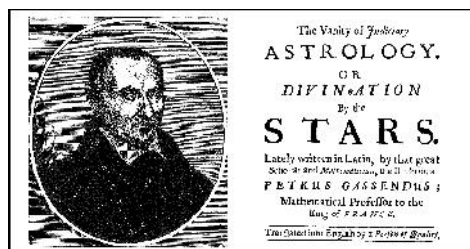
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We welcome your comments



8. OVERVIEWS

Here let us a while attend to the *Plea of Astrologers*, and hear what they can allege in their Defence. Their principal Allegations are, that the Rules and Placits [judgements] of their Art ... were grounded upon long Observations: that the same are still confirmed by many experiments ... fault is not to be imputed to the Art itself, but to the unskilfulness or negligence of the Artist (Pierre Gassendi 1659:68).

8.1 INTRODUCTION

8.1.1 Overviews were not meant to be easy

In 1945 things were going well for Virginia Ehrlich, research director for *American Astrology*:

I have been applying statistical techniques to astrological concepts for a quite a while. ... I believe I can explain better now, after I have worked and solved some of the problems presented by my studies, what statistics can or cannot be expected to do for astrology. ... There is the purely spiritual or philosophical aspect, and statements dealing with this phase are beyond human measurement. [But] statistics can definitely take astrology out of the "unfounded superstition" class, and place it in the category of proven beliefs (*American Astrology* November 1945:40-41).

But there was a severe lack of expertise and of resources that in orthodox disciplines would be taken for granted. Even in the UK it was not until 1972 that the AA (founded 1958) established a Records Section in Norfolk, a Library in Lancashire, and a Research Section in Kent.

Around the world statistical research had made slow progress until the 1980s when *Recent Advances* and personal computers made research and research groups more popular.



Top: An AIR (Astrological Investigation and Research) meeting in London Nov 1981. The group met regularly for about 15 years after the launch of *Correlation* in 1981. From left: Austin Prichard-Levy, Nick Kollerstrom, Mike Startup, Graham Douglas, Charles Harvey, Simon Best (editor of *Correlation* holding its first issue), Dave Stevens (out of picture), Patrick Curry, all names that would later become familiar to *Correlation* readers.



Bottom: NCGR researchers from the New York chapter at a meeting October 1981. From left: Joanna Shannon, J Lee Lehman, Nona Press, Lenore Canter, Julian Armistead. Then Neil Michelsen with one of the printers from his ACS computer in San Diego, also in 1981.

The result has been hundreds of studies and the challenge of assessing them without mental paralysis. Since the 1970s the accepted solution in science has been to reduce each eligible study to an effect size and plot it against sample size (Light and Pillemer, *Summing Up: The Science of Reviewing Research* 1984). The result can tell us at a glance what is happening.

8.2 EFFECT SIZES AND ASTROLOGY

8.2.1 Asking the right questions

To test astrology we must ask the right questions. Not *is astrology true?* (What is truth?) Or *does it work?* (Can thousands of astrologers be wrong?) Instead we should ask about *extent*. To what extent does astrology predict behaviour? To what extent do astrologers agree with each other? To what extent is astrology better than psychology? In short, we should ask about *effect size*, the extent to which one thing is associated with another such as height and weight.

The good news is that in principle any test result with a p value and a sample size N can be reverse engineered via a common table of p -for- z values to give an effect size r using $r = z / \sqrt{N}$

(*p* values are a measure of *statistical* significance for a statistical measure such as *z* whereas effect sizes are a measure of *practical* significance, which is not merely something else but there is no simple calculation that will produce effect sizes from *p* values). The bad news is that the *p* values need to be more or less exact (they rarely are), the test needs to be relevant to correlation in the first place (it may not be), and things can quickly become technical.

There are two main ways of expressing an effect size:

- The ***d* (for difference) effect size** used in medicine and expressed in standard deviations between observed and expected means. It has no fixed limits, which is a disadvantage (see next), so it is not used in the social sciences.
- The ***r* (for regression) effect size** used in social sciences and in this book. It is a number between +1 (complete association) and -1 (complete inverse association), where 0 = zero association, and has the big advantage of allowing effect sizes to be compared. Technically it is expressed as a correlation such as *r* for continuous variables, (phi) for yes/no variables, and (rho) for ranked variables. All are readily calculated given the right data.

Always be aware that effect sizes and *p* values are not the same thing, see 7.7.2016.3, Thus when Gauquelin reported *p* < 0.0001 for planetary effects they seemed hugely impressive, but their effect sizes (which for thirty years nobody bothered to calculate) were typically *r* < 0.10 for less than 0.01% of the population, or uselessly small.

Effect size *r* can be calculated from effect size *d* using

$$r = (d/2) / \sqrt{[(N-2)/N + (d/2)^2]}$$

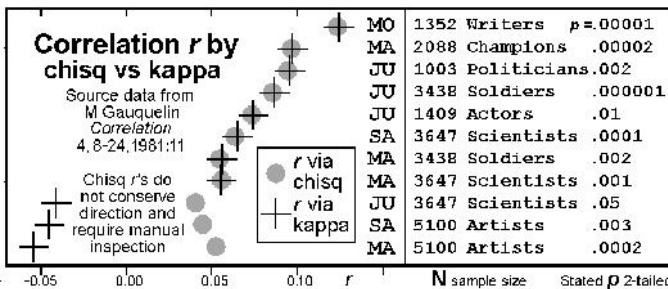
or from *z* or Student's *t* or χ^2 (chi-squared) using

$$r = z/\sqrt{N} \quad \text{or} \quad r = t/\sqrt{(t^2 + N - 2)} \quad \text{or} \quad r = \sqrt{(\chi^2/N)} \quad \text{if } df=1$$

where *N* is the sample size (Paul Ellis, *The Essential Guide to Effect Sizes* 2010). A measure not involving square roots and thus giving direction directly is effect size *k* (kappa), where

$$k = (\text{observed frequency} - \text{expected frequency}) / (N - \text{expected frequency})$$

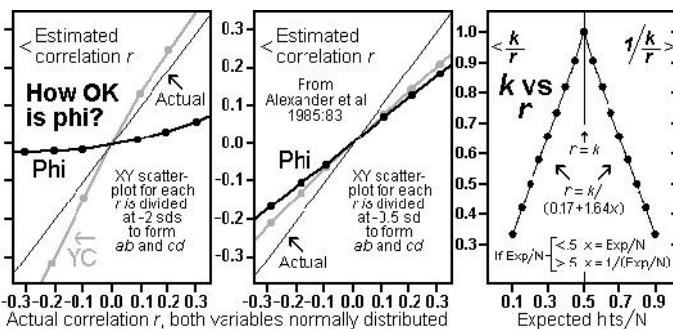
The value of *k* will be identical to *r* only if the value of expected hits = *N*/2, which is true of many tests in astrology. But for other values of expected hits *k* is easy to correct:



For example, kappa after correction (via expected hits/ *N* see below), and *r* (via chi-squared from exactly the same data) for Gauquelin professionals in *Correlation* 4, 11, 1981 are closely similar. And *r* via kappa gives the direction of *r* directly whereas *r* via chi-squared does not.

RA Alexander et al (*Educational and Psychological Measurement* 45, 79-87, 1985) tested 14 measures

of association for 2 x 2 (*abcd*) tables using constructed normal X and Y distributions for each value of Pearson *r* from -0.90 to +0.90 in 0.10 steps. The best performers were Yule's Colligation $YC = (\sqrt{x-1})(\sqrt{x+1})$ and Chamber's $r_e = [(x+1)/(x-1)] - [2x \log_e/(x-1)^2]$, $x = ab/cd$. The widely-used phi = $(ad-bc)/\sqrt{((a+b)(a+c)(b+d)(c+d))}$ performed relatively poorly:



The two left plots show how phi under extreme or normal conditions tends to strongly or weakly underestimate the actual Pearson *r* correlation. Our own right plot shows how closely (albeit not exactly) kappa is related to Pearson *r* if expected hits/*N* 0.1, which allows easy conversion to *r* typically within 1%.

Kappa was originally a measure of rater agreement and has been generally neglected as a measure of effect size. But it is easy to

calculate, easy to convert to *r* within 1% for $Exp/N \geq 0.1$ (2% low if $Exp/N = 1/12$), automatically takes care of direction, and is generally well-suited to the tests common in astrology.

8.2.2 Examples of observed effect sizes

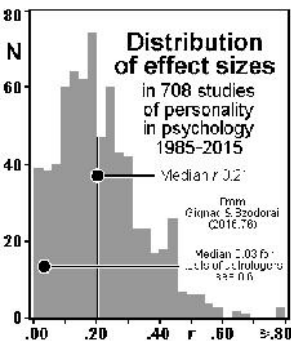
Below are nearly 80 effect sizes from numerous sources especially Meyer et al, *American Psychologist* 56(2), 128-165, 2001, who give over 250 examples in psychology. For convenience our list includes examples from the present work.

1.00 Perfect eg feet vs metres or 100% hits	0.10 Failure vs blaming bad luck
0.95 Arm length right vs left	0.09 Extraversion vs money spent on holiday shopping
0.90 MO position vs tide height (0.05 vs earthquakes)	0.09 Extraversion vs success in sales
0.90 Social desirability of trait vs perceived accuracy	0.08 Ever smoked vs lung cancer within 25 years
0.85 Average behaviour over two 14-days periods	0.08 Hopelessness scores vs subsequent suicide
0.83 Male height age 2 vs 4 (0.60 age 2 vs 18)	0.08 Graphology in matching tests (neutral scripts)
0.72 IQ between MZ twins (0.51 DZ twins)	0.08 Gauquelin planetary effects (ignoring direction)
0.70 Male weight age 10 vs 18 (0.30 age 2 vs 18)	0.06 Baseball single-play outcome vs batting average
0.70 US adult height vs weight (c.1980, 0.44 in 1996)	0.06 Sun sign self-attribution (see 8.3.7)
0.65 Wechsler IQ test vs high school grades	0.03 Astrology in matching tests (see 8.6.1)
0.60 Nearness to equator vs day temperatures in USA	0.02 Aspirin vs reduced risk of fatal heart attack
0.56 EPI scores vs self/peer ratings of E and N	0.00 Coin tossing or 50% hits
0.50 Height of fathers vs height of adult sons	-0.17 Conscientiousness vs sexual infidelity
0.42 City size vs jaywalking (if usually lawful else 0.22)	-0.20 Agreeableness vs sexually aggressive behaviour
0.39 Physical attractiveness between romantic partners	-0.20 Job satisfaction vs absenteeism
0.35 Cognitive behavioral therapy (0.55 for phobias)	-0.27 Neuroticism vs subjective well-being
0.32 Lay predictions from handwriting vs gender	-0.34 Elevation above sea level vs day temps in USA
0.32 Mammogram vs breast cancer within one year	-0.41 Good mood vs aggressiveness
0.30 Height of husbands vs wives	-1.0 Perfect inverse eg night vs day or 0% hits
0.30 Improving teamwork vs job satisfaction	Test-retest agreement same subjects
0.30 Placebo effect mild psychological disorders	0.98 Rating sex with 1% error
0.29 Big Five assessed by partner (0.32 by clinician)	0.92 Achievement batteries)
0.25 Internal locus of control vs subjective well-being	0.90 IQ tests) See
0.23 Drinking alcohol vs aggressive behaviour	0.90 Self-ratings of ability) also
0.21 Typical <i>r</i> effect size in psychology or 60.5% hits	0.88 Aptitude batteries) 8.6.12
0.20 Employment interviews vs job performance	0.85 Personality inventories)
0.20 IQ vs appreciation of music	0.82 Structured interviews (0.61 unstructured)
0.20 SAT scores vs later US college grades	0.80 Ranking of ability (0.48 for ratings)
0.17 Extraversion vs sexual activity	Mean agreement between practitioners
0.16 Extraversion vs subjective well being	<i>In matching</i>) palmists 0.11 See 8.6.7
0.14 Pain reliever eg ibuprofen vs headaches	<i>tests</i>) astrologers 0.10 See 8.6.12
0.13 Media violence vs interpersonal aggression	<i>On isolated factors: Interpretation Features</i>
0.12 Conscientiousness vs job proficiency	Graphology eg extraversion 0.42 slant 0.85
0.12 Scarcity vs perceived value of goods	Rorschach inkblots 0.36 0.84
0.11 Antihistamines vs runny nose and sneezing	TAT (ambiguous pictures) 0.70
0.11 IQ vs head size (0.15 vs brain volume)	

Explanation: At top, an effect size of 1.00 means the correlation is perfect, as between feet and metres. You always get 100% hits. At 0.50 tall fathers tend to have tall sons, with individual exceptions. At 0.00 the average hit rate is the 50% predicted by chance. A negative effect size means more of one gets less of the other as in night vs day. If *x* and *y* are measured in standard deviations, *r* is the slope of the line relating *x* to *y*, so 0.40 is 40% as useful as 1.00. Notice how effect sizes can be substantial for orthodox measures such as the EPI, Big Five and SAT, but never for astrology.

These values are subject to experimental error, so differences are to be expected.

Caution: A tiny effect is not the same as a tiny effect size. The bending of light by gravity is a tiny effect (the sun deflects the grazing light of a star by 0.000486 degree, roughly the angle subtended by a human hair at 10 m), but the effect size is unity, which allows exact prediction of the bending. *Size* is the effective agent.



8.2.3 How small is small? How large is large?

In 2016 psychologists GE Gignac and ET Szodorai (*Personality and Individual Differences* 102, 74-78) plotted the distribution of effect sizes in psychological studies 1985-2015 (pictured), and concluded:

r = 0.10 is Small, *r* = 0.20 is Medium, *r* = 0.30 is Large

So Gauquelin's effect sizes are mostly less than small. But concern over the labels *small*, *medium* and *large* hides an important issue for working astrologers, namely how to rate an effect size in practice, as in "how many hits will X deliver more than tossing a coin?". For them this is what research should be finding out, otherwise why bother? Yet in more than 40 years of *Correlation* the issue has never been raised,

8.2.4 Converting effect sizes into other useful measures

Perhaps the most directly useful measure is the **equivalent hit rate** officially known as the *binomial effect size display* from its derivation via 2×2 tables by US psychologists R Rosenthal and DB Rubin (*Journal of Educational Psychology* 74, 166-169, 1983) and given by

(50+50r)% when the hit rate expected by chance is 50%,
which translates to every **2/r chart readings** averaging **one hit** more than tossing a coin.
This is the key issue that is absent from the pages of *Correlation*.

Thus if astrology has no effect ($r = 0.00$) we have a $50+50 \times 0.00 = 50\%$ chance of predicting whether someone has X, so there is no advantage over tossing a coin. But if $r = 0.10$ due to astrology, our hit rate is $50+50r = 55\%$, and on average every $2/r = 20$ readings have 1 hit more than tossing a coin. Only if $r=1.00$ is every result a hit.

A 2×2 example is the 5507 forecasts of radio quality famously made by Nelson during 1964-1982, see 7.4.1978.2:

	Actual quality =	Good	Poor		The emphasis on hits in cell <i>a</i> seems good news. But the proportion
Nelson's	(	Good	<i>a</i> 4431	<i>b</i> 586	) of good on days forecast as <i>good</i> $4431/(4431+586)=0.883$ is little
forecast	(	Poor	<i>c</i> 427	<i>d</i> 63	) different from that on days forecast as <i>poor</i> $427/(427+63)=0.871$.

So Nelson's apparent success was like forecasting rainless days in a desert. Effect size $\phi = (ad-bc)/\sqrt{((a+b)(a+c)(b+d)(c+d))} = 0.010$. Hit rate = $50+50 \times 0.010 = 50.5\%$, so every 200 forecasts had 1 hit more than tossing a coin.

The above also **works in reverse**. Suppose astrology has to be right at least 75% of the time:

Here (50+50r)% has to be at least 75% and $50+50r$ has to be at least 75, so r has to be at least $(75-50)/50 = 0.50$.

Both **relative risk** and **odds ratio** are widely used in medical studies and are given by:

relative risk = risk of X if you have Y / risk of X if you don't have Y = $a/(a+b) / c/(c+d)$
odds ratio = odds of success / odds of failure = $(a/b) / (c/d)$

Thus the risk of lung cancer if you smoke is about 10 times the risk if you don't smoke (more if you are elderly and a lifelong smoker). The risk of an eminent professional with Mars in a key sector being a sports champion is about 1.2 times the risk if Mars is not in a key sector, and 1.0 times (ie no risk at all) if the person is not eminent or the Mars effect is a social artifact. As for odds, when tossing a coin we expect as many hits (50%) as misses (50%), so the odds of success = $50/50 = 1.0$. Unless the odds when using astrology are >1.0 , we are clearly better off tossing a coin..

Relative risks involve *probabilities* (ie proportion of X vs proportion of not X), whereas odds involve *events* (ie cases of X vs cases of not X). One can be wrongly quoted as the other, both have no upper limit, and neither indicates how big the risk is in absolute terms (which is easier to understand see 7.2.2011.2). Effect sizes tend to avoid these problems.

In most (not all) astrological studies $(a+b)=(c+d)$, in which case the relative risk reduces conveniently to a/c , ie to Obs/Exp, otherwise there is no simple conversion from effect size. For cases typical of astrological research, computer simulations suggest that, as a rough guide, relative risk = $1+5r$ and odds ratio = $1+6r$ (the sd on 5 and 6 is about 2)

8.2.5 Multiple determinants of effect sizes

The effect sizes in psychology are generally small because most variables like aggression have many causes, so the effect size for a single cause like situation has to be small to leave room for the others. If there are N causes the maximum effect size we can expect is roughly $\sqrt{(1/N)}$ based on Ahadi and Diener, *Journal of Personality and Social Psychology* 56, 398-406, 1989:

Interestingly this estimate is fairly insensitive to conditions including whether the factors are added or multiplied (ie allowed to interact). If our plausible astrological causes include midpoints, retrogradation, harmonics, asteroids, fixed stars, radio sources, hypothetical planets, nodes, parts, antiscia, contrascia, parallels, distance, eclipses, lunations, progressions, directions (primary, secondary, tertiary, major, minor, forward, converse), transits, related charts (return, ingress, helio, harmonic, pre-natal, arc-transform), and the golden section, all of which have been seriously proposed and therefore can hardly be seriously omitted, we can end up with a number of factors so large that, regardless of how combined, are effectively indistinguishable from noise. Worse, noise always contains false correlations that can grossly bias the outcome. Thus Freedman (*American Statistician* 37, 152-155, 1983) analysed ten sets of random data, each having 50 predictors and a sample size of 100. The correlation between criterion and combined predictors (ie between noise and noise) should have been zero, but thanks to false correlations it was a staggering 0.69. Which agrees with the expected 0.70 given by $\sqrt{(m-1)/(N-1)}$, where m = number of predictors and N = sample size. So a 0.60 correlation between chart and behaviour would mean nothing if obtained using 20 chart factors and 50 subjects, because on average we can expect $\sqrt{((20-1)/(50-1))} = 0.62$ by chance alone. If we test m predictors and use only the best n , the correlation is only slightly less than using all m , being very roughly $\sqrt{((m+n)/2(N-1))}$.

One way to justify tiny effect sizes is to have a huge sample and focus on absolute numbers. The effect size of 0.02 for aspirin reducing risk of fatal heart attack (*New England Journal of Medicine* 319, 262-264, 1988) translates to saving 13 fatal attacks and 72 nonfatal attacks in

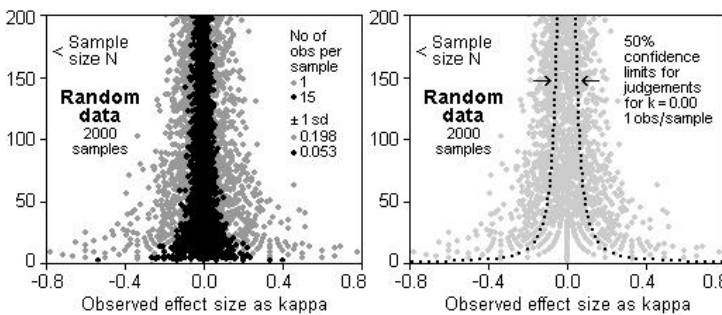
22,000 patients vs a placebo, so it was seen as too important to ignore despite the 21,987 still at risk. But if $N=1$ (as in a chart consultation) the trick is not available. For chart factors with similar positive effect sizes r , combining them will increase the overall effect size as per the Spearman-Brown formula to $nr/(1+(n-1)r)$, where $n=(\text{new number of factors})/(\text{old number of factors})$. But positive factor combinations known to replicate have yet to be established.

8.2.6 Plotting effect size vs sample size

What effect sizes are we likely to observe in our samples when the actual effect size in the population is zero? Contrary to what we might think, the effect sizes we observe in such samples are almost never zero and can be impressively large. Try this:

- (1) Create by computer a fictitious population of 10,000 individuals each with a 50% chance of having a certain trait. That is, generate at random for each individual either 1 (a hit) or 0 (a miss). The proportion of hits will be very close to 50% and the effect size vs an expected 50% will be very close to zero.
- (2) Take at random from this population 2000 samples of between $N=3$ and $N=200$ cases each.
- (3) Measure the effect size in each sample as kappa (see equation in 8.2.1 using observed frequency = number of 1s and expected frequency = $N/2$). The last allows easy-to-calculate effect size kappa to be used, see 8.2.1.
- (4) Plot effect size kappa against sample size N .

If we expect every effect size to be close to zero, we are in for a shock. Although the average is centred on zero as expected, individual effect sizes are all over the place, and as shown below our plot looks like an inverted funnel. For small samples under $N=25$, which is true of most studies by astrologers in the days before computers, the range of observed effect sizes is an impressive ± 0.6 or more, *even though the effect size in the population is actually zero*:



Left: Grey dots are observed effect sizes for each sample of random data. Black dots are the effect sizes averaged over 15 samples of the same N , which as expected reduces the scatter and therefore the width of the plot. **Right:** Same plot of grey dots with 50% confidence limits, see below. Here only N different effect sizes are possible for each sample size N , so as N decreases, gaps become visible especially near 0.

The above plots are called *funnel plots*. The difference between observed and population effect sizes tends to vary as $1/\sqrt{N}$, so the larger our sample size the smaller the difference and the smaller the scatter. Which is why every plot tends to resemble an inverted funnel centred on the average effect size. If our sample size is small, we can easily observe large effect sizes and thus conclude that astrology works, when in fact the only thing we are observing is the difference between our sample and the population. Chance has led us severely astray.

8.2.7 Confidence limits help to interpret results

The 50% confidence limits for $r = 0.00$ are given by $\pm 0.675/\sqrt{N}$, where ± 0.675 defines 50% of the area under a normal curve, see 7.7.2016.3, and N is the sample size. Because r cannot exceed ± 1.00 , confidence limits become asymmetric as mean r deviates from 0.00, but only trivially below ± 0.25 . For a **single** result, we can be 50% confident that the interval between 50% confidence limits contains the true value. For **many** results, if no effect then roughly half will lie inside the 50% confidence limits and half outside. If there is an effect then more than half will lie outside the limits. The actual numbers will be subject to the same variations that cause scatter in the first place, so the difference has to be statistically significant.

In psychology it is more usual to use 95% confidence limits, which for $r = 0.00$ are given by $\pm 1.96/\sqrt{N}$, where a real effect is indicated if more than 5% of results lie outside these limits. But in astrology the number of results is generally too small for 5% to be reliably counted. If the results being plotted are averages then a different approach is needed, see 8.6.1.

8.2.8 Meta-analysis further reduces uncertainty

Meta-analysis weights a set of effect sizes by their sample sizes, subtracts the sampling error (something not possible with a single effect size), and checks the result statistically to see if there is a real effect. Each study is a single data point in the meta-analysis. More importantly:

We cannot do a meta-analysis by reading abstracts and discussion sections. We are forced to look at the numbers and, very often, compute the correct ones ourselves. Meta-analysis requires us to cumulate *data*, not *conclusions* (Rosenthal and DiMatteo in Pashler & Wixted eds, *Stevens' Handbook of Experimental Psychology* 3rd edition 2002:396)

From its rudimentary beginnings in 1904, meta-analysis since the 1970s has revolutionised research in the sciences and humanities by allowing clear conclusions where once there was only uncertainty. By 1985 around 500 meta-analyses had been reported in PsycINFO. By 1995 the number was increasing by more than 100 a year. By 2015 the total was around 10,000.

The meta-analyses in this chapter are based on the bare-bones procedure of Hunter & Schmidt (*Methods of Meta-Analysis: correcting error and bias in research findings* 1990:107-112). More complicated procedures can be used if the data is really extensive or of exceptional quality but this is rarely true in astrology. The bare-bones procedure is quite straightforward:

- First establish an effect size r and sample size N for each study.
- Then calculate the following (*sd* means *standard deviation*, \sum means *sum of*):

Weighted mean r	weighted mean $r = \sum(N \times r \text{ for that } N) / \sum N$
Mean sample size	mean sample $N = \sum N / \text{number of studies}$
sd of r across N studies	$sd = \sqrt{(\sum(N(r - \text{mean } r)^2) / \sum N)}$
sampling variance sv	$sv = (1 - (\text{mean } r)^2) / (\text{mean } N - 1)$

If sv is 75% or more of the total variance sd^2 (75% is a rule of thumb that Hunter & Schmidt found to work well), we conclude that the variation across studies is explained by sampling error, so there is no real difference between study outcomes (which is something we could not otherwise know). Thus meta-analysis can tell us whether, in tests of say astrologers, case histories give more positive results than say personality test scores. If there is a real difference, we re-examine the results to identify the cause. For a worked example see 8.6.3.

8.2.9 Some technicalities related to effect size

The **sample size** required to reliably detect effect size r with $p \leq 0.05$ in 80% of tests depends somewhat on what you are measuring (ρ , r , k and so on). For r it is:

$$N = ((z_{\alpha} + z_{\beta})^2 / r^2) + 3$$

Inserting the relevant z and z values for the specified 0.05 and 80% gives:

$$N = ((1.96 + 0.84)^2 / r^2) + 3, \text{ or roughly } 7.9/r^2 \text{ for } r=0.05 \text{ and } 8.6/r^2 \text{ for } r=0.50$$

For ρ or k the corresponding N is slightly higher (Cohen, *Statistical Power Analysis for the Behavioral Sciences* 2nd edition 1988). Exact values of N can be calculated, but the rules of thumb $N=10/r^2$ and $N=10/k^2$ are easy to remember and have a margin of safety. Thus to reliably detect a typical r or k of 0.05 needs $N=10/0.05^2=4000$. Ironically the more uselessly small the effect size the more demanding the resources needed to measure it.

Attenuation. If the criterion against which astrology is measured is imperfect, it attenuates (ie reduces) the effect size in the same way that wearing boxing gloves reduces dexterity with chopsticks. A perfect criterion has a reliability of 1.0. An actual criterion (eg test scores and ratings) will have a reliability of less than 1.0 but seldom below 0.6. If the reliability is 0.6, then instead of observing r we will observe $r \times \sqrt{0.6} = 0.77r$.

Range restriction. Suppose an unrestricted sample shows effect size r . Restricting the ends (eg by testing only average subjects) decreases the observed r . Restricting the middle (eg by testing only extreme subjects) increases the observed r and is a good way of increasing sensitivity. The decrease or increase in r depends on the restriction but is typically about one-third. Retaining only the top and bottom fifteenths as in 7.6.1985.2 doubles the observed r . In principle, if we know the necessary reliabilities and range restrictions, we can calculate what r would be for a perfect sample and criterion. But observed r 's are more realistic.

8.3. TESTS OF SIGNS (MOSTLY SUN SIGNS)

Critics see the idea of dividing all of humanity into 12 types as ridiculous, especially as there is no reason to even *suppose* it could work. But it makes no difference – the reason sun signs are the most popular form of astrology in Western countries is because they are simple and easy to commercialise in sun sign columns. What matters is not their plausibility or their validity but whether they sell. And they sell extremely well, both as forecasts and character delineations.

8.3.1 Tests of sun sign forecasts

A 1970 UK opinion poll of a representative sample of 1395 adults 16+ found that 80% read sun-sign forecasts, of which 52% thought they were inaccurate and 17% thought they were moderately accurate. Only 11% gave them much attention and only 1% acted on them. 18% were superstitious and 14% carried a lucky charm or mascot (from *Recent Advances* 1977:82). Later opinion polls in the UK and USA found that typically half the population reads sun sign columns at least sometimes, 5% take them seriously, and 1% take them very seriously like horoscope junkies unable to exist without their daily fix (*Skeptical Inquirer* 16(4), 344-347, 1992).

Sun sign forecasts (Aquarius: family difficulties are settled) can be made in various ways from simple sign symbolism (Leos can expect Leonian events) and traditional planetary emphasis (Mars in your sun sign indicates a busy period) to no discernible link with astrology (the letter E is important this week). But astrologers disagree about their merits. Some see them as valid and good publicity, others see them as nonsense and exploitation. Thus a 1967 survey of 213 German astrologers found 49% of them wanted a ban on sun sign forecasts (*Zeitschrift fur Parapsychologie und Grenzgebiete der Psychologie* 10, 115-130, 1967), but it didn't happen. In 1974 Julia Parker, then President of the Faculty for Astrological Studies, put it this way:

Predictive columns ... should all have what might be called a Government Health Warning, telling the readers that this is for entertainment only, and warning them not to take the paragraphs seriously, and certainly on no account to make any decision of the slightest importance on the strength of any statement in an astrological column (*Astrological Journal* 16(2), 15-18, 1974).

But again it didn't happen. British writer Derek Cooper, now deceased, puts it this way:

But for real equivocation [ie ambiguity] you need look no further than the astrological columns of any woman's magazine. Much of what the stars foretell is either so obvious ("you will need a real sense of humour to face the day") or so double-edged ("someone near you will act to your advantage") or so plain daft ("wear red today for real luck") that you might imagine it was intended only for the simpleminded (*The Gullibility Gap* 1974:97-98).

Although forecasts are usually too vague to mean anything except to simpleminded readers, they can very occasionally be specific, albeit often with absurd predictions like these:

Libra

YOUR 1988 PROPHECIES

ADVENTURE: Determined to polish your foreign-language skills, you sign up for classes. You study faithfully, never missing a class. Your reward for all this trouble? A glamorous sojourn to Europe next summer. Bonus — a suave Frenchman wines and dines you.

MONTH BY MONTH

FEBRUARY: Active. On the 14th, Venus' girl is the zodiac's most adorable child, pleasing an elderly friend with Valentines you make yourself. Later on, boredom sets in: if you can't get out, get to a sports centre and swim that blue mood off! The 22nd sees you keeping a rendezvous with your gynaecologist.

Left: In 1988 France's 54m population would have over 200m female visitors from around the world, all Librans, with each suave Frenchman having to crazily average over 10 daily winings and dinings.

Right: On this day a TV reporter counted 104 visitors to Perth gynaecologists, of whom 8 were Librans, 20,000 short of the number predicted. From *Cosmopolitan* (Aus edition) Jan 1988.

Content analysis (essentially counting keywords) of three months of newspaper forecasts in the *Los Angeles Times* during 1974, in the *Brisbane Sun* during 1989, and an issue of *Elle* in Paris c1978, showed that, despite a few differences related to countries and years, the writers used similar techniques to maintain authority over their readers:

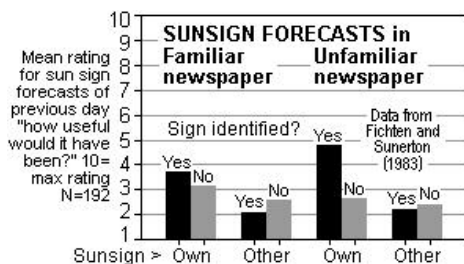
The astrologers share a common agenda, one that promotes dependence, helplessness, obedience to authority, and irrationality. Although their methods are not identical, both employ bi-phasic techniques [ie contradictions such as implying anxiety then implying success, or encouraging the making of decisions then warning of bosses beyond their control]. ... the astrological horoscope column is more than simply content-free psychological chewing gum (Svensen and White, *Genetic, Social and General Psychology Monographs* 121, 5-38, 1995:22).

Ten million French, it seems, have recourse to astrology horoscopes in the press, on radio, and by astrologers and computers. The moral of these *Elle* horoscopes is the moral of a puritanical and demanding society, tinged with a progressive veneer. They offer (or impose) gentle recipes called Prudence, Security, Results, Money, Success (translated from Bardin, *Communication et Langages* No 34. 1977).

Tandoc and Ferrucci (*Women's Studies International Forum* 45, 34-41, 2014) analysed over 400 horoscopes in *Glamour*, *Essence*, and *Teen Vogue*, and found 3 dominant themes – love, money, career. They also found that gender stereotypes shaped the themes more than signs did.

In 1973 a comparison of sun-sign forecasts with actual outcomes was made by UK investigative journalist Nicholas Tomalin. He found marked disagreement, see 7.1.1973.1.

Forecasts with sign IDs removed are easily the most popular classroom test of astrology, and the results always show that own-sign forecasts are judged no more valid than other-sign forecasts. For example Lower (*Nature* 447, 528, 2007) tested Ohio State University classes of 163, 155, 143, 138, 100, total 699 students with forecasts from four major newspapers and got 8.0, 8.4, 7.0, 8.0, 8.0 % hits, actual total 55 hits vs $699/12 = 58.3$ expected by chance, binomial $p = 0.69$. Canadian psychologists Fichten and Sunerton (*Journal of Psychology* 114, 123-134, 1983) had Montreal college students rate sun sign forecasts under all possible combinations of variables with the results shown below. The average student was well aware that daily forecasts existed and read them on average 1.09 times a week:



From left, the first two grey columns (subjects rating unidentified sign forecasts) show that own-sign forecasts from a Montreal newspaper were rated as significantly more useful than other-sign forecasts ($p = 0.03$ one-tailed). But the significance disappeared for forecasts from a Toronto newspaper, showing that some subjects were familiar with Montreal forecasts (all lived in Montreal). When signs were identified, the difference in ratings became larger due to confirmation bias (Montreal $p = 0.004$, Toronto $p = 0.00004$). When 150 subjects rated monthly forecasts from two astrology magazines nothing was significant.

The authors also found that forecasts made by one astrologer were unrelated to forecasts made by another even when target readerships were similar. They concluded that daily and monthly forecasts were unreliable and invalid. Reading frequency was related to neuroticism scores ($r = 0.67$) and usefulness ratings ($r = 0.39$), but not to locus of control or grades in psychology ($p > 0.05$, r not stated). Females were more likely than males to read and believe:

A perusal of many neutral (eg *Time*, *Newsweek*), women's (eg *Vogue*, *Glamour*), and men's (eg *Playboy*, *Penthouse*) magazines [showed that] only the women's magazines carried horoscopes. It is difficult to determine which came first, women's interest in astrology or publishing policy. Nevertheless, women are more likely to be exposed to astrology; this, of course, can stimulate greater interest (pp.129-130).

Clobert et al, *Personality and Individual Differences* 101, 348-355, 2016, gave a total of 576 students aged 17-25 (typically 75% were female) horoscopes whose theme was either positive (*everything is in your favour today*) or negative (*it's going to be an awful day*). Belief in horoscopes led to self-fulfilling prophecies, ie where expectations affect behaviour. From abstract:

Reading positive versus negative astrological forecasts increased positive interpretation of ambiguous events, cognitive performance, and creativity. [So] daily horoscopes have more consequences than one may initially think. [However, the effects were weak and did not extend to non-believers, or to subjects able to control their lives, or to sun signs other than their own. Only people at risk who are told their day will be good or bad will tend to make it happen.]

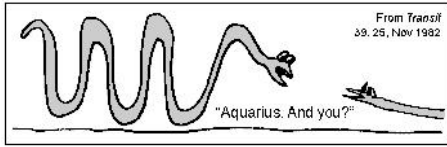
Supporters see sun sign forecasts as providing a reassuring pattern to life, an uplifting thought for the day, in other words one part astrology and nine parts style. Thus much of the appeal of the late Patric Walker's forecasts came from their humility and uplifting thoughts worthy of Kahlil Gibran, eg "Remember that true love, respect and friendship cannot be bought". Readers were being seduced by style rather than by astrology. In fact the astrology is mostly irrelevant:

Manolesco cites an unidentified newspaper that "repeated the same forecasts year after year after having originally taken them from an old book" (*Scientific Astrology* 1973:24). James Randi recounts how, at age 17, he bought an astrology magazine, clipped the daily forecasts, and pasted them up at random for a Montreal newspaper. Later he overheard two readers saying his forecasts were "right smack on", so he quit the job (*Flim-Flam!* 1987:62). Later, in 1978, he gave readings at a Winnipeg radio station for three listeners who had previously sent

in their birth date, and each time scored ten out of ten. But he had merely repeated word for word three readings given months before by Sydney Omarr during a TV show. Journalist John Johansen, who for 18 years worked for the tabloid *West Australian*, comments:

Many years ago we also printed a tabloid called the *Daily News* [which] had horoscopes every day, until one day ... no horoscope had been delivered. What to do? Some smart-aleck suggested they put old ones in the paper, and so, for two years the horoscopes used were many years old, but no one complained (*the Skeptic* [Australia] 24(3), 61, 2004).

8.3.2 Tests of sun sign delineations



Sun sign delineations (Gemini and Librans make music together) are astrologically less controversial because, unlike forecasts, they reflect astrological tradition. They also tend to be our first contact with astrology. We learn what our sun sign is supposed to

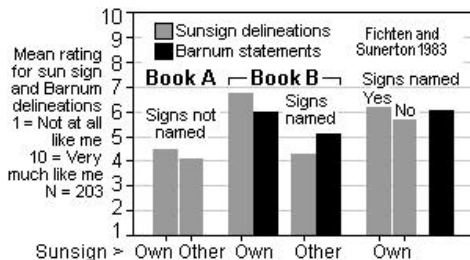
mean, and to our great surprise it seems to fit. But the meanings from Aries through Pisces (*assertive, possessive, versatile, sensitive, creative, critical, harmonious, secretive, adventurous, prudent, detached, impressionable*) are universal. Everyone behaves in each of these ways at various times. So our own sign cannot help but fit – and astrology has its foot in our door. In his best-selling 1988 book *Innumeracy*, US mathematician John Allen Paulos puts it this way:

Few experiences are more dispiriting to me than meeting someone who seems intelligent and open to the world but who immediately enquires about my zodiac sign, and then begins to note characteristics of my personality consistent with that sign (whatever sign I give them) (p.26).

Similarly in his 1988 book *Forbidden Knowledge: The Paranormal Paradox*, Bob Coultie (who had investigated hundreds of paranormal claims including astrology) describes how:

I tried out Russell Grant's sun-sign descriptions from a 1984 *TV Times* Special ("What your sun-sign is really like" said the front cover) without getting better than chance results. Grant was invited several times to take part in a study involving twelve people who would be asked to assess twelve horoscopes without being told which was theirs. Grant, who claims to see fairies, refused (p.67).

Fichten and Sunerton (we met them in the previous section) also had their college students rate sun sign delineations and Barnum statements, with the results shown below.



From left, **Book A:** Unnamed own signs were rated as slightly more accurate than unnamed other signs, which was expected because 64% of students knew their own sun sign meanings (rated moderately accurate). **Book B:** Students judged their own named sign delineations more accurate than Barnum statements (said to describe the average student) while other named signs were judged less accurate. **Final columns:** named own signs were marginally more accurate than Barnum statements but not when they were not named. Conclusion: the acceptance of sun sign delineations is explained by their Barnum content.

They also had 17 believing students match unnamed sun sign delineations from A with those from B. They averaged 4.12 hits ($p < 0.05$), which showed that, unlike forecasts, delineations by one astrologer were measurably similar to those by another (ie they read the same books).

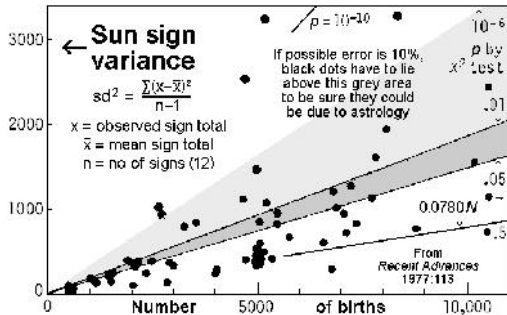
Chapter 7.1 and the rest of 8.3 describe a diversity of empirical sign tests, either individually or where feasible collectively via meta-analysis, which among other things demonstrate the advantages of the latter over the former. The outcome is summarised at the end of 8.3.9.

8.3.3 Tests of sun sign distributions

The idea is to test large samples of people who share the same occupation or personality trait to see if any sign is notably more frequent or less frequent than the others. It seems a simple test to make, and sun sign distributions have been very widely tested in around a hundred studies totalling several millions of cases. But there is a huge problem because the expected distribution depends on: (1) *Astronomy*, eg the Sun spends more time in Cancer than in Capricorn. (2) *The natural frequency of births*, which can be highly variable from country to country, from year to year, from place to place within the same country, and from one social

group to another, see 7.1.1977.3. **(3) Age incidence.** Here groups such as hockey players or prison inmates or licensed drivers or schizophrenics whose membership depends on being over a given age on a given date will be overloaded by the births longest at risk. **(4) Sampling variations,** which can be large and can seem like sun sign effects. The huge problem is that the data required to provide adequate controls is almost never available. So counting sun signs is effectively the most futile test we can make in astrology, simply because clear positive conclusions are almost never possible. For example here are the sign variances (same as standard deviation²) vs sample size for 60 sun sign distributions from *Recent Advances* 1977:113:

The plot shows the **variance of 60 sun sign distributions** (corrected for estimated astronomic and demographic variations) vs number of births. The samples are from twelve published studies that include 430 Nobel laureates, 1131 pugilists, 2050 sea captains, 4004 woman achievers, 6554 idiots, 7200 lawyers, 8762 clergymen, and 14781 engineers. Total number of births = 290,738. Results are all over the place. Computer simulations have shown that errors due to uncertainty in the corrections are likely to be about 5% to 10%, expressed as a standard deviation of sign totals. If it is 10%, and we want to be sure the variance in sign totals could be due to astrology and not to uncertainty in the corrections, we need to ignore simplistic p values and focus on the area above the grey area. It contains 5 dots, and even then with 60 tests such cases could arise by chance.



Conclusion: this plot fails to show that there is anything consistent in sun signs. So we have to try other kinds of test. If all signs were equally probable (they never are), and if the only effect on sign totals was astrology (it never is), the variance expected due to chance (ie when $p = 0.5$) is $0.0780N$ where N = number of cases, not number of tests or number of signs. Almost none of the observed variances are this small, which illustrates the dominant effect of non-astrological variables (conclusion is from *Recent Advances* 1977:99). They are both dominant and unsuspected.

An example of how the above variations can upset even the simplest of studies is provided by French astrologer Hans Ritter, who divided 1464 doctors taken from *American Men of Science* (vols A-C, no date) into two equal groups. The correlation between groups was $r = 0.505$, $df = 10$, $p = 0.094$. Which seems reassuring, except half the signs were higher than expected in one group and lower than expected in the other group (*L'Astrologie Moderne* 14, 11-12, 1955).

Because it is very rarely (if ever) possible to obtain accurate controls for sun sign distributions, researchers have been forced to use other approaches:

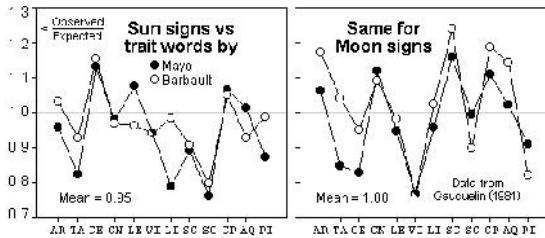
8.3.4 Tests of sun signs vs character traits

In 1978 Ralph Bastedo, a researcher at the University of California's Survey Research Center, compared by computer **(1)** the results of a survey (plus interviews) of 1000 representative adults from the San Francisco Bay area, and **(2)** sun sign meanings obtained by analysing 14 astrology books borrowed from public libraries. The original survey had nothing to do with astrology but it included many items relevant to sun signs such as leadership ability, liberal vs conservative traits, intellectual interests, artistic ability, creativity, self-confidence, ability to make friends, ability to make things, to a total of 33 items. Each item required a response on a 4-point scale, essentially two above average and two below average. The test compared the above-average proportion for each sun sign with the same proportion for all sun signs. It did not correct for demographic effects, but the claims made for sun signs are so grandiose that their effects should have shone through regardless. But they did not:

There was no consistent excess of hits over misses for specific predictions, nor were the differences between signs statistically significant. Examples: Of the two top leadership signs (Aries, Leo), only Aries was above average, and even then it was not more above average than a top non-leadership sign (Cancer). The two top artistic signs (Libra, Pisces) were both below average. Of the top three musical signs (Libra, Aquarius, Pisces) only Pisces was above average. Out of 33 items only one showed a significant difference between signs at the $p = 0.05$ level vs the 1.7 items (0.05×33) expected by chance. No items were significant at the $p = 0.01$ level. (*Skeptical Inquirer* 3(1), 17-38, 1978, and Ralph Bastedo, personal communication July 1979).

In 1980 Michel Gauquelin compared the biographical details of famous people with their Sun,

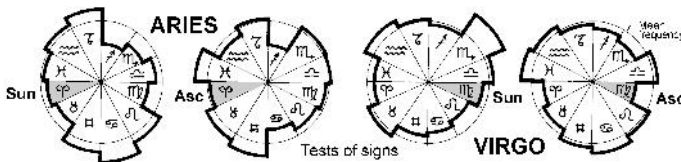
Moon and Ascending signs. He searched thousands of biographies and found an average of 2200 people per sign who had the character traits of that sign as described by leading UK astrologer Jeff Mayo and leading French astrologer André Barbault. These samples are large enough to reliably detect effect sizes of $r = \sqrt{(10/2200)} = 0.07$, see 8.2.5. But there was no tendency for people with the traits of sign X to have their Sun, Moon or Ascendant in sign X:



If people showing the traits of sign X tended to have their Sun **left** or Moon **right** in sign X, we expect the frequency ratio Observed/Expected to be >1.0 . In fact roughly 60% of the observed ratios are <1.00 , with a mean of 0.95 for the Sun and 1.00 for the Moon. So our expectation is contradicted by the data. If Mayo and Barbault agreed on the traits, the closed circles would coincide with open circles. In fact there are minor disagreements but not enough to upset the test.

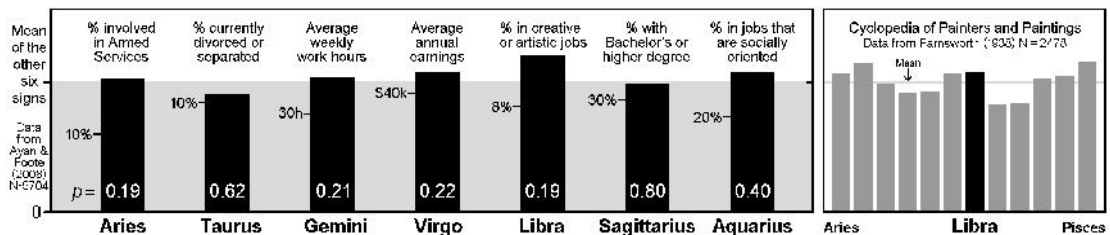
Of course we cannot expect every person who behaves like X to have Sun in X since this would leave nothing to be explained by any other planets in X. But we might reasonably expect say 20% to have Sun in X and 20% to have Moon in X, giving a frequency in X elevated above the 8.3% expected by chance (100/12) before allowing for demographic effects. But none of the observed frequencies are anywhere near this. Indeed, of Gauquelin's $3 \times 2 \times 12 = 72$ results, 43 were in the wrong direction vs $72/2 = 36$ expected by chance. In other words this rigorous and sensitive test found no evidence that signs are valid.

As examples of results in the wrong direction, here are the distributions of sun and ascending sign in people with the traits characteristic of Aries or Virgo as described by Jeff Mayo:



If the descriptions were valid, the observed frequency (thick line) for the shaded signs should be higher than the mean frequency (thin circle), but it is lower (M Gauquelin, *Zodiac and Character-Traits* 1981:12 and *The Truth about Astrology* 1983:130).

In 2008 US researchers Hande Ayan and Mike Foote compared sun sign delineations with the 2006 population survey results for Washington state. In effect it was a replication of Bastedo's 1978 study, albeit again without correction for demographic effects, but with a larger sample. They focussed on signs with (1) the least disagreement among astrological sources, (2) the most distinctive delineations, and (3) the closest match with survey categories. They ended up with seven signs and a total sample size of 5704 adults, an average of 815 adults per sign. But once again none of the signs showed any significant support for traditional claims:



Left: Each black bar shows the survey response for the indicated sign and survey category, the grey area shows the mean survey response for the other six signs. p values show the two-tailed significance of each difference. Even though the comparisons are not corrected for demographic effects, the black bars should extend significantly above the grey area if adults were on average more like their own sun sign than like other sun signs, But the differences are not consistent and none are significant. Even if the largest difference (Libra) was significant (it isn't), the observed frequency is barely 20% more than that observed for the other six signs and is of almost no practical value. From washington.edu/pbaf527m/PolicyReport.HA.MF3.11.08.doc.pdf

Right: The Libra difference does not significantly replicate for 2478 famous artists when corrected for sign length but not demographic effects. Libra is also said to be musical, but for 3257 musicians (not shown) it was the *least* frequent sun sign (from Farnsworth, *Character and Personality* 6(4), 335-340, 1938). Similar results were obtained by Gauquelin for 1473 eminent painters and 1249 eminent musicians, but many cases were common with Farnsworth's.

In 2011 psychologist Renier Steyn (*Journal of Psychology in Africa* 21(3), 493-494, 2011) compared sun signs vs Big Five personality scores of 65,268 mostly black applicants born mostly in 1983 for police jobs in South Africa (mean age 24.8 sd 3.9, males 41%). The largest difference between signs was Openness ($p=0.058$, not significant when corrected for number of tests), nor was the largest frequency difference between signs (VI vs SC). To counter the objection that dividing people by sun sign does not allow for differences in the rest on the chart, he later tested one-day time twins in the same sample (*International Journal of Science in Society* 4(1), 117-122, 2013). The largest counts occurred in 1983, for which the births per day, the date, Sun degree, and major aspects $\text{orb} < 1^\circ$, were: 49 on 1 January (10° Capricorn ME-90-PL); 48 on 3 March (12° Pisces VE-120-JU); 36 on 3 September (10° Virgo VE-120-NE); and 39 on 23 September (29° Virgo MA-120-NE). Despite big astrological differences between dates the four groups did not differ significantly in mean Big Five scores, see 8.7.8.

In 2012 former US astrologer Keith Burke noted how the Moon was generally held to be as important as the Sun, and that there was a correspondence between Moon element and four of the Big Five personality dimensions. But for 192 subjects the results were negative, see 2.3.

In 2014 psychologists Miguel and Carvalho (*Psico-USF* 19(3), 533-545, 2014) compared sun signs and constellations vs Big Five personality scores of 505 Brazilians (mean age 25.6, sd 8.7, males 29%). No result was significant when corrected for the number of tests, and the individually significant results were equally divided between hits and misses.

8.3.5 Tests of signs via prize competitions

In 1980 Dean and Mather offered a prize of £500/\$1000 (then the world's biggest astrology prize) to anyone who could demonstrate the validity of signs. Entries had to (1) validate signs as traditionally conceived (eg that Aries is assertive), (2) be capable of replication, (3) be supported by unambiguous evidence, and (4) be the entrant's own work. Details with a nine-month deadline were circulated to over 10,000 students of serious astrology via articles in leading astrological journals in the UK, USA, Australia and New Zealand. Six entries were received, none of them successful. One received a consolation prize. Another claimed that signs are valid but cannot be validated, thus defeating itself (*Astrological Journal* 23(3), 162-166, 1981). Comments (with Dean and Mather's response in parentheses) included:

- This kind of reality for signs cannot be proven (if no effect can be detected, what is the point of using signs?).
- Other factors can hide or negate sign effects (if this were true then nobody could know anything about signs).
- Not enough time was allowed (surely you already have evidence, otherwise why are you using signs?).

Patrice Guinard (<http://cura.free.fr/10athem3.html>) referred to the tests as:

grotesque competitions in which the participants are induced to test astrology on the basis of outdated positivistic assumptions to gauge its legitimacy. [The organisers conclude] that astrology is invalid on the basis of the negative results obtained, ie the impossibility of producing statistically significant predictions. [The organisers would have us believe that to legitimise astrology] the only stumbling block is the lack of tangible statistical results!

Guinard is arguing that astrology (or at least his kind of astrology) is untestable, therefore negative results are meaningless. For more on Guinard's views and a response see 7.2.2004.4.

In 1981 Dean and Mather offered a bigger prize of £1000/\$2000 to anyone who could validate the hypothesis on page 37 of Hone's *Modern Text Book of Astrology* "each sign is of a different nature. People born with one or other of these signs prominent will be very much of the nature of these signs". Details with a deadline of 18 months were circulated via even more journals. Nine notices of intention to enter were received from seven countries. Five had to be disallowed due to variously wanting to change the rules, extend the deadline, test only three signs, apply tests unrelated to signs or known to give negative results. Eventually three entries were received, none of them successful. The best entry compared the acceptance by 34 art students of authentic and control chart interpretations in a double-blind study that would have won if the results had been positive, but they were at chance level ($p > 0.10$). This and a second entry received consolation prizes (*Astrological Journal* 25(3), 203-210, 1983).

In 1999, in a last-ditch attempt to validate signs, Dean and Mather contacted several thousand astrologers and two dozen interested scientists and invited their ideas for testing sun sign forecasts and delineations. The results suggested that the existing negative verdict on sun signs was unlikely to change, for details see 7.1.2000.2.

Despite these negative results, books sometimes appear that claim their tests prove a link between sun signs and human behaviour. Examples are Van Deusen's *Astrogenetics* 1976 and Gunter Sach's best-selling *The Astrology File* 1998. But non-astrological explanations (such as improperly matched controls or taking any difference found afterwards as proof of astrology) were more plausible than astrological ones. For more on Sachs see 7.1.1998.1.

8.3.6 Tests of signs vs appearance

Most astrology books leave little doubt that signs (especially ascending signs) are linked with physical appearance including body shape, body size, head, face, hair, eyes, nose, teeth, complexion, gait, gestures, even handwriting. But their authors stress that judgement is difficult because many other chart factors can be involved. For example Charles Carter comments:

the question of personal appearance is a difficult though fascinating one. It is not uncommon to meet fairly typical examples of a sign, but more often a person presents an almost unrecognizable blend from which it is not easy to pick out even one prominent planetary influence (*Principles of Astrology* 1925/1963:157).

Margaret Hone says the same and supports it with test results:

While it is easy to work backwards and to track the astrological significator for observed physical traits, it is almost impossible to know *which* significator any person may show above any other. ... In a recent test of 44 people (not a sufficiently large number for real statistical work), their appearance was voted on by about 100 others well versed in astrology. 17 looked more like their ascending sign. 13 looked more like their Sun sign. 9 looked more like the sign containing their Ascendant-ruler. 5 looked more like the sign containing their Moon. This shows that, while the truth of astrological correlation can be definitely seen, truth is NOT served by hazarding a guess at which part of the map will be reflected in appearance (*Modern Text Book of Astrology* 1968:221).

Various artist-astrologers have attempted to show the effect of signs on appearance, but their results are generally in disagreement. For example:



Sun in Gemini according to five artist-astrologers. Gemini may be common to all five, but head, nose, chin and ear shapes differ. Nobody could accurately identify a Gemini using these pictures. From left the sources are: Angeli, *Die Stern lügen nicht Oder doch?* 1980. Garaña, *Astrologia Magistral: Clave de Caracteres y Destinos* 1961. Anrias, *Man and the Zodiac* 1973. Barrett, *Astrological Physiognomy* 1941. Lyndoe, *Everybody's Book of Fate and Fortune* 1938.

Astronomers Roger Culver and Philip Ianna tested the claim that physical characteristics are linked to sun signs using over 300 male and 300 female students at Colorado State University, a minimum of 25 students (male or female) per sun sign. Tests included arm size, baldness, bicep size, blood type, calf size, chest size, fist size, foot size, freckles, hair colour, handedness, hand size, head size, height, hip size, leg length, neck size, reach, ring finger size, sex, skin colour, waist size, wrist size, and weight. The *p* values were 0.07 to 0.84, "a result completely in keeping with the assumption of a random distribution" (*Gemini Syndrome* 1984:125-127).

In 1997 the German astrologer Peter Niehenke sent 200 photos collected by his students to an astrologer who claimed he could accurately match photos to sun sign. The astrologer chose 58 photos for judgement. He divided his judgements into more certain and less certain (the latter was usually because the Sun was within one degree of a cusp). The hits by sign were:

More certain 5 hits vs 58/12 = 4.83 expected, binomial $p = 0.54$
 Less certain 1 hit vs 14/12 = 1.17 expected, binomial $p = 0.70$

The results are close to chance level and hardly improve as judgement becomes more certain. Niehenke had tested similar claims all with negative results (*Correlation* 16(1), 29-31, 1997).

Below are attendees at the 1976 AA Conference in Nottingham grouped in rows according to their sun sign. Can you tell which row is which sign? Answers in caption below:



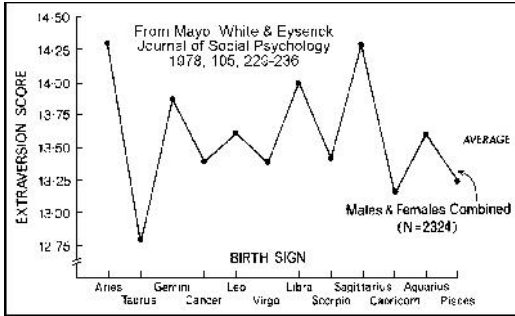
Much has been lost in reproduction but the originals show that like signs are no more similar than unlike signs.

From top: Fire (Sagittarius, Leo, Aries), Earth (Capricorn, Virgo, Taurus), Air (Aquarius, Libra, Gemini), Water (Pisces, Scorpio, Cancer). Photos by Geoffrey Dean from *Astrological Journal*, 19(1), 24-25 and 31, 1977.

8.3.7 Tests of signs vs extraversion and self-attribution

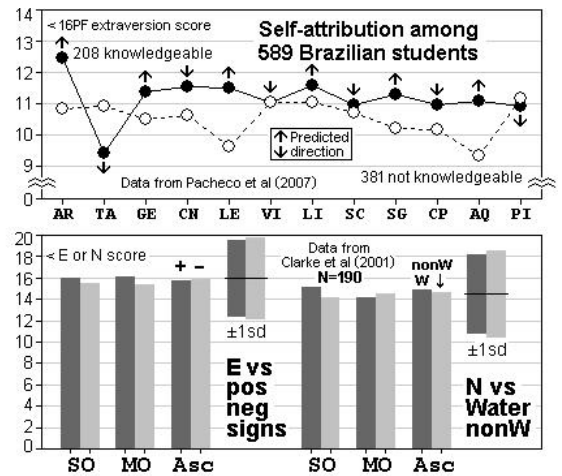
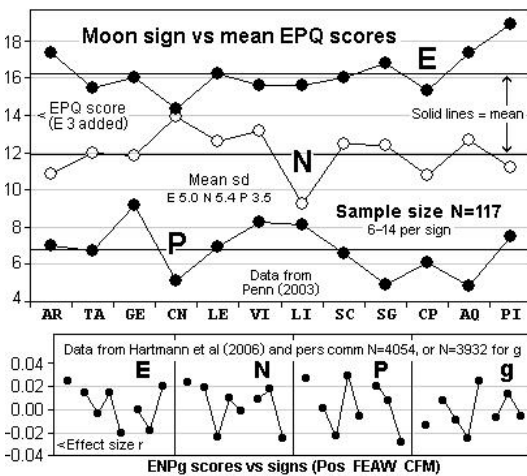
According to tradition, odd-numbered signs (Aries etc) are extraverted, and even-numbered sun signs (Taurus etc) are introverted. But the idea was not easily tested until reliable tests for extraversion became available in the 1960s. Ten years later the idea was tested for sun signs

by Eysenck and astrologer Jeff Mayo by giving the Eysenck Personality Inventory to a sample of 2324 people who had requested chart readings from Mayo's school of astrology. It was the world's first test of astrology to use a large sample and personality scores. The results showed a sawtooth pattern exactly as predicted by astrology:



Reproduction of original plot. The variation in extraversion scores is small (it does not look small because the scale is truncated to 12.75–14.50 vs its actual range of 0–24) but the ups and downs match perfectly without exception the pattern predicted by astrology.

The effect replicated and was hailed as "possibly the most important development for astrology in this century" (*Phenomena* 1(1), 1, 1977). But the pattern disappeared for people unfamiliar with sun signs. Examples of the results for Sun, Moon and ascending signs are shown below:



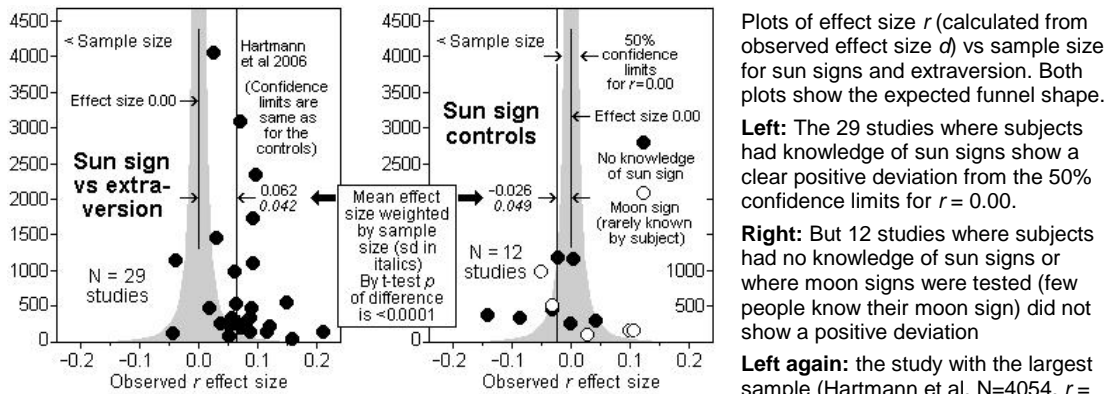
Top left: For 117 male and female undergraduates and graduates (mean age 28 years, range 18-53) there was no hint that Moon signs show the same pattern. From Penn, *Moon Signs in Relation to Eysenck's Personality Theory*. PhD thesis, Alliant International University CA 2003. **Top right:** 589 Brazilian students divided into knowledgeable and not knowledgeable about sign meanings show hints of the expected difference. From Pacheco et al, *Psicologia: Teoria e Pesquisa* 23(3), 305-312, 2007. **Bottom left:** Each dot shows the correlation r between the E, N, P or g scores and sun sign category for 4054 or (for g) 3932 male US Vietnam veterans tested around age 38 with the MMPI-II, from which the equivalent extraversion E, neuroticism N, and psychoticism (tough-tender) P scores were derived. Subjects born within one day of a sun sign cusp were excluded. In addition, general intelligence g scores were obtained via 19 cognitive test scores for a subset of 3932 veterans. There was no support for sun signs, thus only 3 of the 32 plotted correlations are individually significant at the $p = 0.1$ level vs 3.2 expected. Sometimes the results suggest minor self-attribution (correlations are weakly positive between positive signs and E, and between cardinal signs and P) but just as often they do not (correlation between water signs and N is zero and between air signs and g is negative). In any case why should war veterans be knowledgeable about astrology? From Hartmann et al, *Personality and Individual Differences* 49(7), 1349-1362, 2006, and personal communication. **Bottom right:** One of the few studies to include ascendants, $N=190$. Only the SO difference is consistent (mean $p = 0.12$), the rest are inconsistent (mean $p = 0.41$). From D Clarke et al, *Journal of Psychology* 130(2), 131-140, 1996.

The effect when it emerges is easily explained by knowledge of astrology. Ask Sagittarians (said to be sociable and outgoing) a question related to extraversion, such as "do you like going to parties?", and astrology might tip their answer in favour of *yes* rather than *no*, and vice versa for Capricorns (said to be shy and solitary). In psychology the effect is called *self-attribution*. It looks and feels like astrology but it has a non-astrological explanation.

To show how knowledge of astrology has an effect, US psychologists Delaney and Woodyard gave 55 students personality tests before and after exposing them to controlled sun-sign descriptions. The results showed that the students had significantly ($p < 0.01$) adjusted their responses to match the descriptions regardless of whether the descriptions were astrologically

correct or deliberately reversed (*Psychological Reports* 34, 1214, 1974). Sakamoto et al (*Asian Journal of Social Psychology* 3(2), 107-124, 2000) gave 64 female Japanese students bogus feedback from a test that suggested they were either extraverted or introverted. When each student subsequently interacted with a stranger, their interaction matched the bogus feedback

The plots below show the meta-analysis of all sign vs extraversion studies published up to 2015. The results reveal differences between studies that cannot be explained by sampling error but are explained by knowledge of astrology, ie by self-attribution:



Plots of effect size r (calculated from observed effect size d) vs sample size for sun signs and extraversion. Both plots show the expected funnel shape.

Left: The 29 studies where subjects had knowledge of sun signs show a clear positive deviation from the 50% confidence limits for $r = 0.00$.

Right: But 12 studies where subjects had no knowledge of sun signs or where moon signs were tested (few people know their moon sign) did not show a positive deviation

Left again: the study with the largest sample (Hartmann et al, $N=4054$, $r =$

0.023) is notably (but not significantly) less than the weighted mean of 0.062, possibly because the subjects (US war veterans) were unlike the others (mostly students). When Hartmann is excluded, the weighted mean is 0.071.

Some astrologers argue that the above effects could have existed before sun signs became popular, and would therefore be evidence for astrology, but this of course cannot be known. However, Japanese psychologists Sakamoto and Yamazaki (*Progress in Asian Social Psychology* 4, 239-262, 2004) were able to investigate the recent popular Japanese belief that personality is related to the four blood types A, B, O and AB. The belief originated in the 1930s and was repeatedly disconfirmed by empirical studies both in Japan and elsewhere. It remained largely unknown in Japan until a flurry of popular books and articles in the 1980s made it as popular as sun signs are in Western countries. In Japan during 1978-1988 annual surveys randomly sampled about 3000 people aged 13-59 on many topics that included blood type and answers to 24 yes/no questions about their personality. The proportion of each blood type was Type A 38%, Type B 21%, Type O 30%, Type AB 11% (the proportion depends on country and is only roughly similar to that in the UK/USA).

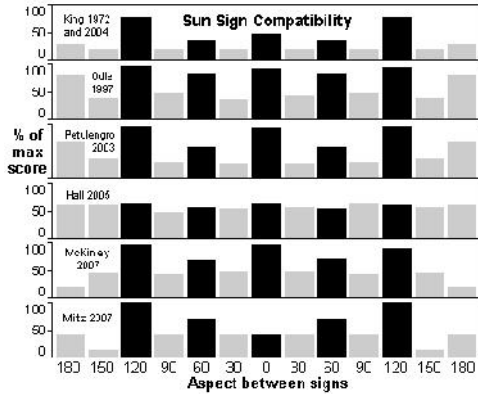
Popular books define Type A's as anxious perfectionists; B's as cheerful but selfish; O's as generous but stubborn; AB's as arty but unpredictable. The six most consistently-answered questions for each type agree with this and reveal them as respectively E-N+, E+N-, E+, E-, and thus equivalent to sun signs. The mean r effect sizes calculated from the authors' d effect sizes are $r < 0.01$ during 1978-1982 before the belief became popular, and $r = 0.03$ during 1984-1988 after the belief became popular, which (1) are close to the mean effect size for sun sign self-attribution (0.062) after allowing for the lower validity of the blood-type personality measure, and (2) confirm their origin in popular belief rather than in actual connections with personality. In Japan today the belief is promoted by best-selling books, by matchmaking and employment agencies, and by a population where asking about blood types (90% know their blood type) is as normal as asking about sun signs.

When self-attribution effects are compared with national opinion polls of belief in astrology, the results suggests that roughly 1 person in 3 believes sufficiently in astrology to measurably shift their self-image in the corresponding direction (*Correlation* 3(2), 22-27, 1983). If just 1 in 20 of those who have shifted their self-image have also shifted their job preference, which does not seem implausible, it is enough to explain the occasional hit when the occupations in census data are compared with sun sign predictions (*Skeptical Inquirer* 9(4), 327-338, 1985).

8.3.8 Tests of sun sign compatibility

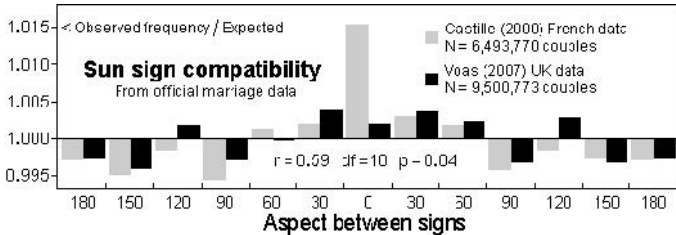
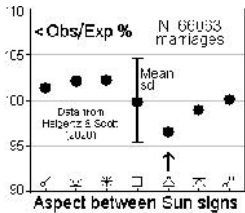
Some people see sun signs as good predictors of compatibility. And sun sign authors who follow tradition show at least some agreement on the compatibility between one sign and another:

GENT 48 Taurus, no smoke, tail, to meet Cancer or Cappy 38 - 48, VFM if suited. Box 1899, Western Mail.



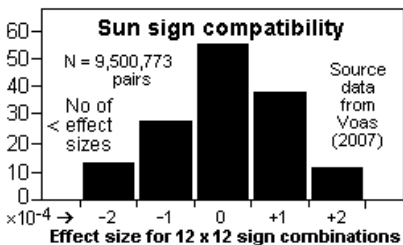
Sun sign compatibility according to six authors who have rated pairings on scales of 1-5 or 1-10, which allows their pairings to be compared quantitatively as here. The vertical scale is the compatibility rating as a percentage of the maximum possible. The generally preferred aspects are conjunctions (0), sextiles (60), and trines (120), shown in black. Aspects on the right are to signs later in the zodiac eg Leo to Libra, aspects on the left are to earlier signs eg Leo to Gemini. Although most authors tend to agree on the preferred aspects, they can disagree on particular pairings. For example authors King and McKinley (like Ptolemy) rate the opposition (180) as largely unfavourable, Hall and Mitz rate it as average, and the other two rate it as largely favourable. The mean correlation between plots is $r = 0.61, p = 0.04, df = 10$, which is more than enough to ensure detectable sun sign compatibility (if it exists).

But French registry office data for millions of marriages 1976-1997 (Didier Castille, *Sunny day for a wedding* 2000) and 2001 UK census data (David Voas, *Ten million marriages: A test of astrological love signs* 2007), both studies are available online, failed to show that any of the 12 x 12 possible sun sign pairings occurred more often than expected by chance. Pairings seen as compatible were no more frequent than those seen as incompatible. A similar result was obtained by Helgertz and Scott (*Genus*, 76(1), 1-18, 2020) for 66,063 marriages 1968-2001 in Sweden, which has one of Europe's lowest levels of belief in astrology. Indeed, when their results are organised by aspect between sun signs, trines (arrowed) were the least frequent, lower even than squares (which were exactly average), which is contrary to what sun sign astrology would predict.



Castille tried correcting for subjects who inadvertently entered their own birthday for that of their spouse, but his large peak at 0 suggests it was not enough. Voas made a more thorough correction for this and other response errors, and his data shows no peak at 0. In each case the large peaks predicted by astrology at 120 (sun signs in trine) are not observed.

If we were concerned only with p values (the original Voas 12 x 12 distribution was significant but only because the samples were huge), we would miss the above failure to support sun sign predictions, and we would miss the real benefit of huge samples, which made Voas's test the most sensitive test of sun signs ever conducted – it was able to reliably detect effect sizes of around $\sqrt{(10/10^7)} = 0.001$, see 8.2.5, equivalent to getting 50.05% hits when chance is 50%, so every 2000 forecasts have 1 hit more than tossing a coin. But as shown below, even this tiniest and most useless of effect sizes could not be detected. Self-attribution did not extend beyond self-attribution. So for predicting compatibility, sun signs absolutely do not work.



If some pairings of sun signs are more compatible than others, as is claimed by sun sign astrologers, their effect sizes should stand out in Voas's test of sun sign pairings in ten million marriages. That is, there should be effect sizes well to the right of 0 on the horizontal scale. But their distribution is effectively symmetrical and no pairings stand out from above the noise. The distribution of the 144 effect sizes ranged from -0.0002 to $+0.0002$, mean $<0.000,01$, a success rate for predicting compatibility by sun sign among 2 million married couples of barely 10 couples more than by tossing a coin.

8.3.9 Tests of sun signs vs illness

Tests of signs vs illness, especially the Aries-head-to-Pisces-feet tradition of zodiacal man, have been consistently negative, see 7.1.1950.2. Nevertheless Canadian health researchers Austin et al compared the hospital admissions of 5.3 million Ontario residents aged 18+ with their sun signs (*Journal of Clinical Epidemiology* 59, 964-969, 2006), which we can assume is free of self-attribution effects. The frequency of each of the 223 most common causes of admission for each sign was compared to the mean frequency for the other signs (elective and planned admissions were excluded). Per sign, the two most significant differences and p values were:

	p	Cause of admission	p	Cause of admission
AR	0.006	intestinal infections	0.040	bone & cartilage disorders
TA	0.001	intestinal diverticula	0.037	fracture of neck or femur
GE	0.015	alcohol dependence	0.033	complications of procedure
CN	0.039	anemia	0.048	intestinal obstruction
LE	0.004	gastrointestinal hemorrhage	0.040	aftercare
VI	0.034	vomiting in pregnancy	0.036	fracture of tibia & fibula
LI	0.011	fracture of pelvis	0.038	subarachnoid hemorrhage
SC	0.012	rectal abscess	0.039	lymphoid leukemia
SG	0.038	head and neck	0.046	fracture of humerus
CP	0.010	morbidity	0.024	abortion
AQ	0.007	angina pectoris	0.038	bacterial pneumonia
PI	0.001	heart failure	0.018	acute heart disease
	<u>0.015</u>	<u>mean</u>	<u>0.036</u>	<u>mean</u>

Every p is <0.05 , which seems like proof of a connection. But when the above links were tested on a second matched set of 5.3 million Ontario residents, only 2 reached $p < 0.05$ vs 1.2 expected by chance. The apparent connection did not exist. The most significant result (heart failure admissions for Pisces) was later tested vs other signs in a 2×12 contingency table (*Journal of Clinical Epidemiology* 61, 295-300, 2008), and delivered $p = 0.0017$ for $df = 11$:

	AR	TA	GE	CN	LE	VI	LI	SC	SG	CP	AQ	PI
Admissions	1476	1534	1553	1496	1497	1445	1350	1297	1277	1343	1433	1522
Non-admiss	886872	916978	936062	916057	901512	919751	896153	848831	845536	843292	854868	891810

Collapsing 2×12 to 2×2 gave this result:

	Pisces	Other signs	Total
Admissions	1522	15701	17223
Non-admiss	891810	9765912	10657722
			$p = 0.026$ for $df = 1$

Both p values are <0.05 , suggesting that the apparent proof of a connection has re-appeared. Except the researchers wanted to show how both p 's were inflated by choosing Pisces because it was the best *observed* result rather than the best *predicted* result (Pisces is traditionally connected with feet problems not heart problems). When the test was repeated 100,000 times using simulated controls, the true p was 0.15, and even that was an overestimate for the reasons given in 7.7.2016.3, where the Bayes Factor shows this result is strongly against an astrological effect. The effect size was equivalent to 50.1% hits when chance is 50%.

Conclusion to 8.3: In 1984, after surveying published studies and making his own tests, all with negative results, psychologist Michael Startup concluded "it is probably time for all to agree that enough is enough; the sun-sign idea is simply not valid", see 7.1.1984.2. Today, 35 years later, the tests in 8.3 and in 7.1 amply support Startup's conclusion, making signs (not just sun signs) the most tested and most disconfirmed idea in astrology. In short, no factor involving signs can have any practical effect beyond that due to expectation and role-playing.

8.4 TESTS OF OTHER CHART FACTORS

8.4.1 Can we test the whole chart?

Each of 10 planets can appear in 12 signs and 12 houses, and make 9 kinds of aspect (0, 30, 45, 60, 90, 120, 135, 150, 180) to each of the 9 other planets, or $12 \times 12 \times 9 \times 9 = 11664$ possible combinations per planet. But because some combinations for one planet limit those for another, for example planets in the same sign or house cannot be in opposition, and the outer planets move too slowly to repeat except over thousands of years, and because A-B aspects are also counted as B-A aspects, the total combinations for 10 planets is not 11664^{10}

(roughly 10^{40}) but more like 10^{28} depending on location, house system and time period, of which a traditional chart will typically contain about 40 factors (planets in signs, planets in houses, interplanetary aspects), or 100 if midpoints are included. US astrologer Doris Chase Doane claims the total number of combinations for 10 planets, 12 signs, 12 houses, 10 aspects is 5.4×10^{68} but without explaining her calculations (*Astrology 30 Years Research* 1956:1).

Both estimates are vastly more than the number of people who have ever lived (around 10^{10}). Furthermore (1) They deny that the meanings of chart factors could be based on observation as claimed in 3.1. (2) They deny that there could be a genuine "whole chart" said to be essential for reliable interpretation. For example Dutch psychologist Jan van Rooij wonders:

whether the concept of "the whole chart" will ever provide any testable hypothesis at all. For what is this whole chart actually? [Take] the example of a Sun in Sagittarius in the fourth house conjunct Venus, this is very different from the Sun in Sagittarius in the tenth house conjunct Mars. Oh right, and its meaning will be different when Mars is trined by Mercury, and this is different from the circumstance where Mars is part of a stellium with Mercury and Pluto, or different when Mars is the ruler of the first house, and again different when Mars is on the midpoint of Saturn and Uranus, which of course has a completely different meaning from the midpoint of Saturn and Neptune, and certainly when Neptune is retrograde – and we can go on and on (astrology is more complex than life itself). [With so many factors] it is simply impossible to interpret a "whole chart". When astrologers claim that they use the whole chart ... 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 should be considered, and which factors? ... Suppose that I consider as many as 20 factors, then undoubtedly an astrologer will come up who claims I should use 21 factors. So, although I might not make use of the whole chart, astrologers don't either (*Correlation* 13(1), 55-56, 1994).

He wonders why astrologers in their books and articles focus on the meaning of individual factors if their meaning can be so easily influenced by other factors. In response to astrologers who claim that statistical tests are meaningless, he points out that 100 charts containing the same factor should have something in common regardless of other factors, and that this something is what the researcher is after. Psychologists Eysenck and Nias put it this way:

If the most basic tenets of astrology are true, they should be detectable in their own right, regardless of other subtleties. ... suppose we were investigating the belief that there is a connection between diet and body weight. Of course many other factors come in, such as genetic make-up, age, exercise, health, and so on. Nevertheless, if we took a large enough sample, we should certainly expect to see indications that fat people tended to be well fed and starving people tended to be thin. If astrology is true, it must pass that kind of test (*Astrology Science or Superstition?* 1982:31).

Astronomers Culver and Ianna note how astrologers want it both ways:

much of the astrological community trumpets the supposed power of sun-sign astrology via the mass media, only to scurry behind the "other factors present in the horoscope" when confronted with an ever-increasing body of statistical evidence against such astrological sun-sign correlations (*The Gemini Syndrome* 1984:136).

Furthermore, if astrology merely *inclines* and never *compels*, then astrology is necessarily about *probabilities*. So only a statistical or probabilistic approach can be meaningful in the first place.

8.4.2 Early tests of chart factors

In the early days the calculation barrier prevented the use of large samples and controls. So the early tests were largely of little value, for example see the results of Choisnard and Krafft in 6.3.3-6.3.4. Even the famous US Church of Light research during 1924-1969 (a worldwide army of volunteers prepared many thousands of charts to analyse dozens of occupations, illnesses, and events, see Doane, *Astrology 30 Years Research* 1956) was of little value due to the absence of controls (*Recent Advances* 1977:171, 395).

Astrology provides many cases where failing to check probabilities has been fatal. For example any of 10 planets within 0.5° orb of a conjunction or opposition with one of the fixed stars Pleiades, Antares, or Ascelli are said to indicate blindness or eye troubles (Mueller, *Astrology Now* 1(7), 4 and 34-36, 1975). But the probability of such a placement is $(1 - (1 - 2/360)^{3 \times 10}) = 0.154$, which is nearly 80 times higher than the observed incidence of blindness (0.002 in countries with high standards of health care). In other words 79 out of 80 predictions based on this criteria are likely to be wrong. Similarly for Lilith, a hypothetical Dark Moon revolving

around the earth once every 126 years. UK astrologer Terry Piercy placed Lilith in over 100 natal and event charts, observed numerous contacts with it or its antiscion, and concluded that "its validity ... is as strong as any other factor in astrology" (*Astrology* 41(4), 109-121, 1967). But under his rules Lilith and its antiscion each makes at least two aspects in over 95% of charts by chance alone. So his observations about the "validity" of Lilith could hardly fail.

8.4.3 Modern tests of chart factors

The answer is to use large samples, controls, comprehensive tests, and replication to avoid confounding by chance effects and the crud factor. Notable examples are the studies by:

- Nona Press et al of 311 timed births who had committed suicide in New York City 1969-1973, see 7.4.1977.3.
- Peter Niehenke of aspect meanings using a 500-item questionnaire and 3290 timed births, see 7.6.1987.3.
- Mick O'Neill of 7868 factors in the charts of Gauquelin's 15942 professionals, see 7.5.1994.2.
- Mark McDonough of 300,000 factors in the 30,000 timed births in AstroDataBank files, see 7.7.2003.2.

None produced useful support for astrological claims. Nor have any of the other 700+ studies summarised in Chapter 7. Against this, Finnish mathematician and hobbyist astrologer Kyösti Tarvainen claims that his own tests of large samples have produced results with $p < 0.05$, but he fails to recognise that conclusions based on p values alone are indefensible when he has not shown that they replicate or that their effect sizes (which he does not calculate) are useful, see 7.7.2016.4. Indeed, of all the tests made of chart factors, the only result known to consistently replicate is "no useful support for astrological claims". A possible exception might be Gauquelin planetary effects, but this has to await their replication under conditions where social artifacts are excluded *and* observed effect sizes are elevated to levels that are potentially useful.

8.4.4 Tests of chart comparison

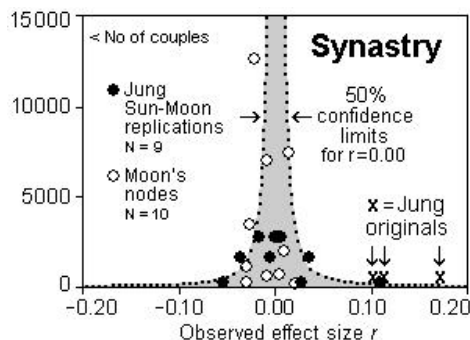
The comparison of charts is said to indicate how compatible their owners are:

The process of comparing the horoscope of one individual with that of another is invaluable in determining the potentials of their relationship (Sakoian and Acker, *The Astrology of Human Relationships* 1976:xiii).

By a detailed comparison of the horoscopes of two people we can estimate the degree of compatibility between them and the type of adjustment each will need to make in order to achieve a truly harmonious relationship with the other (Davison, *Synastry: Understanding human relationships through astrology* 1977:iv).

Astrology gives us the developmental pattern of the relationship as well as its potential (Weingarten, *The Principles of Synastry* 1978:11).

But meta-analysis of relevant tests such as Carl Jung's astrological marriage experiment and tests involving the Moon's mean nodes in one chart conjunct Sun through Saturn in the other reveals nothing not explainable by chance:



Effect sizes for Jung's original findings are larger than most but do not replicate, supporting the suspicion that his samples were biased. The Moon's N and S nodes are held to operate only by conjunction, N being generally favourable and S being generally unfavourable. No clear difference was found so here the two are combined. (In Hindu astrology both are unfavourable).

Despite some large sample sizes, these results show no clear evidence that natal charts play any role in human relationships. The mean effect size for 19 studies excluding Jung's is 0.0004, equivalent to 50.02% hits when chance is 50%.

Source: Dean, *Correlation* 14(2), 12-22, 1995 (Jung replications) and O'Neill, *Correlation* 10(1), 10-18, 1990 (nodes).

Tests of the number of aspects between charts were just as negative. Thus for 2824 married couples from Gauquelin's first heredity study, and 77 major aspects of orb 5° (SO through SA, AS, MC in one chart and the same in the other, but not aspects between JU and SA), the number of aspects per couple averaged 17.25 vs 17.11 expected (Ruis, *Correlation* 12(2), 20-43, 1993). Here 17.11 was the mean of 500 random matching runs within a window of six years (average 48320 aspects per run), and was almost exactly the same as the theoretical

number $77 \times 80/360 = 17.111$. The corresponding effect size r for 2824 married couples was about 0.0006, clearly far too small to have the slightest practical value.

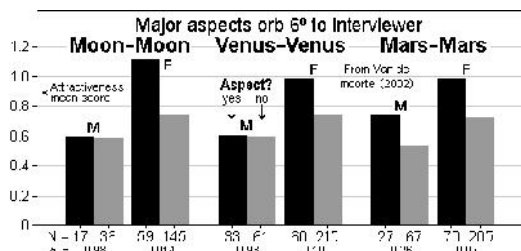
A few tests of chart comparison by astrologers have been made, but with results generally no better than in any other tests of astrologers. They are included in the lists in 8.10.

Tests of attraction. The comparison of two charts is also said to describe the *attraction* between two people, which is harder to test than just reading marriage records. Nevertheless it was ingeniously tested by Belgian astrologer Koen Van de moortel (*Astro-Logics*, 2nd edition 2002:126-133, also *Correlation* 17(1), 50-53, 1998). In Summer 1992, in a shopping street in his home town of Ghent, he approached strangers and asked them "What do you think about astrology?". He was then aged 30.

After a few minutes of conversation, he asked each stranger for their birth data, and discreetly rated their attractiveness on a 7-point scale from -3 (ugly and disgusting) through 0 (neutral) to +3 (would love to take you to dinner). The mean scores were 0.60 for males and 0.79 for females. There were no scores of -3 and only one of -2, but of course it is:

difficult to detest someone who is at least friendly enough to stop and give you two minutes of their time (p.128).

Altogether he approached 369 strangers, of which 75% were female and 70% knew their birth time within two hours. Later by computer he calculated the number of major aspects of orb 6° between his birth chart and their birth chart for Moon-Moon, Venus-Venus, and Mars-Mars, all chosen because his astro experience had suggested they were the most important. Their mean attractiveness score was higher when aspects were present, which supports the astrological claim of a link between such interchart aspects and attraction. Here are the details:



Attractiveness mean scores vs major aspects yes/no from Koen Van de moortel's brief conversations with strangers. The mean score was typically 0.6-1.0 and the standard deviation 0.9-1.0. Significance of each yes/no difference by t -test is shown by the p values (mean $p=0.39$), the best of which loses significance when corrected for the number of tests. When each difference is converted to an effect size r , calculated from its t value, mean $r = 0.085$, equivalent to 54.25% hits when 50% is expected by chance.

Yes/No differences were larger for females, but "might be caused by other than astrological factors" (p.128). Van de moortel also found that the difference in attractiveness was larger if he and the stranger had two of the above aspect pairs instead of just one. To keep his analysis simple he did not test other aspect pairs said to be traditionally important, such as Sun-Sun, Sun-Moon, or Sun-Venus, nor the whole chart, nor randomised control charts. So we cannot tell if the above results are genuinely due to astrology or to some unnoticed bias. Such a simple test deserves to be repeated with appropriate controls. Van de moortel has tried to encourage volunteers to make a replication, but so far (as at 2020) without success.

8.4.5 Tests of birth time rectification

The birth time is both the most important and the most unreliable of astrological factors. When does a plane journey begin? At the arrival of the idea, at making the decision, at buying the ticket, at packing the bags, at leaving the house, at entering the plane, at starting the engines, or at actual takeoff? Only the last is definitive, and even then there may be a turning back. If life is a plane journey, then conception = buying the ticket (potential travel) and birth = takeoff (actual travel), in which case only birth adequately defines when life begins. Which is not what biology would conclude.

Time of birth is crucial in astrology, but in biology its only known influence may lie in the division of people into larks (best in daytime) and owls (best at nighttime). UK psychologists Wallace (a lark) and Fisher (an owl) wondered if the first exposure to light at birth might set

the biological clock for alertness (in Kunzendorf & Wallace, *Individual Differences in Conscious Experience* 2000:337-349). For high-school and college students they found that birth time was related to being a lark or owl, but not for students over 21, possibly because they had become used to work normal hours. The typical work day of 8am–5pm is OK for larks but not for owls, who will tend to be more tired than larks in the morning. Children who are owls will have more difficulties in morning classes than in afternoon classes, and vice versa for larks.



To some astrologers the astrological birth time is when the spirit enters the earthly vehicle, which may or may not coincide with the physical birth time, thus allowing the perfect excuse for error in chart reading, plus unlimited and untestable speculations as fruitful as speculations about the birth time of a tulip but still popular in the pages of astrological journals.

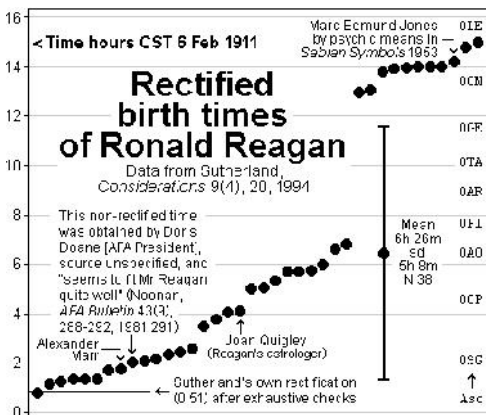
Question: How accurate are public clocks? People's attitude to time varies with country. There is German punctuality (time is money), Spanish mañana (never do today what can be done tomorrow), and casual action (events begin when people arrive not when the hour arrives). Such attitudes are largely determined by our situation and culture, not by our personality (*Journal of Cross-Cultural Psychology* 42(3), 482-493, 2011).

In which case they should be reflected in the general pace of life and in the accuracy of public clocks. To test this idea, psychologists Levine and Norenzayan checked clocks in 15 banks picked at random in each capital city of 31 countries, and compared their accuracy (to the second) with local telephone time signals. Accuracy was highest in the industrialised countries of Western Europe and in Singapore and Japan (average error less than a minute), and lowest in the non-industrialised countries of the Middle East, Latin America, and Asia (average error was up to several minutes) (*Journal of Cross-Cultural Psychology* 30(2), 178-205, 1999), see adjacent plot. An earlier study by Levine and Bartlett found that clock errors tended to be twice as large in small cities than in large cities (*Journal of Cross-Cultural Psychology* 15(2), 233-255, 1984).

Nevertheless an accurately timed birth chart is said to correlate with important events in the owner's life such as promotions, accidents, marriage, and death. Conversely, the timing of important events is said to allow unknown birth times to be determined, a process called rectification. Numerous methods have been proposed, usually allowing the perfect excuse for error (ie the result need not necessarily agree with an accurately-observed birth time).

For example in his 1954 book *Rectification of the Birth Time* based on a lifetime of research, Gustav Schwickert claims that the astrological birth time (which he nonfalsifiably defines as when "the *Ego* takes possession of the physical body" p.91) usually differs from the observed birth time, the average difference for 26 cases being ± 8 minutes, range 21 minutes before to 15 after (pp.82-83). The astrological birth time is what works in directions, and is determined by what works in directions, so his circular claim cannot fail. But in controlled tests this excuse

collapses because the results supposedly excused are generally in disagreement. For examples see next and especially 8.9.9 wrong charts.



Various astrologers have worked backwards from the life events of Ronald Reagan to produce over 35 different birth times spanning 15 hours, each one definitive according to the astrologer concerned. But at least the astrologers seem to agree that the time was not between 7h and 13h, or after 15h. The non-rectified time of 2h was obtained by Doris Doane from an unspecified source. The time chosen by the author Nick Sutherland after exhaustive checks is 0h51, Ascendant 15sc33. From *Considerations* 9(4), 19-43, 1994.

Earlier *Considerations* (Volume 1, 1985) had published careful rectifications of Reagan's chart by

three very distinguished astrologers (Margaret Millard, Kay Hughey, and Alexander Marr), who had obtained 13:58, 6:36:28, and 1:44:06 CST respectively. The last two were exact to the *second* yet differed by five *hours*. All differed by hours from the time that Reagan's astrologer Joan Quigley's said was accurate "to the exact second" and which "tested out over and over" (*What Does Joan Say?* 1990:123, 44). In her book Quigley does not state her actual rectified time, only that it gave a Sagittarius Ascendant (pp.53,157), which agrees with the 4:06 CST "source unknown" quoted by Nick Sutherland 1994:20). So what is going on here?

That such exact times can differ so inexactly is unremarkable. Chart symbolism is so flexible, and factor combinations are so numerous, that juggling the birth time to get *this* chart and *this* combination to fit *these* events can hardly fail to be successful. Thus computerised methods of chart rectification invariably give numerous times to choose from according to your preferred symbolism. In other words the time chosen will fit your preferred symbolism but not necessarily the actual birth time, for an example see 7.4.1990.1. Technology has misdirected your attention away from what is actually happening, namely your seeing faces in clouds.

In any chart rectification by events, an often overlooked factor is the frequency of the chosen chart signifiers, which has to match the frequency of the event otherwise the method is implausible. But whereas the frequency of a given signifier is generally fairly constant, the frequency of certain events can vary widely according to country, century, age and gender. For example the observed probability of death during twelve months at various ages varies by up to a factor of ten depending on whether the country is India or Sweden:

At this age in years	≤1	10	40	70	
The probability of death (	0.17	0.005	0.011	0.068	in India 1960
during twelve months is (	0.015	0.0004	0.002	0.032	in Sweden 1960

Data are from Derek Llewellyn-Jones, *Human Reproduction and Society* 1974:140,147.

Again, take any two large centres of population separated by a few km, each with about 10^5 people, as will exist in any large urban area such as London or New York. It is inconceivable that the 10^5 charts in one centre could differ significantly from the 10^5 charts in the other centre. Yet on 6 August 1945 in Hiroshima 10^5 people died, whereas in Kure just 20 km away nothing special happened, a difference that astrology seems incapable of explaining.

Thirty years ago this point was tested by Swiss researcher Dr Marc De Schrijver during routine cat-breeding experiments using time-sensitive factors measured far more precisely than in normal astrological practice. His results denied any possibility of rectification, see 7.4.1983.1.

Methods of rectification not based on events include:

(1) Rectification by degree meanings. This method is guaranteed to fail because the many existing sets of degree meanings are in notorious disagreement, see 8.9.3.1, a point stressed by inventors of degree meanings to justify their inventing yet another set of degree meanings.

(2) Rectification by facial appearance. The account below is condensed from *Recent Advances* 1977:407-409. We have been unable to find any controlled tests or factor analyses:

During 30 years of research German astrologer Edith Wangemann and hundreds of students tested traditional systems against many thousands of charts and found none were useful. She claimed a new system based on multiple-of-45° aspects between planets and Koch house cusps (orb 30') gave accurate results for 4 out of 5 charts. Aspects to house cusps and cusp rulers described facial features such as forehead, eyes, cheeks and jaw. The effect of each planet was largely in agreement with tradition (VE feminine; MA masculine; JU – the most obvious effect of any planet – photogenic, jovial; SA prominent bones, serious. Aspects to Asc made the face round (SO, MO), long (JU, UR), square (SA), broad (PL), rest indefinite. Her research finished in 1973 and is reported throughout issues of *Sein und Werden*.

(3) Rectification by framing, an ancient technique rediscovered by the astrologer Alexandre Volguine in his 1974 book *Les Significations des Encadrements dans l'Horoscope*. Interpretation is based on the two planets which enclose or frame the target point irrespective of their distance or asymmetry. The two planets are said to blend their traditional meanings with that

of the target point. Subsequent planets are not considered. After studying more than 6000 charts during 25 years, Volguine concluded that the framings of the Asc and MC were so decisive for personality and career that they allowed quick and easy rectification:

The framing of the Ascendant and MC are ... so clear and strong in the majority of cases that it allows at-a-glance assessment of birth-time accuracy. It is one of the chief factors to examine when a choice is required between two versions of a chart (p.139). [No controlled tests were cited to support this claim]

We have been unable to find any independent controlled tests of Volguine's claim.

(4) Rectification by the **prenatal epoch**, aka the *Trutine of Hermes*. Today most (but not all) astrologers see the method as unreliable, a view confirmed by tests, see 7.2.1957.1.

8.4.6 Tests of angular planets vs appearance

The idea is an ancient one. Thus Ptolemy (*Tetrabiblos* Book 3 Chapter 16) describes how:

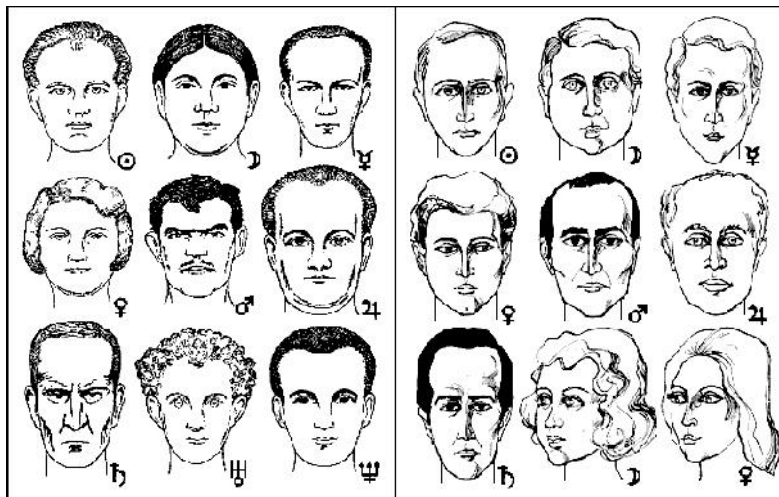
Nature forms and moulds the body before she inspires it with a soul ... In regard to the body, therefore, it is in all cases requisite to observe the oriental horizon [Ascendant], and to ascertain what planets may preside or have dominion over it (Ashmand translation. The Robbins translation does not disagree but has it in Chapter 11 not 16).

To which he adds various modifiers (rulerships, signs, quadrants, fixed stars), each of which modifies everything else, and all of which "it is necessary to bear in mind". But can it be done in the first place? In 1819 British astrologer and *Tetrabiblos* translator James Wilson felt the whole business was far too complicated, so the answer was no:

Modern astrologers make a sad confusion in describing the form of any person ... yet even in that symbolical way their doctrines are too intricate to admit of clear definition, and too contradictory to be easily reconciled. ... I am certain no human intellect, however acute, can form a correct judgment of any one's appearance from so many conflicting testimonies (*Dictionary of Astrology* 1819/1974:153).

Later, with the growing popularity of signs, priorities moved to the ascending sign, but to no avail. In 1951 Margaret Hone (*A Modern Text Book of Astrology* 1951:221) put this new priority to the test and came to much the same conclusion as James Wilson, see 8.3.6.

Nevertheless the planetary features on which most of the published opinions agree are: Sun *commanding*, Moon *fat fleshy*, Mercury *slight vivacious*, Venus *beautiful plump dimpled*, Mars *muscular*, Jupiter *large benevolent*, Saturn *thin bony*, Uranus *tall independent*, Neptune *inert*, Pluto *expressive* (*Recent Advances* 1977:406-407, the last two are based on just one or two opinions). Here are two examples of planetary appearances from artist/astrologers:



Supposed angular planetary effects on facial appearance.

Left: Sketches by the German artist-astrologer Hans Stein after a lifetime study of thousands of photographs and charts, from G Barrett, *Astrological Physiognomy* 1941:7.

Right: Sketches by Jean Retailleau from PC Jagot, *Les Marques Révélatrices du Caractère et du Destin* [Revealing marks of character & destiny] c1920/1976:73-103.

The only clear similarities between the 2 sets of sketches are for Jupiter faces (large, oval, dignified) and for Saturn faces (lean, thin, stern).

Now test the above effects yourself on the following faces of people with either Jupiter or Saturn (and no other planet) within 5° of the Ascendant. Can you tell which is which?

The photos below are from an early version of www.astrofoces.com, which "seeks to verify astrology with photos grouped by Sun, Moon and Ascending sign". In 2012 the website no longer carried these photos.



These people have either Jupiter or Saturn (and no other planet) within 5° of the Ascendant. About 1 in 4 have it within 1° . According to the previous sketches, the difference could hardly be more marked – Jupiter is large and oval, Saturn is thin and stern. Here all faces on a diagonal are for the same planet, so the difference (if valid) should be easy to confirm. (1) Which diagonal is which planet? (2) Of the Saturn faces, none have Ascendants in element X, whereas the Jupiter faces have plenty of Ascendants in X. Which element is X? Answers are at the end of 8.4.7.

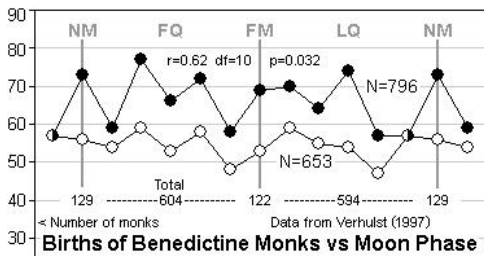
8.4.7 Tests of boosting the signal/noise ratio

The tests mentioned so far in section 8.4 took years of computerized work. By hand they would represent the lifetime work of thousands of astrologers, all of whom might claim that their experience supports the validity of factors that these tests have failed to confirm. Could this be because the tests did not involve things that reliably show up in charts? Or because the tests did not sufficiently control human qualities that subsequently interfered with the astrology? As will be apparent from Chapter 7, neither question is justified by the evidence, so both answers are No. But we continue anyway. Take Gauquelin's Mars effect for example, for which the effect size is typically $r=0.08$. Belgian political philosopher Jos Verhulst comments:

it should be kept in mind that the horoscope is presumed to reflect, in some way, the global context of one's life and personality. Besides being a sportsman, a champion can be married or not, develop an idealistic outlook on life or not,

show high intelligence or not. It could be that some particular element of the horoscope, such as the position of Mars near to the ascendant, turns out to be favourable for becoming a sport champion within one life context, but unfavourable within another context. Therefore, astrology should be tested in populations that share the same overall life context, not just one specific trait (in M Mikulecky ed, *Chronobiology and its Roots in the Cosmos* 1997:59-64).

Verhulst suggests that Benedictine monks are a good example – they share a very specific world view and a very simple lifestyle that deeply controls their existence. To test his idea he chose the two most important astrological planets (Sun and Moon), and calculated the Moon phase at the birth of 796 monks from 8 monasteries around the world and 653 monks from another 14 monasteries around the world. He used the birth data given in the *Catalogus Monasteriorum* 1995, a scholarly reference work updated every five years containing the birth dates of more than 7000 monks. Moon phase = Moon longitude at birth – Sun longitude at birth (if answer is negative then add 360°):



Here Moon phase is plotted in 30-degree segments centred on 0° = New Moon, so 90° = First Quarter, 180° = Full Moon, and 270° = Last Quarter. The number of monks for each data point in the two plots averages 66 and 54. The New Moon and Full Moon totals are much the same (129 vs 122), as are the totals either side of Full Moon (604 vs 594), and there is no clear dependence on Moon phase. Nevertheless the correlation between the two plots is significant ($r = 0.62$, $p = 0.032$), which Verhulst saw as support for his idea.

However even at a monastery there is still a wide diversity of jobs to be done, for example some monks may specialise in growing food, others in cooking it, and others in keeping the plumbing working. The same applies to others who share a very controlled lifestyle such as farmers in remote outback areas or workers in Antarctic bases. Indeed, Gauquelin addressed this very point when he chose to study eminent professionals because they expressed:

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. ... 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).

In other words, Verhulst tried boosting the signal/noise ratio by reducing noise whereas Gauquelin tried it by boosting signal. In terms of useful effect sizes neither was successful.

So what about trauma? If anything should show up in charts, surely it would be the kind of traumatic event that Jung saw as an "archetypal situation", that is, one arousing strong crisis-like emotions, see 7.6.1952.1. Arguably the most traumatic event in anyone's life is death including suicide, but even here astrologers disagree on whether it can be seen in charts, as for example horary practitioner John Frawley and astro-historian Nick Campion, who assert:

- Yes, it is perfectly possible, from both natal and horary [charts], and in practice as well as theory (Frawley).
- 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 (Campion).
Both in interviews with Garry Phillipson, *Astrology in the Year Zero* 2000:114).

Just as Cicero wondered how 70,000 Romans massacred at Cannae could have the same chart factors at death, so we can wonder about the three million people drowned in the Chinese Huang-Ho floods of 1931, the one million people drowned in the Bangladesh floods of 1970, the 100,000 nuclear victims killed at Hiroshima and Nagasaki in 1945, and the nearly 3000 killed when the New York twin towers collapsed in 2001, albeit not necessarily in the same few seconds. Could they all have relevant death signatures? How could such signatures mean anything when much larger numbers of people survived concurrently in the same countries?

The wife of astrologer Robert DeLuce, a past director of the AFA, noted that her husband has "predicted the time of his death for many different dates, none of which were correct" (Holden and Hughes, *Astrological Pioneers of America* 1988:43). But it could be argued that death is ordinary – it comes to everyone – so why expect it to show up? And the same might be said of degenerative diseases such as cancer. So we need to test something really life-changing that

does not apply to everyone regardless of how long they live. But something like what?

Not everyone gets murdered, so murder would be a good topic – except most studies are of *murderers*, not murder *victims* (which is what we want). A study by Gauquelin in 1951 of 623 notorious French murderers found nothing remarkable, and arguably war is enough to turn everyone who is conscripted into a potential murderer. So we need a better topic.

Given the personal suffering that irresistably drives a person to seek a sex change (more than a third of those afflicted end up committing suicide), to say nothing of the subsequent events, it seems reasonable to expect such a condition (known as *gender dysphoria*) to be prominently shown in the birth chart, or at least more prominently shown than most others. Those afflicted are anything but subnormal, with many being professional, skilled, and well-educated. The incidence of gender dysphoria is not precisely known but an extrapolation from reported cases suggests about 1 in 10,000, so it is unlikely to emerge via say a sun sign whose individual incidence is about 1 in 12. On the other hand it is prudent to assume nothing.

In 1997, after eight years of work inspired by the work of Dutch astrologer Wim van Dam into homosexuality, British astrologer Keith Anderson managed to collect 101 cases of gender dysphoria all with recorded birth times. He looked at a large number of factors, most of them based on tradition or on published claims including aspects, angularity, midpoints, Jones's planetary patterns, harmonics, retrogradation, and eight house systems, He applied statistical tests and allowed for the number of tests but found no useful differences from chance.

Thus for midpoints there was no emphasis on Venus as suggested by Ebertin's midpoint interpretations and biological correspondences. For harmonics the results were largely or totally contradictory (see *Correlation* 17(2), 76-77, 1998 for a review of Anderson's 161-page self-published book on which the above is based). Nevertheless Anderson felt that "*Somewhere* the astrological signature *must exist* predicting that at some time during the native's life this devastating upheaval will take place" (our italics). Since it is difficult if not impossible to prove a negative in such cases, this comforting position can be maintained indefinitely.

Answer to test of planetary appearance: (1) In the top row starting at top left, the planets are Saturn, Jupiter, Saturn, and so on alternately to Jupiter, Saturn, Jupiter at bottom right. The claimed influence is not discernible. (2) Unlike the Jupiter faces, none of the Saturn faces have an Ascendant in Water. So X = Water.

8.5 TESTS OF GEOPHYSICAL FACTORS

8.5.1 Why test geophysical factors?

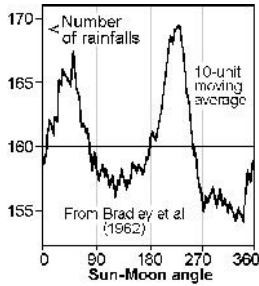
During the 1970s astrology boom there was a need for evidence but unlike today not much was available. So geophysical evidence was accepted as a proxy even though it was relevant to natural astrology (physical study of the heavens, now absorbed into astronomy, the work area for astronomers) rather than judicial astrology (making judgements via the heavens, now simply astrology, the work area for astrologers). Key players were cycles of any sort especially solar cycles, electrostatic life fields, extra low frequency waves, radio sources, magnetism, gravitational and tidal resonance, and lunar effects, all reviewed with 129 references in *Recent Advances* (1977:487-533). Selected updates follow below. For earthquakes see 8.8.7.

8.5.2 Tests of radio propagation quality

Seen as especially relevant were Nelson's findings on radio propagation quality, which proved to be an artifact see 7.4.1978.2, but which fifteen years later was still being quoted as proof of astrology by the NCGR co-director of education (see cura.free.fr/decem/09slevin.html).

8.5.3 Tests of lunar effects on rainfall

Also popular at the time were biological tides and lunar effects. A measure of the desperation to prove astrology was a lunar effect on rainfall (Bradley et al, *Science* 137, 748-749, 1962), which could hardly be less relevant to consulting rooms, and was anyway a tiny *physical* effect possibly due to the shielding effect of the Moon on the solar wind and on meteoric dust:

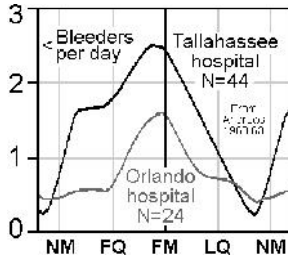


The heaviest 24-hour rainfalls at 1544 US weather stations 1900-1949 show a second harmonic vs the Moon's phase. The effect looks large because the vertical scale has been truncated, but in fact it is very small and required a huge amount of data to detect it, in this case no less than 16076 heaviest rainfalls, plus strong smoothing.

More relevant was Bradley's Jupiter Pluvius study (*American Astrology* August 1968:3-10, summarized in an original *Correlation* issued as a supplement to *Astrological Journal* 2, 4-6, Winter 1968). Jupiter was the Roman god of sky and lightning, and giver of rain. But the results were eventually found to be due to an artifact, see 7.4.1981.1.

8.5.4 Tests of lunar effects on bleeding

One of the earlier lunar effects cited in astrology books was the apparent connection between Moon phase and bleeding. It began when Florida surgeon Edson J Andrews analysed his tonsil and adenoid operations at Tallahassee hospital 1956-1958 (*Journal of the Florida Medical Association* 46(11), 1362-1366, 1960, reprinted in *Astrology* 48(1), 49-56, 1974). Of just over 1000 cases, 44 required special control of post-operative bleeding, of which 36 cases occurred within one week either side of full moon. Another 24 bleeding cases from Orlando hospital 1950-1956 revealed a similar pattern.



After smoothing the data by taking seven-day averages every fourth day and getting this result, Andrews concluded that a lunar effect existed. But he did not report the actual daily counts. The curves may look impressive but the averages of 1.5 and 0.8 bleeders per day are too low to allow adequate statistical testing (Andrews applied no statistical tests). Nor did he have controls for artifacts such as weekend effects, and no comparison with non-bleeders (which among other things might have shown whether artifacts actually existed). In other words no conclusion is possible.

Nevertheless Andrews famously concluded:

Because these data have been so conclusive and convincing to me, I threaten to become a witch doctor and operate on dark nights only, saving the moonlit nights for romance (p.1366).

His work was re-analysed by Wunder and Schardt Müller (*Zeitschrift für Anomalistik* 2, 91-108, 2002), who also conducted a replication on 228 cases of knee and hip surgery, but they found no support for his claims. Many other negative replications (see below) have been reported since hospital databases became sufficiently large and computerized to allow proper lunar analyses, and belief in a Moon connection became a concern for hospital administrators:

Belief in lunar effects on abnormal or deviant human behaviour ("moon madness") is old, common, perpetuated by the media and notably widespread among health professionals (Voracek et al, *Wiener klinische Wochenschrift* 120 (11-12), 343-349, 2008:343).

Today over 100 controlled tests relevant to Moon phase and bleeding have been reported, none of them confirming the Andrews findings. For example no significant link was found in the following diverse studies totaling over 76,000 cases (p was typically >0.2):

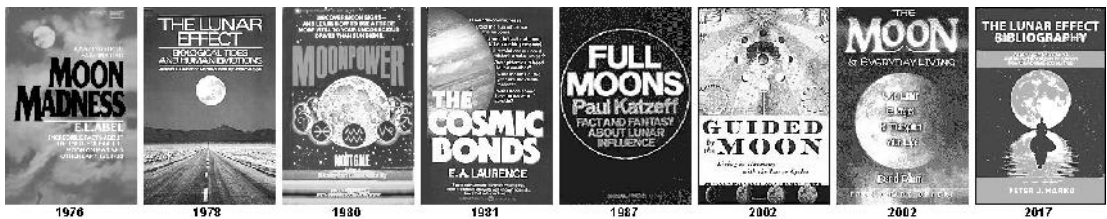
- 14970 consecutive operations in Graz 1990-1996 (Smolle et al, *Archives of Dermatology* 134(11), 1368-1370, 1998).
- 782 cases of ambulatory surgery (Holzheimer et al, *European Journal of Medical Research* 8(9), 414-418, 2003).
- 589 children's tonsillectomies 1998-2000 (Kumar et al, *Laryngoscope* 114, 2031-2033, 2004).
- 1801 consecutive elective surgeries (Kredel et al, *Acta Anaesthesiologica Scandinavica* 50(4), 488-494, 2006).
- 452 consecutive cases of bladder surgery (May et al, *International Urology and Nephrology* 39(4), 1023-1030, 2007).
- 2411 cases of lung surgery in Munich (Kuehnl et al, *European Journal of Medical Research* 14(4), 178-181, 2009).
- 26852 operations for thyroid surgery in Vienna 1982-2009 (Promberger et al, *European Surgery* 42(2), 72-76, 2010).
- 27914 operations over 111 lunar cycles 2001-2010 (Schuld et al, *World Journal of Surgery* 35(9), 1945-1949, 2011).
- 305 cases of hip replacement (Fickscherer et al, *Archives of Medical Science* 8(1), 111-114, 2012).

Wolbank et al (*Resuscitation* 58(1), 97-102, 2003) analysed 11,134 emergency admissions of patients to hospital over six years in Graz Austria. There were significant clusters mainly for lung disorders suggestive of a population exposed to periods of general pollution, but not the slightest correlation with Moon phase ($p = 0.85$), Moon distance ($p = 0.99$), Moon sign ($p = 0.85$), anomalistic month ($p = 0.17$), or synodic month ($p = 0.28$). The authors conclude "Any influence of the moon ... can be definitely ruled out" (p.97).

8.5.5 Tests of other lunar effects

Moon beliefs helped the ancients explain things otherwise difficult to explain. Today they are part of folklore everywhere. Worldwide there are many hundreds of Moon superstitions, many with key differences. Thus in English, French, Italian, Latin, and Greek, the Moon is female, but in Sanskrit and all Teutonic languages the Moon is male. Europeans see a man in the Moon, East Indians see a rabbit in the Moon, Samoans see a woman weaving, and the Chinese see a monkey pounding rice (Schick and Vaughn, *How to Think about Weird Things* 2008:107).

Here other lunar effects include the Moon's association as popularly perceived with birth rate, crime, psychiatric admissions, suicide, marine organisms including oysters, animal behaviour, and plant growth. Many hundreds of lunar studies in these areas have been published, many with impressively large sample sizes, but there are unavoidable problems due to seasonal and calendar artifacts. If you count days, expect artifacts due to the interval between full moons being a slightly variable 29.5 days (here the problem is that .5). If your study involves people and your full moons tend to fall on weekends, expect artifacts due to weekend effects.

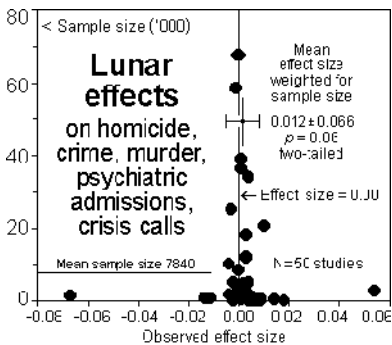


Belief in lunar effects is promoted in numerous books, albeit less frequently than previously. Generally their approach is to ignore negative findings, and especially to omit numbers, which allows them to safely say "X found links with the Moon" even though the link did not replicate and the effect size was negligible. The last book is an annotated bibliography of 338 sources 1871-2017 by astrologer PJ Marko who claims that familiarity with the field "can only further our understanding" (p.8). But there are no effect sizes and no meta-analysis so it is just as unhelpful as the rest.

In their 1978 book *The Lunar Effect*, Lieber and Agel claim their research confirms:

lunar influence on violent behaviour, with implications for psychiatry, medicine, and the behavioural sciences (p.xii).

But a meta-analysis by psychologists Rotton and Kelly of 37 lunar studies involving homicide, crime, murder, psychiatric admissions, crisis calls or suicide found no evidence of significant lunar effects (*Psychological Bulletin* 97, 286-306,1985):



The plotted effect sizes show the usual inverted-funnel shape but with no appreciable tendency to be positive. The sampling variance is less than the total variance, suggesting there are real differences between studies, which is not surprising given the diversity of topics. But the mean effect size weighted by sample size is a tiny 0.012, equivalent to 50.6% hits when chance is 50%, while $p = 0.86$ would seem to offer no possibility of it being different from zero. From Rotton and Kelly, *Psychological Bulletin* 97, 286-306, 1985, $N=37$, plus 13 later studies from online sources.

Rotton and Kelly specifically noted how the studies in their meta-analysis showed no consistency in outcomes:

For every study that has recorded more lunacy when the moon is full, another has recorded less (p.301).

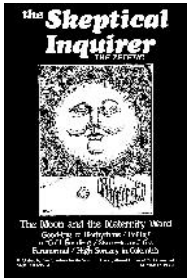
Other surveys of lunar effects have reached the same conclusion. There are many studies and many opportunities for success but no hint of consistent results. Here are some recent views:

It is to be noted that each publication suggesting lunar effects in man is matched in the same or following year by one or more papers refuting such effects. ... For every study that has recorded more lunacy when the moon is full, another has recorded less (Dubrov, *Human Moon Biorythms* 1996:89-90,301).

The majority of studies [on people] did not produce any evidence of a connection, and ... the positive findings contradicted one another in respect of lunar phase (Endres and Schad, *Moon Rhythms in Nature* 2002:125-126).

If, as folklore would have us believe, relationships between lunar phases and human behaviour are strong and obvious, why do studies have such difficulty in uncovering them? (Kelly, Rotton and Culver, *The Moon was Full and Nothing Happened*, in Nickell et al, eds, *The Outer Edge: Classic Investigations of the Paranormal* 16-32, 1996:29)

UCLA astronomy professor J-L Margot, in *Nursing Research*, 64, 168-176, 2015, shows how proper competence in astronomy, data collection, and analysis is essential to avoid erroneous conclusions. When one adheres to basic standards of evidence, no lunar connection is found.



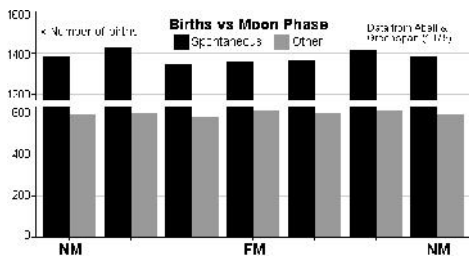
Birthrate. One of the more widely held beliefs about lunar effects is that there are more human births at Full Moon. In their study of this belief, Abell and Greenspan (respectively an astronomer and physician) comment:

The belief is even widespread among nurses in maternity wards and among some gynecologists as well. One of our colleagues recalls that his first child was born during full moon and that when he arrived at the hospital there were expectant women waiting in the halls for available rooms; the nurses all explained that "it always happens this way" at the time of a full moon. Astrologer Sydney Omarr frequently refers to the incidence of crime and violence, as well as the higher birthrate, at the time of full moon ((*Skeptical Inquirer* 3(4), 17-25, 1979:18).

Abell and Greenspan point out that empirical studies have found only weak and conflicting effects. For example the following results each involved over half a million cases in New York:

Birthrate 1948-1958 was about 1% higher during the two weeks **following full moon** (Menaker & Menaker, *American Journal of Obstetrics and Gynecology* 77, 905-914, 1959). Birthrate 1961-1963 was 1% higher during the two weeks **around full moon** (Menaker, *American Journal of Obstetrics and Gynecology* 98, 1002-1004, 1967). Birthrate during a later unspecified three-year period was 1% higher during the two weeks **preceding full moon** (Osley et al, *American Journal of Obstetrics and Gynecology* 117, 413-415, 1973)

They note that to properly test half a million cases would require "a very substantial amount of effort" (p.24), so the conflicting outcomes led to their own analysis of new data:



Abell and Greenspan's results for live births at UCLA Hospital during 17 March 1974 through 30 April 1978, a total of 1506 days spread over 51 synodic months, mean 29.53 per synodic month (same as the known mean length, so an exact number of lunar cycles was involved). Nearly 8200 births were natural and spontaneous, and 3500 were induced by drugs or Caesarian section. In neither case was there a significant peak around Full Moon (a chi-squared test for spontaneous births gives $p = 0.58$ $df = 6$). Nor was there a significant effect for multiple births or stillbirths (such cases are not included in the plot).

In 1988 Martens et al critically reviewed the 21 studies on birth rate vs lunar phase published in North American and European journals during the previous fifty years (*Psychological Reports* 63, 923-934, 1988). They noted that the birth rate varies with time of day, with season, with day of week (with lower birth rates on weekends and on national holidays, not necessarily the result of interventions), and with drops in barometric pressure tending to coincide with the onset of labour, all of which led to this comment:

These variations in birthrate are important for the examination of lunar phase in birthrate because confounding with weekdays and holidays or a dependence between secular and lunar trends could result in spurious correlations between births and lunar phase (pp.923-924).

Total number of cases was about 150,000 and mean p was 0.40. The authors conclude:

there is no sufficient evidence to support the notion there is a relation between lunar periodicities and birth. Even if we consider only the studies which have obtained positive evidence of such a relationship, it is clear that the relationship is, at best, very weak and, second, that it is certainly not stable ... this wandering of the maximum is a good indication that the real causes have nothing to do with phases of the moon (p.933).

More recent studies have confirmed this conclusion. For example:

Arliss et al (*American Journal of Obstetrics and Gynecology* 192(5), 1462-1464, 2005) analysed 564,039 births across 62 lunar cycles in North Carolina 1997-2001. No significant difference in frequency or complications or intervention was found across the eight moon phases. "As expected, this pervasive myth is not evidence based" (p.1462).

Staboulidou et al (*Acta Obstetrica Gynecologica Scandinavica* 67(8), 875-878, 2008) analysed 6725 timed births (no interventions) in Hannover Germany 2000-2006. No significant effect of moon phase was found on birth rate. Nor of moon phase at time of conception on frequency, complications, or gender of outcome.

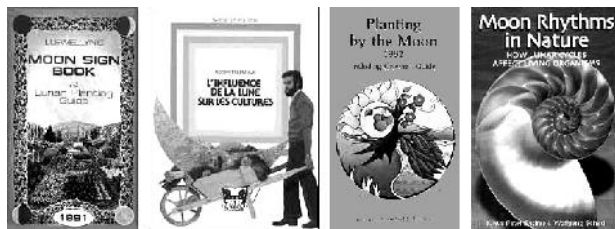
Gestation. But if there is no link between lunar phase and birth rate, surely there is a link with gestation time, which (traditionally) is roughly ten lunar months? In fact the median observed gestation time in cases with no complications is 284 days or 9.62 (not 10) lunar months and is variable with a standard deviation of 10-15 days. There are more deliveries 3 weeks early than 3 weeks late, first-time mothers deliver 1-5 days later than existing mothers, mothers aged <20 years deliver a few days earlier, and whites tend to deliver later than nonwhites (Mittendorf et al N=114, *Obstetrics & Gynecology* 75(6), 929-932, 1990; Kieler et al N=1868, *Ultrasound in Obstetrics & Gynecology*, 6, 353-357, 1995). So the answer is no.

Suicide. Lieber and Agel (*The Lunar Effect* 1978:30) cite a 1977 study said to have found a significant lunar effect for suicides 1956-1970 in parts of California and Colorado. But again later studies have failed to confirm it. Voracek et al analysed all 65,206 suicides officially registered in Austria 1970-2006 (*Wiener klinische Wochenschrift* 120 (11-12), 343-349, 2008). It was the second-longest study period and the second-largest sample ever investigated on this subject. Observed proportions did not deviate from expectancy during Moon quarters or 3-day windows centred around New and Full Moon. One of the authors' comments was especially relevant, and effectively summarises the status of all lunar studies involving people:

Subgroup analysis (by age and year), additionally conducted for demonstration purposes, yielded results conspicuously resembling those of related studies with positive findings, namely, sporadically emerging significant findings that were entirely absent in the overall analysis and directionally erratic, thus suggesting they were spurious (false positives) ... due to statistical type 1 errors or erroneously taking calendrical periodicities of suicide occurrence that are real as evidence for lunar effects (p.343).

8.5.6 Moon rhythms in nature

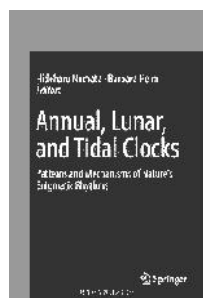
In contrast to the above findings on humans, some lower organisms show clear lunar rhythms, especially those living in the sea and therefore exposed to tidal forces. But many plants and animals show no connection with moon phases, while others show a small connection in their growth or reproductive behaviour but not consistently – for some it is only at full moon, others only at new moon, and still others only at waxing or waning quarter moon (all from Endres and Schad, *Moon Rhythms in Nature* 2002). None of which helps horoscope interpretation.



Left: Astrological Moon planting guides from the USA (plant during the increasing phase) France (plant in tropical Water signs), and the UK (plant in sidereal Water signs). Each system claims superiority over the others, but they cannot all be right. **Right:** This splendid resource (Endres and Schad, *Moon Rhythms in Nature* 2002, translated from the original 1997 German) contains over 1100 references and provides good evidence that moonlight does affect plants, either directly

eg via stomatal activity or indirectly eg via insect activity, but such effects are very different from those claimed for Moon planting. Despite the authors' evident attachment to natural rhythms, the word *astrology* is never mentioned.

For an example of lunar phase vs wheat germination see Kollerstrom 7.4.1984.1.



Astrologers often claim that the persistence of lunar effects on oysters when a thousand miles from the sea proves that astrology is credible, which is like arguing that money exists therefore everyone is rich. But the claimed effect disappeared when the data were given a proper time-series analysis, and was evidently due to inadequate data, failure to apply controls, and wishful thinking (*Journal of Theoretical Biology* 8, 426-468, 1965). Neumann (in Numata and Helm eds, *Annual, Lunar, and Tidal Clocks: Patterns and Mechanisms of Nature's Enigmatic Rhythms* 2015:3-24) notes that such behaviour has not been confirmed in later studies (p.8).

Tides. Many astrologers argue that, because the moon causes tides and we are 60% water, the moon causes tides in us – which therefore proves astrology. But tides are caused by the

difference in gravitational force across the target bodies. So they will have no effect unless you are as big as a planet. Similarly the moon causes tides only in very large unbounded bodies of water like the world's oceans, where the tidal range is affected by the geometry of the coastline and ocean floor. And not in glasses of water. Even in the Great Lakes the largest tides are less than 5 cm in height, and are masked by the much greater fluctuations due to wind and changes in barometric pressure, and by long-term seasonal changes in rainfall and water storage. New and Full Moons have similar tidal effects, so if they differ it isn't tidal.

8.5.7 Need for geophysical evidence now superseded

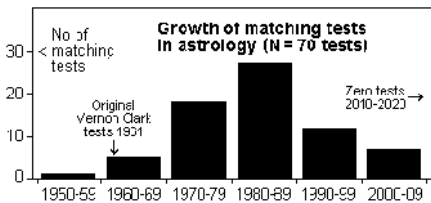
As noted in 8.5.1, the 1970s astrology boom led astrologers to promote geophysical evidence in lieu of human evidence even though it was relevant to natural astrology rather than judicial astrology. Today there are enough direct tests of judicial astrology (ie astrologers and clients) to overcome the previous need for geophysical evidence. These direct tests are surveyed next.

8.6 TESTS OF ASTROLOGERS

8.6.1 Tests of matching birth charts to owners

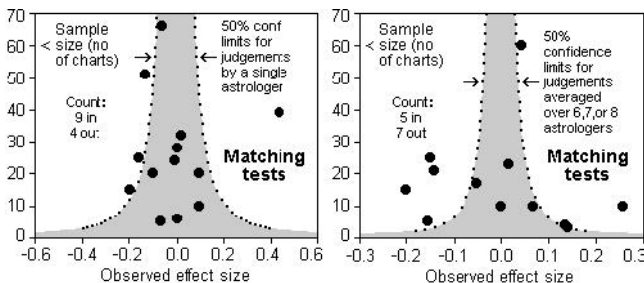
In astrology books the birth chart always matches its owner. But is that because the match is genuine, or because charts contain so many factors that a match is always possible even with the wrong chart? To find out, we take sets of birth charts and ask astrologers to match them with descriptions of their owners. Crude tests of this kind have existed since the early days, see 5.2, but proper tests had to await the arrival of modern research design and statistics.

Matching tests were begun in the 1950s by Michel Gauquelin but without publishing many details of the outcomes, see 6.3.2. In 1960-1961 three tests were made by US psychologist and astrologer Vernon Clark, after whom such tests are often named. Like research generally, matching tests peaked in the 1980s and then declined, with only one since 2010 (albeit not published because it lacked controls see 7.7.2017.1):



Matching tests in astrology since 1950. A total of 70 tests involve around 2400 birth charts and more than 1000 astrologers, many of them recognised as being among the world's best, in a total of ten countries including India. About a third of the tests were made by astrologers, a third by scientists, and a third by both together. The details of each test with references are listed in 8.10.

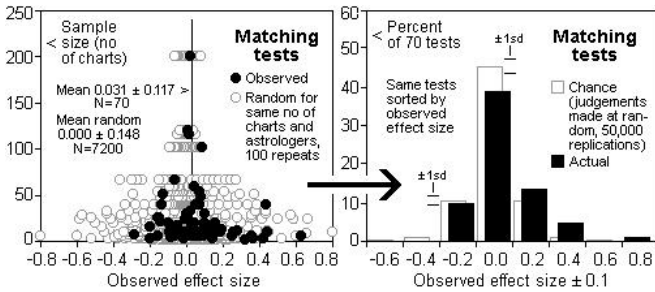
In a matching test astrologers have to decide which of several (typically two) birth charts best match the person's occupation, personality scores, case history, or answers to a questionnaire, or sometimes one chart and several (typically two) people. If astrology and astrologers work as claimed the match will be better than guessing. **Confidence limits** are of course important but will depend on the number of astrologers involved because averaging reduces the scatter of individual responses. Sometimes enough tests have nearly the same number of astrologers to allow a plot of effect sizes against single 50% confidence limits, as here:



Effect sizes with 50% confidence limits for tests of a single astrologer (left) or 6, 7, or 8 astrologers (right). Compared with the 50% confidence limits, the effect sizes tend to lie slightly inside for a single astrologer or slightly outside for 6, 7, or 8 astrologers, which is not a significant difference. Of the 25 effect sizes shown here, only 11 lie outside vs 25/2=12.5 expected, so in this case there is no evidence that astrologers can match charts to persons better than chance.

But generally the number of astrologers in each test is too varied to allow a plot against one or even two sets of 50% confidence limits. So we have to try again. Plotted below are judgements generated at random for each astrologer and for each chart in the 69 tests, and then repeated 100 times to ensure a representative outcome. In short, this simulates what would happen if

every judgement was made at random and allows us to judge if astrology is better:

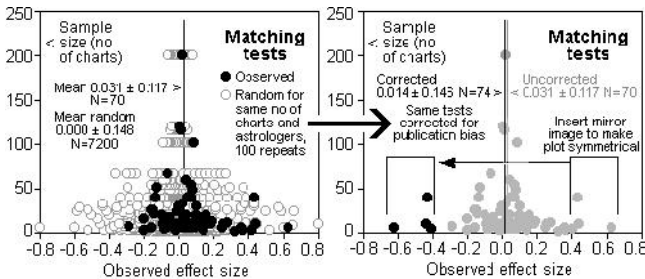


Left: Each black dot represents one of the 70 tests. The grey circles simulate what would happen if each astrologer in each test made their judgements at random. Each run is repeated 100 times so every black dot has 100 grey circles at the same sample size. The fewer the astrologers for each black dot the greater the range of circles, and the extreme circles represent what might be expected by chance once in every 100 tests. Coincident circles appear as single circles.

The features are: (1) The plot resemble an inverted funnel. (2) The black dots (which show actual tests) tend to be engulfed by grey circles (which show the extent of sampling errors), suggesting that the observed effect sizes (mean 0.031) are due not to astrology but to sampling error. (3) This is confirmed by **meta-analysis** see 8.2.4, which shows that the variance due to sampling error is 0.041, three times the observed variance of $0.117^2 = 0.014$. This means the results are *entirely* explained by sampling error, which leaves nothing for astrology to explain. (4) The black dots should be symmetrical about the mean but they are not. More are on the far right than on the far left. This indicates the presence of publication bias against negative results, as when authors submit results or journal editors publish results only if they are positive, a worrying occurrence in astrology and in the social sciences generally, see 8.6.2. **Right:** The grouped effect sizes show much the same distribution as that expected if every astrologer were making judgements at random. In what follows we try (unsuccessfully) to explain away these disappointing results.

8.6.2 Tests of publication bias

Publication bias against negative results is a serious problem in science. It can be detected by asymmetry in the funnel plot, and can be evaluated by the trim-and-fill method (for examples see McDaniel et al, *Personnel Psychology* 59, 927-953, 2006) as simplified below:

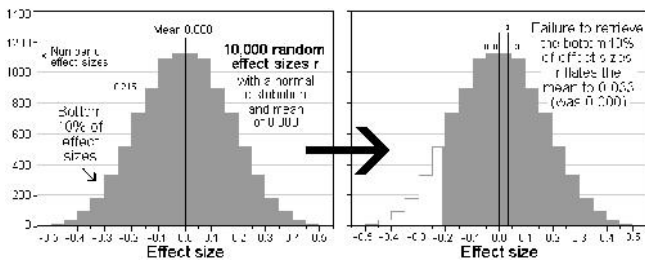


Left: results repeated from the previous plot. If there was no publication bias against negative results, the plot should be symmetrical about the mean. But it is not. The dots extend further on the right than on the left, indicating that such a publication bias exists.

Right: we can evaluate the publication bias whether by researchers or editors or publishers by simply adding mirror-image points to match the biased points until the plot looks symmetrical. Here the effect sizes we are

adding are between -0.4 and -0.7 , which means we are assuming that no astrologer would want to admit to getting results equivalent to scoring about half the hits expected by chance. The expanded sample gives a mean effect size of 0.014, half of what it was before, so publication bias has effectively doubled the observed effect size.

The extent of publication bias can be precisely calculated (G Francis, *Psychonomic Bulletin & Review* 19, 975-991, 2012) but is exceedingly technical. Much simpler is removing the tail of a distribution of random effect sizes to estimate its effect on the mean effect size, as below:



Left: distribution of 10,000 random effect sizes mean 0.000. **Right:** same distribution with the bottom 10% of effect sizes deleted. This simulates the denial of publication to the worst 10% of results. The mean effect size is now 0.033. If the bottom 1% or 20% of effect sizes is deleted, the mean effect size is now 0.0040 or 0.059. (Dean unpublished work 2014). It cannot be applied to any particular meta-analysis but is a useful rule of thumb.

The above results suggest that denying the bottom X% of studies will increase mean effect size r by about $0.0033X$, ie by 0.033 if $X = 10\%$. Conversely, a mean effect size of $r = 0.031$ (the result for astrologers matching charts, see 8.6.1 above) could be the result of denying the worst $0.031/0.0033 = 9\%$ of studies, which in astrology is arguably conservative. In other words it is plausible that publication bias is responsible for the positive outcome.

Publication bias is especially problematic when the true effect size is near zero (as here and in parapsychology) because it will then have a relatively large effect, making it impossible to be sure if the observed effect size genuinely differs from zero. Many examples of its serious effect in psychology are given by Meehl, *Psychological Reports* 66, 195-244, 1990. Here is a highly disturbing example in parapsychology from French and Stone (*Anomalistic Psychology* 2014):

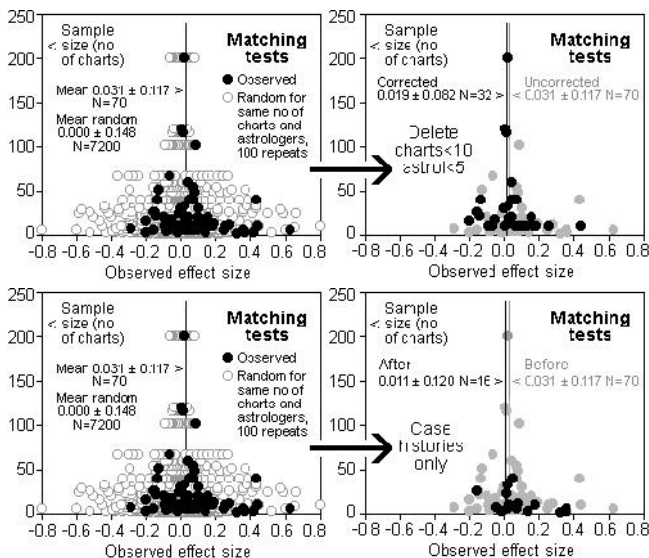
In 2011 a series of apparently positive psi studies by psychologist Daryl Bem appeared in the influential *Journal of Personality and Social Psychology*. The same journal refused to publish three independent failures-to-replicate from three university departments, as did the prestigious *Science Brevia* and *Psychological Science*. Eventually the failures were published in the online journal *PLoS ONE*, where they attracted as much interest as the original Bem studies. French and Stone make the obvious comment: "the difficulty in publishing a failed replication ... could leave ... a misleading impression of the strength of the evidence base" (pp.238-240).

Obviously if studies are solely in charge of hostile critics then it may go the other way with publication being biased against *positive* results. But this does not apply here, although it did apply to skeptics behaving badly about the Mars effect, see Gauquelin 6.5.

8.6.3 Tests of study quality

Low-quality studies would normally be omitted from any survey of effect sizes. Study quality may be low for many reasons: **(1)** Samples may be too small. **(2)** Samples may have been chosen because they worked or **(3)** contained giveaway cues that helped astrologers get the right answers. **(4)** Birth charts may be in an unfamiliar format. **(5)** The judgement task may be too difficult. **(6)** The criterion (such as ratings or personality scores) may be of low validity. **(7)** Very common is a lack of reported detail, which makes it difficult to evaluate quality. **(8)** In extreme cases the study may be a fake or a hoax, but this is not known to apply here.

To avoid charges of bias, no study in 8.6.1 has been excluded. Also, astrologers would hardly submit to tests they were unhappy with. Nevertheless could low-quality tests have biased the result downwards? To find out we repeat the analysis after excluding all tests involving fewer than 10 charts and 5 astrologers, and again after selecting only tests of case histories. This does not guarantee that the remaining studies will be perfect, but it is better than nothing:



Left: original results. **Right:** results after discarding the lower quality tests (grey dots), arbitrarily defined as tests involving fewer than 10 charts and fewer than 5 astrologers. The mean effect size is reduced from 0.029 to 0.019, so if anything the lower quality tests were inflating the result. As before, there are more black dots on the right than on the left, indicating a publication bias against negative results. When mirror-image points are added on the left to match the two extreme effect sizes on the right, the mean effect size is further reduced to 0.012. **Left:** but could tests involving unfamiliar criteria such as suicide have biased the result downwards compared with tests involving familiar criteria such as case histories? Such bias is precisely what meta-analysis will detect, but no differences were found that could not be explained by sampling error, see last plot in 8.6.1. **Right:** indeed, if anything the tests involving only case histories give slightly worse results.

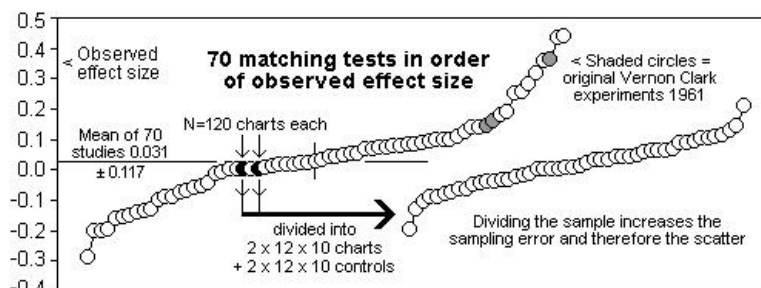
Each of these plots leads to the same conclusions: **(1)** Astrologers are unable to match birth charts to their owners better than guessing. **(2)** Differences between studies are explained by sampling errors due to small sample sizes, which means there is nothing left for astrology to explain. Indeed, to *reliably* detect such tiny effect sizes would require samples of many thousands of birth charts, see 8.2.5. **(3)** These conclusions are based on far too many studies to be simply dismissed as premature. Nevertheless we can still apply further tests, see next.

8.6.4 Tests of sample size

Sampling errors decrease in proportion to $1/\sqrt{N}$ as the sample size increases. So if we rank the above 70 effect sizes in order of increasing sample size they should converge on the truth as the sampling errors get less and less. But in fact they seem to be converging on zero:

Sample size	1-5	6-10	11-39	40-200	Mean of 1-200
Mean wtd effect size	0.062	0.076	0.047	0.015 ... >> zero?	0.031
Std deviation	0.407	0.251	0.158	0.102	0.117
No of tests	16	22	18	14	70

So again there is nothing left for astrology to explain. Indeed, if two of the largest samples are subdivided to simulate tests of small samples, the results confirm how the effect sizes observed with small samples will almost never be a good indication of the true effect size:



If the two tests of 120 birth charts (black dots) and their controls are divided into a total of 48 tests of 10 charts each, the same marked scatter emerges even though the original effect sizes (0.004, 0.010 and 0.014; 0.025 for the controls) were close to zero. Further subdivision (not shown) increases the scatter. The plot shows how small samples can give effect sizes that are both compelling

and wrong. Notice how the three original Vernon Clark results (all explained by their small sample sizes) happen to be at the high end. Without this accident of fate they may never have achieved their place in astrology's hall of fame.

8.6.5 Tests of experience

Received astrological wisdom holds that experience matters (ie experience of chart reading, not experience of dealing with people's problems). As does technique, use of intuition, birth data accuracy, and so on. At first sight these things seem self-evident and above criticism.

But when tested under controlled conditions, see 7.6.1985.2, none of these things mattered. Factors such as technique, house system, birth data accuracy, the astrologer's experience, confidence, personality, gender, and use of intuition made no difference. No astrologer performed better than effect size 0.00. If anything their judgements were made worse by looking at birth charts. Yet the effect sizes claimed by astrologers are notably large. Linda Goodman says:

An individual's Sun sign will be approximately 80% accurate, sometimes up to 90% (*Sun Signs* 1968:xvi),

which is equivalent to an effect size of about 0.70. Much the same was found in a survey of 56 astrologers, see 7.6.1986.3, with little variation with experience. Why are astrologers actually getting 0.00 and not 0.70? This is a huge difference. So more tests are in order, see next.

8.6.6 Tests of neural networks

A computerised neural network is a large network of interconnected equations where each equation weighs its particular inputs. Depending on the weighted sum, the equation sends a Yes or No to other equations. At the end of the network is a final equation that delivers the prediction. The weights for each equation are automatically varied (sometimes millions of times) using known data to see which weights give the most accurate results. Unlike a traditional regression equation, the variables and weights do not have to be specified in advance because the network does all the work. But its sheer complexity often make it impossible to know the effect of any given variable, nor can it give confidence intervals, whereas a traditional regression equation provides both. Furthermore the neural network's ability to handle many variables means it is good at fitting known data, but not necessarily good at predicting outcomes for unknown data. In general, neural networks are sometimes more accurate, sometimes less accurate, than traditional regression equations as used in a multiple discriminant analysis (Ayres, *Super Crunchers* 2008:141-144).

Dr Dean Radin, director of the consciousness research lab at the University of Nevada, is famous for his cutting-edge research in parapsychology using neural networks running on a super-computer. The advantage of a neural network is that it can be trained on a subset of data and then applied to new data to see if it can make improvements. In effect it does what an astrologer is said to do, but with enormously greater sensitivity and control.

In 1994, in an unpublished study, Radin tried a dozen different neural networks on the EN data in 7.6.1985.2, and on the Gauquelin professionals. But nothing was found that was not already known by other methods. He concluded "Neither of the datasets seem to uphold the traditional astrological notions" (personal communication September 1994). Neural networks in 1994 were not as advanced as they are today, but they still created complex nonlinear multivariate regression models of the kind that astrologers think they use, and were probably far more sensitive than the linear techniques used by Gauquelin and others, albeit with the problem that interpreting any success would have been difficult.

8.6.7 Tests of palmists

Like astrology, palmistry embraces intuition but avoids the problem of uncertain birth times. So can palmists perform better than astrologers? This was tested by Geoffrey Dean in the UK, USA and Australia where audiences of astrologers or palmists had to make 16 judgements of E and 15 of N from the charts and hands of extreme scorers (a subset of the subjects tested in 7.6.1985.2), all projected as 35 mm slides. Average time per judgement was 5 minutes. When cues (see next section) were avoided:

- 22 astrologers (including semi or full professionals) averaged 52% hits with an agreement kappa of 0.10.
- 14 palmists (at least 6 were professionals) averaged 50% hits with an agreement kappa of 0.11.
- 4 guessers with no knowledge of astrology or palmistry averaged 42% hits.

The judgements were too few to tell if there was a real difference between astrologers and palmists, but neither group performed better than chance.

Because the chart style tended to be unfamiliar and hands were disembodied, 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. In addition they usually differed on what they felt was relevant, so disagreement was the rule. Thus it was not uncommon for alternate panel members to vote alternate ways, or for half the audience to vote one way and half to vote the other way. But this disagreement had no evident effect on their faith in astrology or palmistry (Dean, *Correlation* 5(2), 2-24, 1985:19-20).

8.6.8 Tests of cold readers

By chance an out-of-practice student of cold reading was present at one of the early tests in the previous section. He was at the back of the room in the worst possible position for cold reading. But he noticed that when announcing the judgements to be made, Dean tended to lower his eyes and voice during the correct judgement (which of course he knew in advance) as if trying to hide it. From such cues alone the cold reader scored 72% hits, more than any astrologer. After this Dean took precautions to prevent such cues, for example by announcing E and not E+ or E-. The mean hit rates before and after taking precautions were:

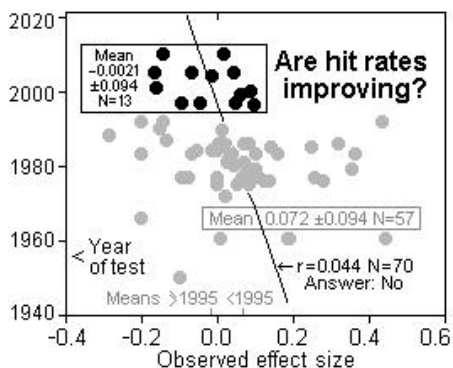
56% for 17 astrologers before precautions 52% for 22 astrologers after precautions

suggesting that astrologers do pick up cues but not to the extent that a cold reader does. US psychologist Andrew Neher had students test palmistry/numerology/Tarot/I Ching readers (none performed better than chance) and concluded from his own observations that readers:

often are astute, sensitive individuals who pick up subtle cues "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 Psychology of Transcendence* 1990:230).

An astrologer concerned with maximising client satisfaction could therefore do worse than abandon astrology (but not the pretence of astrology) in favour of cold reading, as in 2.4.

8.6.9 Are future results likely to improve?



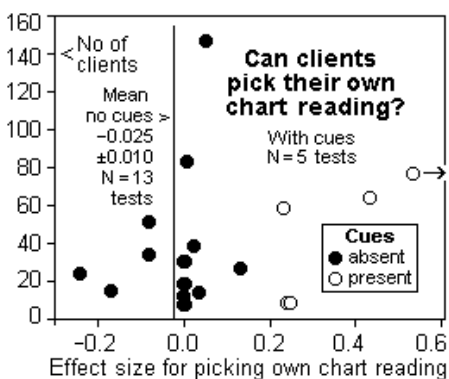
As tests improve, and if astrology is valid, we expect effect sizes to improve as well. But they do not:

The 70 studies of 8.6.1 plotted against test year. Before 1995 the results show a huge scatter with a notable reduction since 1995. But the mean of these later results is negative and (if the trend is real) getting worse despite the slow but steady improvement in tests and sample sizes. The scatter is too great to allow a meaningful verdict. But if 0.70 (which astrologers claim to achieve) is the target, how likely is it that future results will actually attain it?

Artifacts such as hidden persuaders are prevented in controlled tests (hence the 0.00 expected by chance) but not in everyday practice (hence the 0.70 in 8.6.5).

8.6.10 Tests of clients

When given several chart readings, can clients pick their own? Can they tell if the chart is the wrong chart? According to astrology books the answer should be yes. But in 18 tests totalling 2333 readings and 715 clients, and in the tests of wrong charts in 8.9.9, the answer was no, at least not when cues such as sun sign descriptions were absent:



When cues such as sun sign names or sun sign descriptions are absent from astrology readings, clients are unable to pick their own when given typically 3-5 to choose from. The observed mean effect size with no cues is a non-significant -0.025 for $N = 13$ tests, equivalent to 48.75% hits vs 50% expected by chance (so worse than chance). When cues are present (open circles), they give the game away, so observed effect sizes are positive, large, and misleading.

The above 5 with-cues studies exclude 4 studies with expectancies ≤ 2 that were too small for the resulting r effect sizes calculated via chi-squared to be meaningful. The tests included interpretations personally made and typed by certificated astrologers as specified by the UK's Faculty of Astrological Studies, so they cannot be dismissed as unrepresentative. But how to explain a result so contrary to what astrology books imply? For clues we can look at computerised interpretations:

8.6.11 Tests of computerised chart interpretations

In 2002 the Canadian educational psychologist Gail Duncombe analysed interpretations of the same chart by well-known certificated astrologers such as Bruce Scofield and Liz Greene (*A content analysis of astrological profiles*, Masters thesis, University of Saskatchewan). All interpretations were obtained online based on date, time and place of birth plus the subject's sex (subject was a female aged around 40). Of the seven interpretations chosen for analysis, three were free, and the rest cost \$8, \$45, \$50 (on audiotape), and \$50 (Vedic astrology, the rest were Western), much less than the hourly cost of a personal consultation of up to \$750.

Other than the audiotape, all were computerised. Two of the free interpretations were used by a team of four raters to establish the rating method and its reliability, which was then applied by Duncombe to the remaining five. Each interpretation averaged 160 statements, range 41-374. Fourteen types of statement were identified. The top 91% with typical examples were:

- 26% Vague or ambiguous (you enjoy a certain amount of variety)
- 14% Socially desirable (you are loyal to your friends)
- 13% Negative (you are not interested in chores)
- 12% Unclassifiable (we start by computing your birth chart)
- 10% Explain astrology (astrology was once a respected study)
- 08% Comprehensive (you have either done it or are about to do it)
- 03% Double headed (you are generally cheerful but can get depressed)

03% Disclaimer (astrology can only indicate tendencies)

02% Padding (of course everything is relative)

The top 8 themes were character traits and relationships; then career, money and education; then health, spirituality and leisure. Together they occupied about half of each interpretation. Not one statement was personally specific (you are well suited to educational psychology), the only specific statements being universally valid (you walk with an upright posture). Overall there were no huge differences between Western and Vedic, or between computerised and taped. All except one were easy to read, the exception being Liz Greene's \$45 computerised interpretation, which had "extremely long, complicated, convoluted sentences" hard to understand. It was produced by software using artificial intelligence to imitate the thought processes Liz Greene would use when reading a chart, and had been described as

simply breathtaking in its accuracy ... light years ahead of anything else on the market ... beautifully written (Ridder-Patrick, *Astrological Journal* 30(4), 163-164, 1988). [All qualities Duncombe failed to verify]



From the pictured brochure c1990. The **Astro*Intelligence Analysis** is an entirely new type of Horoscope reading. From an expert astrological knowledge base and text provided by Liz Greene, the program considers each chart factor in relation to the rest of the chart, and therefore interprets it differently in each chart. It covers at length the subject's Jungian type (feeling, thinking, sensing, intuiting, which relate to the four elements), character, family background, relationships, and how to achieve inner harmony. "Conflicts and affinities are weighed up to identify the most important psychological issues. Carefully constructed rules steer the logic towards appropriate archetypal themes and astrological patterns stored in the computer's vast knowledge base. [The computer in Zurich decides] what to do when contradictions occur or when no clear pattern can be found". Program was developed by German computer expert and former physicist Dr Alois Treindl. *Astro*Intelligence* reports were first released in 1987 after two years of development. By 1993 world-wide sales at around £25 each were averaging over 20,000 a year. By 2020 the cost was \$US70 each (about £55).

The software is written in PROLOG, a language designed to combine rules, statements, and logical thinking. Unlike a language in which each step is defined by the programmer, the results are by no means obvious even to the programmer. In effect the program synthesises the whole chart and also allows the incorporation of feedback to improve accuracy. During its development the program was tested against what its website calls "a great number of people we know very well", which seems unlikely to be effective when subjects cannot reliably pick their own chart from others, see previous section. So it may simply lead to a more universally acceptable interpretation. Furthermore the same website fails to describe any *controlled* tests, which is a fatal omission. To understand why, consider this:

Once the strength and meaning of each chart factor has been identified by an astrologer, their synthesis (the foremost problem in any chart interpretation) is easily done by computer, so the astrologer is no longer necessary. In the early 1980s this was put into practice by the *Starword* program written by Terry Dwyer, a rare combination of computer programmer, researcher, and tutor for the Mayo school. It was largely based on the meanings given in Sackoian and Acker's *The Astrologer's Handbook* 1973/1989.

In the two years it took to develop *Starword*, Dwyer systematically went through every chart factor including less traditional ones such as harmonics and the Vertex, plus various ways of evaluating strength such as angularity and rulerships. Along the way he had every result checked by 30 people (family and friends including astrologers), whose feedback allowed him to progressively eliminate factors that either did not work or added nothing to the accuracy.

Eventually *Starword* ended up using (1) the signs of the three main angles (Ascendant, MC, Vertex) and the first seven planets (Sun through Saturn), all in the first three harmonic charts, and (2) interplanetary aspects and angularity. Nothing else including houses had proved to be useful. It was an impressive achievement. Dwyer concluded:

Step by step the program has shown that it works better without all the other paraphernalia we are accustomed to using. It gets good results by being thorough and systematic with the jobs it does carry out (*Astrological Journal* 25(3), 190-198, 1983:197).

In other words, both *Starword* and *Astro*Intelligence* (unlike other computer programs at the time) were focussed on synthesis. Both had undergone the same lengthy development. And both had passed the same tests of acceptance.

However, two years later, *Starword* was tested against controls based on births 5 years and 6 months before the authentic time, but with the same sun sign to avoid giving cues to subjects familiar with their sun sign meaning. Each interpretation was divided as usual into 7 sections (eg mentality, career, relationships) which the subject then rated for accuracy.

Further work was abandoned after a pilot study of 30 subjects (not the same as the previous 30) showed that 15 picked the authentic interpretation as the more accurate, and 15 picked the control interpretation (it was an entry for the \$5000 superprize, see 8.9.10.2). Despite its rigorous development and tests of acceptance, the program actually performed no better than chance (*FAA Journal*, 15(3-4), 19-32, 1985:24). Given that no individual chart factor has been found to be usefully valid, Dwyer's result confirms that their synthesis is necessarily a waste of time. So where does that leave *Astro*Intelligence*?

As it happens the accuracy of *Astro*Intelligence* interpretations was later tested by Geoffrey Dean (unpublished work 1990). The subject was an extremely emotional introvert (much gloom and doom), the control was an extremely stable extravert (gales of laughter). Both were female, both were well-educated, both had Sun in Capricorn, and both knew their own birth time. They were born three years apart but could hardly be more different. Each was given the *Astro*Intelligence* interpretation with the assurance that it was theirs. They had to check each sentence for accuracy. Over to the authentic subject:

Your psychological type does not remain static and unchanging through the whole of your life. There is something within all of us - whether we call it the unconscious, the Self, or the soul - which strives toward balance and completeness, and which tries to integrate into our lives all those qualities or inner characters which have been neglected or undervalued. At certain important junctures in life, it is as though some central core, deeper and wiser than the conscious "I", draws us into conflicts which enable us to develop our weaker areas, so that we can become more complete as human beings. Thus you will find that, incorporated in the following paragraphs about your psychological type, are some suggestions about how you might facilitate this inner movement toward a more balanced perspective on life. Life does this for us, sooner or later. But sometimes it is more rewarding and less problematic if we cooperate with the process.

Your unusual mental abilities combine with realism and a sound appreciation of facts and of the ways of the world. Your mind does not fly off into realms of abstract theory and philosophy, but remains firmly grounded in reality, testing each concept against life as it is. You have well-developed organising abilities, great common sense, a careful, orderly and perhaps scientifically trained intellect, and a capacity to focus and concentrate your mental energy on obtainable goals so that you always produce results. You are a practical idealist, and are therefore powerful and effective in inaugurating new methods and procedures. You might do well in fields such as research, computer programming, sociology and medicine, and other spheres of life where your grasp of main principles combines with your ability to relate ideas to the limits of the concrete world.

From the *Astro*Intelligence* report being tested. **Left:** Introduction to the section on Jungian typology. **Right:** Part of that *Astro*Intelligence* report divided by Dean into the sentences to be rated. Here the authentic subject (a talented artist with five planets including the Sun and Moon in Capricorn) entirely disagreed with these five sentences, which were otherwise a perfect interpretation of five planets in Capricorn. It is probably because of this concentration in one sign that the extract does not show the lack of clarity that both subjects commented on.

The interpretation contained a total of 260 sentences, which for analysis were divided into three consecutive sets of 86, 86, and 88 sentences. Here are the resulting ratings:

Subject	Hit	?	Miss	Hit	?	Miss	Hit	?	Miss
Authentic	40	18	28	28	40	18	36	21	31
Control	43	7	36	27	15	44	44	6	38

? means accuracy is uncertain, so the sentence is neither a hit nor miss

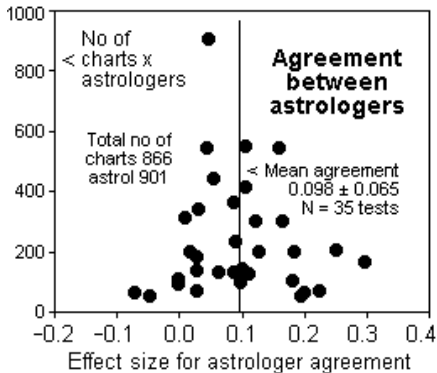
When the uncertainly are divided equally among the hits and misses, the first and second sets are slightly more accurate for the authentic subject, the third set is less accurate. The above test is especially sensitive because the subjects are so different. But if we use the control results as an expectancy, the average effect size phi is only 0.06, essentially no different from chance, and no phi's are significant. In other words the results provide no evidence that this particular *Astro*Intelligence* chart interpretation is more accurate than simply guessing.

In agreement with Duncombe's finding, both subjects found it hard going. The authentic subject (after nearly 3 hours of struggle with 19 pages) said "the whole thing is really so silly". The control subject (who had a good working knowledge of astrology) said "very disappointing, too confused", and her mother (who happened to be a keen Jungian!) "experienced the same confusion and frustration". The supposed breathtaking accuracy and beautiful writing were nowhere to be found. We should not of course depend on a single test. Nevertheless it provided no incentive to spend money on further tests of interpretations costing £25 each.

8.6.12 Tests of astrologer agreement

Tests of agreement avoid all possible concerns about (1) birth data accuracy, (2) validity of case histories, and (3) tests of validity in general. Indeed, it would make no difference if the birth charts were invented and all calculations were wrong, because here the test is about *agreement between astrologers* and not about *agreement with reality*.

The agreement between astrologers has rarely been tested directly. However, 35 of the 69 matching tests in 8.6.1 provide sufficient detail for the agreement to be calculated, either as an intraclass correlation *ir* or as kappa *k*. Together they involved a total of 866 charts and 901 astrologers. Each test looked at how well typically 5-30 astrologers agreed on what a given chart said about its owner such as being extraverted or emotional. Their mean agreement was only slightly better than tossing a coin – a result hard to dismiss because many of these astrologers were among the world's best:



The agreement between astrologers judging the same chart shows a positive deviation, with an observed mean effect size of 0.098 out of a possible 0–1. But this is nowhere near the agreement of 0.8 generally recognised as being necessary for psychological tests applied to individuals (as astrology is). So if you ask for a second opinion on your birth chart, it is likely to differ substantially from the first.

The above agreement of 0.098 compares poorly with observed agreements in other areas:

0.90 IQ tests	) Test-retest	Source and number of studies:	1 (63)
0.88 Aptitude batteries	) on same		1 (22)
0.85 Personality inventories	) subjects		2 (43)
0.82 Structured interviews			3 (25)
0.80	<i>Generally recognised as the minimum limit for tests applied to individuals</i>		
0.48 Ratings of ability	(improved by using rankings or having teams of raters)		4 (23)
0.43 Graphology	(effect size for hits is typically 0.12) *		5 (15)
0.36 Inkblots	(effect size for hits is typically 0.34) *		6 (7)

* Agreement on *interpretation*. Agreement on *features* is 0.85 and 0.84 respectively.

Source: **1.** Helmstadter, *Principles of Psychological Measurement* 1966. **2.** Eysenck and Eysenck, *Manual of the Eysenck Personality Inventory* 1964. Helmstadter as above. **3.** Wiesner and Cronshaw, *Journal of Occupational Psychology* 61, 275-290, 1988. **4.** Harris and Schaubroek, *Personnel Psychology* 41, 43-62, 1988. Rothstein, *Journal of Applied Psychology* 75, 322-327, 1990. **5.** Beyerstein and Beyerstein, *The Write Stuff* 1992:295. **6.** Jensen, *Acta Psychologica* 22, 60-77, 1964. Reznikoff et al, in *Advances in Personality Assessment Volume 1* 1982. Parker KCH et al, *Psychological Bulletin* 103, 367-373, 1988.

The same lack of agreement occurs in the wrong matches made by astrologers, where:

in choosing a wrong match they find *different wrong matches*, so that there is not even consistency among astrologers (Roberts, *The Message of Astrology* 1990:149, our emphasis).

The above results lead to an interesting key question: What causes such poor agreement, is it astrologers or is it charts? Which of these two components is the least reliable? An answer can be obtained by tests of variance in chart readings, see next.

8.6.13 Tests of variance in chart readings

Let two types of astrologer A and B (eg intuitive and non-intuitive) make ratings from two types of chart X and Y (eg simple and complex). There are just three reasons why their ratings of the match between chart and a given trait (eg sensitivity or reserve) might vary:

Reason	Why ratings might vary
Astrologers	Type A makes higher ratings than B regardless of chart
Charts	Type X is rated higher than Y regardless of astrologer
Interaction	Type X is rated higher by A than by B; astrologer and chart interact

If charts are accurately calculated, and if astrologers are in perfect agreement, then the only source of variation between one chart reading and the next would be charts. But if astrologers show poor agreement (as they do), then astrologers and the interaction between astrologers

and charts become further sources of variation. The division of variation across astrologers, charts and interaction can be determined by what is called *analysis of variance*, for which the minimum requirement is for a number of charts to be rated on a numerical scale by a number of astrologers. Once we have that then the rest is straightforward:

A total of five studies have suitable data, most of them involving E and N (Dean, *Correlation* 6(2), 2-24, 1986:34). Some results are erratic due to small numbers of charts (eg 10) or astrologers (eg 2), but on average most of the variation in chart readings was equally divided between charts and astrologers, namely charts 45%, astrologers 42%, interaction 13%.

In other words the results suggest that a typical reading is as much determined by the astrologer as by the chart, which will not surprise anyone who visits astrologers. At which point we turn to an approach that avoids all problems of astrologers, charts, and their interaction:

8.7 TESTS OF TIME TWINS

8.7.1 Time twins – the definitive test of astrology

Recall that astrology supposes a link between the heavens and human affairs (*as above so below*), a link that astrologers claim to see everywhere every day and in every way:

Astrology throws light on every department of life (Sydney Omarr, *Astrology's Revelations About You* 1973). There is no area of human existence to which astrology cannot be applied (Julia & Derek Parker, *The Compleat Astrologer* 1975:81). There is no greater proof of astrology's validity ... than its daily application in clinical practice (Glenn Perry, *Astrological Journal* 34(3), 145, 1992). I have looked at more than a thousand charts, and I am constantly amazed at how the Birth Chart does in fact describe people as they are (David Hamblin, *The Spirit of Numbers* 2011:preface).

Enter time twins, people born at the same moment in the same general locality, who must by definition be more alike than expected by chance. At any given place on Earth the heavens at one moment signify that people of a certain type are being born, the next moment it is another type, and so on. Time twins are thus the definitive test of astrology because all uncertainties of birth chart interpretation are avoided – you just look at people.

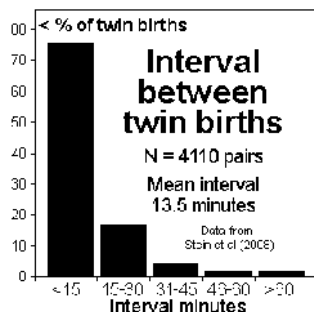
But how far apart in time and locality can births be before they cease to be time twins? In perhaps the most detailed commentary on time twins made by an astrologer, John Addey cites many interesting but inconclusive cases, and then suggests an answer:

one would expect to find *really exceptional* [his emphasis] similarities of life and temperament only in those born almost exactly at the same time [within a few minutes] and in the same locality. [Nevertheless] the tendency for similarities to appear in the lives of those born on the same day must remain strong and well worth investigating (*Astrological Journal* 9(1), 14-29, 1967:14).

At which point we should look at ordinary twins:

8.7.2 Interval between twin births

In 1603, in his 602-page *A Defence of Iudiciall Astrologie*, Sir Christopher Heydon claims the interval between twin births is “for the most part never lesse than three houres” (p. 237). But he was probably inventing a reason to explain the difference between identical and fraternal twins (see next section), because most studies of natural twin births have found that more than half of all twins are born less than 15 minutes apart. An example is this 2008 study:



Interval between spontaneous twin births 1990-2004 in Hesse, Germany (capital Frankfurt am Main). Excludes gestations <34 weeks (34 is three weeks less than normal), first twin by caesarian section, and births where either twin was dead or malformed. Mean was 13.5 minutes (W Stein et al, *Acta Obstetrica et Gynecologica Scandinavica* 87, 346-353, 2008). The mean interval between 335 natural twin births 1965-1973 in Oulu Finland 65°N was 17.5 minutes (P Jouppila et al, *Acta Obstetrica et Gynecologica Scandinavica Suppl* 44, 13-19, 1975).

For every 1000 labours in Europe or in North America about 12 result in twins, so about 1 person in 40 (1000 / (2 x 12)) is a twin. In Asia the rate is roughly half this, while in central Africa the

rate is roughly double, both for reasons that may be related to diet. Worldwide a constant 3 per 1000 labours result in identical twins, the variable rest being fraternal twins. If the twin rate is x per labour, triplet and quadruplet rates are roughly x^2 and x^3 (*British Journal of Social Medicine* 6, 192-196, 1952, x^2 being about one-third too high).

Because the interval between twin births whether identical or fraternal is much the same, then according to astrology the twins should be equally alike. But they are not, which makes twins one of the oldest (and most ignored) arguments against astrology. In 1981, after assessing the latest twin findings, and allowing for the Gauquelin findings, UK psychologist Peter Watson (who was also a former associate editor of *New Society*) concluded:

the whole body of twin evidence goes against it [ie against astrology]. The very fact that *all twins*, MZ [identical] or DZ [fraternal], are conceived at the same time, yet the two types grow up in very different ways, seems to me the most convincing evidence that astrology, if it has any influence at all on personality, has only a very slight one. Maybe twins are not the most powerful evidence: triplets may be better. [Look at] triplets which consisted of MZ twins and a third singleton, in effect a DZ twin to each of the other two. Here we find that the MZs grow alike but that the odd twin out is very different. Astrology, it seems to me, cannot account for this (*Twins* 1981:200).

The default explanation (ie differences in birth time) is ruled out by the McCaughey septuplets born 19 November 1997 in Des Moines, Iowa (hospital at 41n36 93n37) just *one minute* apart starting at 12:48 CST. Their charts are essentially identical. During their births the Moon moved 3' and the AQ Ascendant 2.3°.



The McCaughey septuplets in birth order at age 24.

The closest major aspects and orbs are SO-60-NE 0.2°, VE-90-SA 0.4°, and UR-60-PL 0.1°. The closest angular positions are JU-0-AS 6.9°+ and PL-0-MC 3.8°+.

The similarities predicted by astrology do not exist – 3 are girls, 4 are boys, 2 have cerebral palsy, 2 wear glasses, 2 married before age 22, and all are pursuing different careers (from 1 to 7 they are carpentry, childhood education, exercise science, public relations, computer info systems, US Army, computer info systems). Either astrology doesn't work or it depends on timing too precise for it to work in practice. Too many similar cases exist for this one to be ignored, see *multiple birth* in Wikipedia.

8.7.3 Twins, time twins, and genetics

John Addey points out how, in principle, time twins should influence twin studies:

conclusions based on the evidence obtained from twins alone, without a control group consisting of births occurring within the same time-interval (usually less than one hour) as the twins, are unscientific conclusions (*Astrological Journal* 9(1), 14-29, 1967:29). [That is, if astrological claims about time twins are valid].

But his astrological claims are undermined by studies of identical twins reared apart, which largely eliminates contributions from similarities in their environment. In general the results show that twins reared apart are more similar than different. Genetic links between identical twins (whether reared apart or not) are responsible for near-perfect correlations in IQ, personality, social attitudes, behaviour and ability (identical twins are almost as alike in ability as the same person tested twice), and for a huge number of similarities in areas such as:

Alcoholism, body language, career choice, chastity, clothing, conformity, conversation, dental history, divorce, fingerprints, food likes, gestures, headaches, health, heart disease, hobbies, hypertension, infectious diseases, insomnia, jewellery, libido, mannerisms, marital relations, mental illness, phobias, politics, quirky habits, religious interests, schizophrenia, self-control, smoking, social attitudes, speech patterns, suicide, tics, tolerance, voice, even major life events. Identical twins occur in about 0.35% of births regardless of nationality. But fewer than 300 pairs reared apart have been identified, so the entire sample remains small, albeit not by astrological standards (data from Lawrence Wright *Twins* 1997:20,60).

The above characteristics describe the inner person as much as the outer person, and are essentially those that astrology claims to describe. Indeed, one might see both astrology and genetics as a forecast about the person's future life, in which case a correspondence between genetics and astrology should be inevitable. In 1976 John Addey described it like this:

Of all the astrological problems which beckon to us from the future there is one that must excite the thoughtful

astrologer more than any other. ... we know that there are laws of heredity by which natural characteristics are transmitted from generation to generation. We also know that the natural characteristics of each person are described by the horoscope calculated for his date, time and place of birth. It therefore follows – and we must be clear about this, it *does* inevitably follow – that the astrological code by which the horoscope is interpreted must be in agreement with the genetic code by which natural traits are transmitted from one generation to the next. The two things must be parallel expressions of the same theme. Every astrologer who ... understands the reasons behind the issue knows beyond any doubt that it is, and must be, true (*Harmonics in Astrology* 1976:203).

But note the problem – the above characteristics originate in *genetic* links that will not exist between *unrelated* people regardless of their birth times. In other words astrology predicts that time twins will be similar in ways that genetics says are unlikely to arise except by chance. So right from the start, the predicted parallel expressions in time twins seem unlikely to exist.

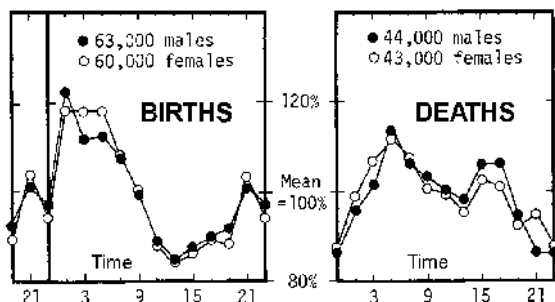
The same conclusion arises from a study of the spouses of 1000 identical twins, which found that only 13% of the husbands and 7% of the wives could have fallen for the other identical twin, while a quarter of the husbands found the other identical twin to be not the least attractive. When one twin was asked to evaluate the other twin's spouse, about as many disliked the spouse as not (*Journal of Personality and Social Psychology* 65(1), 56-68, 1993). Which is contrary to what a chart comparison between the spouse and each twin would predict, given that the small time difference between twins could hardly affect the overall testimony of the chart comparison. In other words astrology predicts that time twins will have similarities that many real twins do not have. So again the predicted parallel expressions seem unlikely to exist.

Clones. A single cell from an organism contains sufficient genetic information to recreate the entire organism. The results are called clones, absolutely exact carbon copies of the original. Clones have already been produced for carrots, salamanders, and sheep, and human cloning is not theoretically impossible. Clones pose considerable problems for astrology because each clone has an identical physical structure, but its own birth time and thus its own independent existence. In other words astrology could no longer claim simultaneous dominion over both the physical form and the astrological form. The problem cannot be dismissed on the grounds that cloned human beings are so far only theoretical – if, as most astrologers would allow, astrology applies equally to cats, dogs, sheep and horses, the problem exists already, even though subtleties would allow scope for the erection of smoke screens.

8.7.4 Twins, time twins, and death

Twins have charts that are more similar than those of siblings. So their ages at death should also be more similar. But they aren't. For example a study of 1400 twins aged over 60 found that **(1)** When one twin died the life expectancy of the other was still average expectancy. **(2)** If twins die closer together in age than do ordinary siblings it is only because they are of the same age. **(3)** If one twin died in their sixties, the other died on average these numbers of years later (Lissy et al, *American Journal of Human Genetics* 12(2), 170-179, 1960):

Male identicals	4.2 years	Female identicals	9.5 years
Male fraternal	6.4 years	Female fraternal	10.5 years



The identical-fraternal difference is in the right direction to support astrology but not the male-female difference, whereas genetics can explain both, see previous section.

Birth and death times as reported for Zurich municipal records in the 1880s and plotted in *Recent Advances* 1977:471. **Left:** Births with the plot for 19-23 hours duplicated to show the dip at midnight that is common to all such early records, see 6.8.4. **Right:** Deaths peaked around 5 am, roughly the same as for births.

In 1939 Krafft analysed the birth and death data of 750 octogenarians and found eight pairs born <5 hours apart, mean 2 hours, who died <8 hours apart, mean 3 hours (*Traité d'astro-*

biologie 1939:35-36). Krafft does not give enough data to allow the number expected by chance to be reliably calculated but it is likely to be around six pairs, which is close to his observed eight pairs. So Krafft's results are inconclusive.

In his research Michel Gauquelin had noted anyone who shared his birthdate of 13 November 1928 (*Dreams and Illusions of Astrology* 1969/1979). His personal time twins included:

A former captain of the French National Rugby Team Jean-Pierre Saux, a chronic alcoholic committed to the Sainte-Anne Hospital, and a "small time swindler" who was briefly mentioned one day in the newspaper. [Also] Princess Grace of Monaco was born on 12 November 1928, that is to say, under almost the same heavens. The problem of astro twins, when considered to furnish proof of the validity of the horoscope, is thus very difficult to solve (p.88).

He expands on this problem (pp.88-89) by referring to Krafft's findings:

The astrologer Krafft congratulates himself for having found twenty or so individuals born on the same day and who died in the First World War. But alas, a simple calculation shows that such a phenomenon is *normal*. Let us estimate – and such a figure is probably well below the actual figure – that 100,000 French and German soldiers of the class of 1913 (born in 1893) were killed on the battlefield during the war. This would mean that approximately 270 male children born on the same day would have been killed in the War. More precisely, for every hour of the 365 days of 1893, there were approximately ten children born in France and Germany who were assured the same tragic destiny.

He notes that the birth records of any French community will have inscribed in the margins "died on the field of battle". In other words Krafft's findings are:

a statistical necessity, found to be in much greater number than common sense would lead one to believe, without it thereby being possible to find any argument in favour of the horoscope (p.89).

As for the time twins in his own huge data base, Gauquelin reported that he had:

found no significant similarities in the lives of unrelated time twins (from a personal letter to WK Eriksen, cited in *The Humanist* November/December 1976:43).

In 1978 Belgian astrologer and former editor of *Demain* Jacques de Lescaut issued the first volume of his 12-volume bilingual (French-English) *Encyclopédie des Données de Naissances / Encyclopedia of Birth Data* containing good quality birth data of 600 famous Capricorns. The data were in date order and included death date where known. Inspection revealed 74 sets of time twins born on the same day but often in different countries so they could be more than 24 hours apart. When their occupations were divided into twelve broad categories such as military, music, sport, stage, politics, and writing, they were no more similar than non time twins. Ages at death for the 36 twin pairs with death data are shown below:

Age difference in years at death >>	0-1	2-4	5-9	10-19	20-29	30-39	40+
Number (born <6 hrs apart	1	1	0	1	0	1	0
of twin (born >6 hrs apart	1	2	1	0	2	3	0
pairs (time not stated	0	5	3	8	4	2	1

For 36 time twins born on same day, mean difference in age at death was 15.5 years. Mean age at death was 69 years for time twins and 68 years for non time twins.

There is nothing in the above figures to suggest time twin effects exist for age at death, so they provide no incentive to examine de Lescaut's other sign collections (for example Capricorn with 74 sets was comparable with Aquarius 76 sets and Pisces 56 sets).

8.7.5 Stories about time twins

In his autobiographical *Confessions*, theologian St Augustine of Hippo (354-430) describes what may be the first recorded test of time twins. The father of his friend Firminus was keen on astrology and "took care with most exact diligence to know the births of his very puppies". When the father of his friend Firminus learned that baby Firminus was due at much the same time as the birth to a slave in his own household, he ordered:

messengers ready to send to one another so soon as they had notice of the actual birth ... [subsequently they met] at such an equal distance from either house that neither of them could make out any difference in the position of the stars, or any other minutest points; and yet Firminus, born in a high estate in his parents' house, ran his course through the gilded paths of life, was increased in riches, raised to honours; whereas that slave continued to serve his masters, without any relaxation of his yoke, as Firminus, who knew him, told me (Chapter VII:8-9).

In 1822 the opposite view emerged when the world met Samuel Hemmings and King George III, the most cited story of time twins, albeit in what is likely a fabrication, see 7.2.1994.3. Similar parallels have been claimed for a chimney sweep and George IV; a commoner and Edward VII; a lowly artisan and Kaiser William II of Germany; a restaurant proprietor and King Umberto I of Italy (Leo, *Key to your own Nativity* 1917:301-302; West & Toonder, *Case for Astrology* 1973:284). But none are sufficiently documented to allow similar checks.

However, as shown next, the number of time twins that exist in Western history is so huge (hundreds of millions) that many striking similarities in personality and events will occur by chance alone. The handful of cases cited by astrologers cannot hope to be convincing.

8.7.6 Occurrence of time twins

The occurrence of time twins is determined by the spacing of human births, which is known to follow a Poisson distribution where:

$$\text{probability of R births in T minutes} = e^{-M} \times M^R / R!$$

where $e = 2.718...$

$M = \text{mean births in T minutes} = \text{population} \times \text{birth rate} / \text{number of T minutes in a year}$

and $\text{birth rate} = \text{rate per unit of population}$. $R! = R \times (R-1) \times (R-2) \times \dots \times 1$

For a population of one million, a typical birth rate in Western countries of 0.013 per unit of population, ie 13 per 1000 (a century ago it was typically 20 per 1000), and $T = 1$ minute:

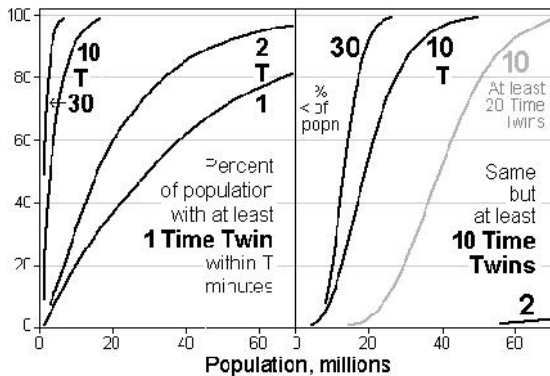
$$M = 1,000,000 \times 0.013 / (365.25 \times 24 \times 60) = 0.0247$$

So the above probability for $R = 1$ birth in $T = 1$ minute is

$$e^{-0.0247} \times 0.0247^1 / 1! = 0.9756 \times 0.0247 / 1 = 0.024 \text{ or } 2.4\%$$

In other words 2.4% of the population will have a time twin born within one minute, which is about the same proportion as people who have an ordinary twin.

If $T = 10$ minutes, then M is 0.247, $e^{-0.247} = 0.781$. If $R = 1, 2, 3$ the proportion of one million who will have 1, 2, 3 time twins born within 10 minutes is $0.781 \times 0.247^1 / 1! = 0.193$, $0.781 \times 0.247^2 / 2! = 0.024$, and $0.781 \times 0.247^3 / 3! = 0.00030$. In other words 19.3%, 2.4%, 0.3% of the population will have 1, 2, 3 time twins born within 10 minutes.



These examples and adjacent plots show how the number of time twins increases extremely rapidly as the interval T increases and as the population size N increases:

Left: Increasing $T=1$ to $T=30$ minutes makes a huge difference in the proportion of the population who have at least one time twin born within T minutes.

Right: For $T=10$ or $T=30$, nearly everyone in a large population will have not one but 10+ or 20+ time twins.

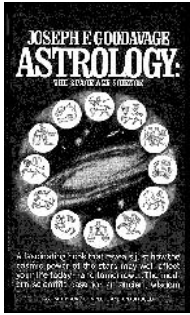
These equations are for birth *time* and do not allow for differences in birth *place*. However, differences in birth place within the largest

cities have less effect than the imprecision of birth times measured to the nearest five minutes. For a rectangle 50 x 50 km, which is 2x the area of Los Angeles, 3x the area of New York City, and 1.5x the area of Greater London, the difference between Ascendants at the same moment depends on latitude, date, and time. For latitudes of 30° to 55° over a year the mean difference from the mean Ascendant in that rectangle is 0.3°, with a maximum (at corners) of 0.4° at 30° to 1.3° at 55°. The maximum difference of MCs from the mean is 0.4°, or 1.6 minutes in time.

8.7.7 Tests of time twins

Time twins may be surprisingly common, but finding them is like finding needles in a haystack – there are very many needles but it is a huge haystack – and astrologers have rarely been able to find more than a handful. Nevertheless US time-twin specialist Joseph Goodavage took a

strong stand on time twins in his chapter "Your Astro-Twin Can Revolutionize Your Life" in his 1966 book *Astrology: The Space Age Science*:



For centuries, astrologers have been saying that people with identical horoscopes live parallel lives, with occasional differences explained by genetics and the station or position into which they were born. Until now, no one has ever proved it. ... I decided to look into the matter ... Here is what I learned: *In 100 percent of the cases investigated, such "astro-twins" do indeed show parallelism. They tend to become ill simultaneously, and of the same disease – to suffer identical injuries at the same times and to the same parts of the body. The injuries often leave identical scars. They tend to get married, to have accidents, receive promotions, and have the same number of children at the same time sand of the same sex – and they even die at the same times and of the same causes!* (pp.25-26). [His italics]

He begins with classic stories (see 8.7.5) and cases from his own research, of which more below, and then emphasises the difficulties of such research:

Elaborate questionnaires were sent out, but only a fraction replied. The major part of that fraction didn't match with a time twin. When one would reply, quite often the other would not. Yet, in 100 percent of the lives of those who were born within a few minutes of each other, the same tendency kept reappearing. The major events in the lives of these people paralleled one another as though they were perfectly synchronized. ... A simple but sometimes expensive method used in our research was the "personal" columns of various newspapers. We ran an ad requesting that those born at a certain time and place respond to a box number. The immediate results were disappointing – and expensive. No replies. The same procedure was tried in different cities, but only a small percentage responded. In that small percentage, however, the questionnaires which matched could almost have been taken as carbon copies if not for the allowed difference in genetics (hereditary characteristics) (pp.37-38). [He does not explain that last comment]

Later, in June 1976, Ben Boya, editor of the US sci-fi magazine *Analog*, published a two-page case-history questionnaire from Goodavage with three pages of commentary. It was designed to collect births during 2-6 February 1962 when five planets and a solar eclipse were in Aquarius. It would take no more than a couple of hours to complete, and Isaac Asimov had agreed to be a devil's advocate. Boya encourages his readers to respond by stressing:

Here's your chance to participate in a Crucial Experiment about the validity of astrology. Maybe those "couple of hours" can end several millennia of argument (p.9)

No follow-up appeared, suggesting that the response was too poor to be useful. Unfortunately Goodavage died in 1989 without publishing any of his data or details – and there is a further complication: In 1976 US industrial engineer WK Eriksen checked six of Goodavage's time-twin examples and found serious errors. For example Goodavage cites a case in 1939 where two unrelated women named Edna met for the first time in hospital, saying:

Each had a baby at the same time; the babies weighed the same and were given the same name ... both their husbands were named Harold. Each Harold was in the same business and owned the same make, model and color car. [The two couples] had been married exactly three and a half years and had the same anniversary ... Both fathers were born in the same year, month and day. The mothers too had the same birthdate ... (*Astrology the Space Age Science* 1966:32-33). [This case is cited by West and Toonder in their book *The Case for Astrology* 1973:282-283]

Eriksen questioned one of the women and discovered that:

1. The babies were born over one hour apart. **2.** The fathers were not in the same business. **3.** The fathers did not own the same make, model, and color of car. **4.** Both couples did not have the exact same marriage anniversary. **5.** The fathers were not born on the same day, month, and year. **6.** The mothers did not share the same birthdate (*The Humanist* November/December 1976:43-44).

Another example. Goodavage cites a 1964 case of parallel brutality:

A doctor and his wife were sentenced to two years in prison in Tucson, Arizona, for extreme cruelty to the five-year-old adopted daughter Tina. The child was found by the housekeeper – beaten, bloody, and half-starved. ... At almost the same time, but in another state, an identical story unfolded. A dentist and his wife had beaten and brutalized their five-year-old adopted daughter ... They too were sentenced. The second child was Tina's twin sister from whom she had been separated since infancy! (*Astrology the Space Age Science* 1966:33).

Eriksen consulted the *Tucson Star* reference librarian and discovered that:

1. Tina's twin was a brother (fraternal twin). **2.** The twin brother died over one and a half years before Tina was found badly beaten. **3.** The twin brother had not been separated from the family. (Fictionalized dentist and wife.) (*The Humanist* November/December 1976:44).

Eriksen notes that Goodavage's vocal letter to *The Humanist* of November/December 1975 says "My aim is not to defend astrology but to present the truth as I have found it". He confronted Goodavage with the clear discrepancies in just two of his six examples. In response:

Goodavage admitted that "sure there are errors" in his writings on astrology – "nobody is infallible – but this is not deliberate on my part". [Eriksen continues] our purpose in this article was to review Mr. Goodavage's contention that his research into time twins proves the validity of astrology. It is difficult to understand how he could be so vocal about the "truth" when not one of his own studies have been validated (p.44).

In response, John Anthony West (*The Case for Astrology* 1991:196) complains that:

To the best of our knowledge, no one has taken the trouble to look into Eriksen's data, or into those examples he neglected to debunk. Given the proven unobjectivity of so many other *Skeptical Inquirer* inquiries, it would be naive to accept Eriksen's data as definitive without independent corroboration.

Which might be more persuasive if West had taken the trouble to do what others failed to do, or if he had noticed that Eriksen's data appeared in *The Humanist* and not *Skeptical Inquirer*.

8.7.8 What about dissimilar time twins?

Time twins that happen to be similar leave the door open for belief. But the same is not true of dissimilar time twins because they are effectively "white crows". Some examples:

Kosmobiologie for January 1968 describes two girls born of different parents at the same minute in the same hospital in Vienna in 1946. Despite having the same horoscope they had quite different characters and lives. One was pretty, married at age 21, and had a child six months later. The other was ambitious, remained single and childless. *Kosmobiologie* for January 1969 describes two boys born in adjoining beds at the same time. Despite having the same horoscope they developed very differently, which was ascribed to one having parents who were 12 and 14 years older than the other's.

Much later in 2008, researchers Hande Ayan and Mike Foote reported that one of them had a time twin born within one minute, yet:

the two could not be further apart. [They] have different incomes, look different, have different artistic and cognitive strengths and weaknesses, and have very different success rates with relationships (from www.washington.edu/pbaf-527m/PolicyReport.HA.MF3.11.08.doc.pdf in late 2015).

Here is a similar case:

My brother and my mate's wife are precise "astrological equivalents" being born within the same hour on the same date in the same year (May 1967 if you're wondering). There never were two more different people and the same stuff never happens to them. (Richard of London UK, on the website www.theguardian.com/notes_and_queries/query/, "Astrology. It's all a load of rubbish isn't it?" 2011). To which TC of London responded: "Well, they both got a mention in *Guardian Notes and Queries*, in the same letter, on the same day. What are the chances of that?"

In 2013 psychologist R Steyn tested four sets of one-day time twins born in 1983 in South Africa (mean N=43). Despite their astrological differences, see 8.3.4, the four sets were not significantly different in mean Big Five scores (no $p < 0.5$). He concluded:

astrology should be seen [as] an outmoded, archaic belief system based on mythological assumptions. Thus, any real-world decisions made on the basis of such a system would be foolish and a sign of ignorance (p.494).

8.7.9 More tests of time twins

In 1968 the first issue of *Correlation* (its pre-cursor not the present journal) announced what was possibly the first systematic approach by AA members to testing time twins:

The material for the present project has been collected from *Who Was Who 1951-60*. The birth dates and page references were recorded and copied onto individual slips, which were sorted into date order. In this way the astrological twins were found and listed. A control group of pairs has been listed at the same time in a random manner. These may be called the "non-twins". The next step is to evaluate the degree of similarity in each pair, using facts given in *Who Was Who* such as dates of marriage and death, number of children, titles, profession, and so on. Lists of pairs have been presented to Astrological Association members for the scoring of similarities. All such scoring is done blind, pairs of astrological twins and non-twins being undifferentiated and listed in a randomized order. ... As birth dates are given in *Who Was Who*, but not birth times, only a very small proportion of those called astrological

twins will strictly deserve the name "twin" in the sense of having been born close together in time on the same day – that is, within the normal limit for twins. It will be interesting to see how far this is an important or essential factor. But even if those born on the same day do not show a significant degree of over-all similarity, certain features of their lives may show a consistently higher score than others; and these factors may prove to be those which are less influenced by the exact time of birth than by the more general, slowly changing astrological situation prevailing during a given twenty-four hour period (from *Correlation 1, Research Publication of the Astrological Association in collaboration with ISAR*, Autumn 1968:8).

The work was well underway, yet no results appeared in the pre-cursor *Correlation's* eight issues to Summer 1970 nor in its continuation in *Astrological Journal*. Had the results been positive their non-publication by astrologers would be inconceivable, so we are left with the implication that the results were both negative and a case of publication bias.

However, John Addey had already extracted a total of 970 nonagenarians from all 4 volumes of *Who Was Who*. The largest volume (1940-1949) gave 324 nonagenarians, of whom six pairs were born on the same days. Although the personal details given in *Who Was Who* were often very brief, there were in every case clear similarities (*Astrological Journal* 9(1), 24-26, 1967):

1. Both male, first a vicar, then a rector, then a canon, unmarried, died 2 months apart.
2. Both involved with the Church. He a clergyman's son, she a clergyman's daughter. Both married.
3. Both male, a president of societies, involved in law, many publications, married 4 years apart.
4. Both male, one active in politics, the other a diplomat, married in same year.
5. Both male, educated at London University, one an army chaplain, the other a chairman in military education.
6. Both male, one late 11th Hussars, the other late Grenadier Guards.

Addey noted that neither these similarities, nor the similarities shown by the other several dozen cases he cited, were conclusive. But even without controls they were encouraging:

I hope the evidence mustered in this article may encourage someone, either inside or outside astrological circles, to follow up research on this subject of coincident births. Similarly, if any additional evidence on the subject is known to our readers, I should be glad to publish details (p.29).

Brass Tacks. Nothing much happened until 1980, when the AA's Charles Harvey and Frank McGillion became involved in a test of time twins for the BBC TV programme *Brass Tacks*. Via ads in *Radio Times*, *Times*, *Telegraph* and *Guardian*, and requests for help on London and Manchester radios, a total of 43 people were found who had been born on 10 November 1947, the birth date of Brenda, a friend of the producer and a tutor at a child guidance centre. Five with birth times between 5:00 and 6:30 pm were chosen as being the closest to Brenda's 5:50 pm.



Left: London studio with (from left) Frank McGillion, Jeremy Cherfas (CSICOP), Brenda, BBC presenter, Tad Mann. **Middle:** Birmingham studio with the chosen five and (not visible) Charles Harvey. **Right:** The two closest look-alikes.

The five were asked how well Tad Mann's verbal interpretation of Brenda's chart applied to them. Responses ranged from "yes, amazing" to "no, too general". The most striking finding was the close resemblance between two of the five (above right) who were also the closest in time (both 5 pm). Overall verdict was "promising but inconclusive" – really strong similarities between time twins were clearly rare. The half-hour programme aired on 16 June 1980.

Mirror Images. In 1987 John Addey's 1967 article led two UK astrologers Helen Greengrass and Brian Hewitt to set up a company with this name for researching astrological twins. Not unexpectedly progress was slow. But two years later:

With two years' efforts behind us we can now state that the coincidences in life similarities demand attention and are worthwhile research material (*Astrological Journal* 31(3), 154-159, 1989:155).



TIME TWINS
A Research Project

Nevertheless *Mirror Images* experienced difficulties in collecting data, as did a similar research project called *Time Twins* set up in 1992 by US psychologist and astrologer Margot Kane with initial funding from the NCGR New York Chapter.

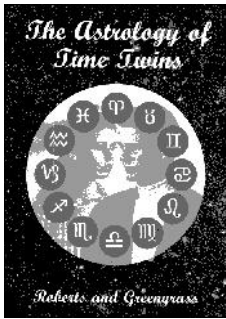
Elegant logo of the *Time Twins Research Project* based in New York.

Enter Peter Roberts. In 1989 Greengrass met Peter Roberts, and together they launched a research project on time twins, whose results were published in *The Astrology of Time Twins* 1994. With help from the media they managed to collect a total of 128 subjects born on average just over an hour apart on six dates during 1934-1964, or 1% of the 13,000 people then being born every six days in the UK. Each subject completed a questionnaire asking for personal details such as time and place of birth, and the Eysenck Personality Questionnaire. The EPQ gave scores 0-12 on each of E (outgoing), N (moody), P (ruthless), and L (socially conforming), and thus an objective measure of similarity based on separation in ENPL space:

$$\text{similarity score} = \sqrt{[(\Delta E)^2 + (\Delta N)^2 + (\Delta P)^2 + (\Delta L)^2]} \quad \text{where } \Delta \text{ means "difference in scores"}$$

The 128 subjects provided a total of 1400 pairs of time twins born <1 day apart, for which the proportion of similarity scores at the most-similar end was as follows:

<3 (close resemblers) = 3%, 3-4.9 (next closest) = 15%
Mean similarity score for all 1400 pairs = 7.8 standard deviation 2.9



After interviewing 17 subjects born on the same day (which gave 18 pairs born ≤1 hour apart) they found some evidence of similarities in interests and occupation, for example two born 15 minutes apart were respectively a bassoon player and a clarinet player, but there were no clear similarities in personality scores, appearance, handwriting, names, or life events. The similarities predicted by astrology were simply not there.

Similarly their analysis of 748 pairs (later confirmed by all 1400 pairs) found no support for increasing similarity (that is, decreasing similarity scores) as the interval between births decreased (pp.45-46):

Interval between births, hours	3-4	2-3	1-2	0-1	)	$r = 0.16$
Average similarity score	8.35	8.04	7.82	8.32	)	$p = 0.84$

Roberts and Greengrass do not give the N and sd for each interval

But things changed when they focused on the *proportion* of close resemblers instead of their actual *numbers*. In the full sample of 1400 pairs born <1 day apart, the proportion of close resemblers increased as the birth interval decreased, exactly as predicted by astrology.

Mean hours between births	0.3	3.2	11.5	21.5	As the mean hours between births
N = No of time twin pairs	98	493	688	121	increases (top line), the % of
Close resemblers, pairs	4	15	17	2	close resemblers decreases (bottom
Close resemblers, % of N	4.1	3.0	2.5	1.7	line) in the predicted direction.

They concluded that their results suggest that probably <10% of time twins are similar, and that although it was not the view accepted among astrologers it would nevertheless provide some support for astrology. However an independent re-analysis (French et al, *Journal of Scientific Exploration* 11(2), 147-155, 1997) noticed that (1) the above numbers underlying % of N (eg 4 and 2 pairs) were too small for comfort, and (2) the effect did not replicate for the next-closest resemblers, see table below. When they re-divided the sample to boost the numbers underlying % of N, the smooth decrease disappeared along with support for astrology:

	Original study (1994)				French et al (1997)			
Mean hours between births	0.3	3.2	11.5	21.5	1.5	5.2	10.2	17.8
N = No of time twin pairs	98	493	688	121	360	341	352	347
Close resemblers, pairs	4	15	17	2	10	12	11	5
Close resemblers) as %	4.1	3.0	2.5	1.7	2.8	3.5	3.1	1.4
Next closest) of N	9.2	15.8	16.1	12.4	13.3	17.0	15.6	15.0

Roberts and Greengrass also found that personality differences measured *within* dates were smaller than the same differences measured *between* dates, which would again provide some support for astrology (p.111). But the French et al re-analysis found they had overlooked the natural changes in personality scores with age, which immediately explained their finding. Furthermore their data showed evidence of contamination by prior knowledge of astrology. In other words any apparent time-twin effect in their data was probably the result of artifacts.

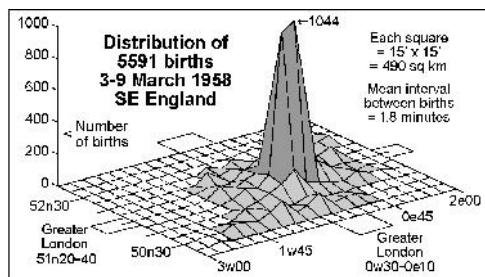
8.7.10 Tests of time twin cohorts

Roberts and Greengrass collected more time twins in a few months than Goodavage did in many years, but data collection was still a problem because the unceasing media stream of information quickly diverts attention from any pleas for help. Their own lucky mentions in national newspapers had brought only modest results. They saw how further progress in time twin research required large samples, but large samples were:

for all practical purposes, out of the question (p.68).

In the 1980s there were three long-term studies of child development under way in the UK. The first was a study of 5500 children born in one week in 1946, and was the study that first linked mothers' smoking in pregnancy with later problems for their children. The next was the National Child Development Study of 16,000 children born in one week in 1958 (AA requests for data were refused because astrology was not seen as respectable). The next was a similar study of 15,000 children in 1970. Groups that share some experience, or are the same age, are called cohorts. The idea is that by following children from birth to later life, links thought to exist between early childhood experiences and performance in later life can be tested.

Dean and Kelly (*Journal of Consciousness Studies* 2003, 10(6-7),175-198) analysed a subset of the NCDS cohort consisting of 5591 persons born in SE England during 3-9 March 1958:



3D plot of NCDS births in SE England during 3-9 March 1958. As expected, their concentration peaks in the Greater London area. Data are a subset from the UK's National Child Development Study (N=16,000). Times for 92% of the plotted births were recorded to the nearest five minutes, the rest to the nearest minute. Data collection required a national effort by whole armies of workers, well beyond anything that astrologers could hope to achieve. Birth times and places are not computerised and are retrievable only by personal inspection of the records. Access to NCDS data requires accreditation, permission, and signing an agreement that forbids passing data to third parties.

To minimise birth place variations, a subset of 2101 persons born in London during 3-9 March 1958 was analysed. They were born on average 4.8 minutes apart, so they were precisely those for which Addey had predicted "really exceptional similarities of life and temperament". Measurements at ages 11, 16 and 23 had provided for each person 110 astrologically relevant variables (and many more not relevant) including test scores for IQ, reading, and arithmetic; teacher and parent ratings of behaviour such as anxiety, aggressiveness, and sociability; physical data such as height, weight, vision, and hearing; self-ratings of ability such as art, music, and sports; and various others such as occupation, accident proneness, and marital status; all of which are supposed to be shown in the birth chart. Included as a control were 16 variables for the mother such as age, blood pressure, and length of labour that seven leading astrologers had unanimously agreed would not be shown in the birth chart of the child.

Before analysis the subjects were arranged in chronological order of birth. This gave 2100 successive pairs of time twins of which 73% were born 5 minutes apart or less, and only 4% were born more than 15 minutes apart. The similarity between time twins for each variable was then measured as the serial correlation between successive pairs AB, BC, CD, DE, and so on. Here serial correlation is a direct measure of effect size and is extremely sensitive due to the large sample size. Unlike the Roberts and Greengrass approach (count each time twin

against every other time twin within one day, which if applied here would have produced nearly 600,000 pairs), serial correlation counts each time twin once only, thus minimising the risk of artifacts. So the test is strongly conducive to success – except the results are uniformly negative. Thus the mean effect size due to astrology over 110 variables is $r = 0.00 \pm 0.03$:

Source of variables	Variables N	Subjects Mean N	Original data		Controls: Randomised		Equated every	
			Mean r	sd	Mean r	sd	50th Mean r	25th Mean r
Mother	16	2066	0.001	0.029	-0.001	0.022	0.017	0.038
Subject	110	1393	-0.003	0.028	-0.001	0.028	0.018	0.036

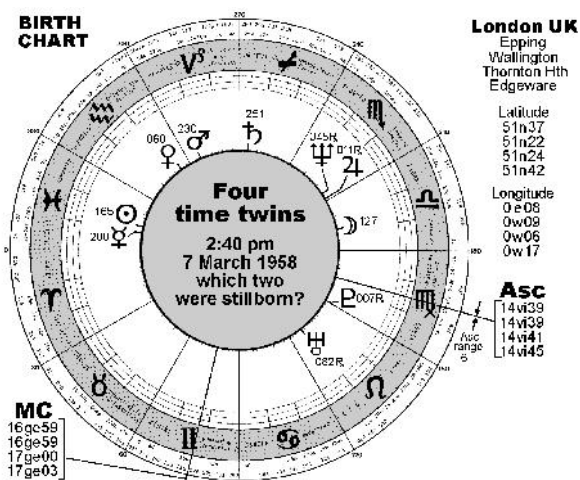
Here "Subjects Mean N" is less than 2101 due to missing data. "Randomised means" are for 2000 replications. For "Equated" every 50th or 25th subject is made the same as the next to simulate astrological effects.

According to astrology the serial correlations in this data should be zero for mother variables and strongly positive for subject variables. But the last (-0.003) is effectively zero, and their difference (-0.004) is in the wrong direction and non-significant ($p = 0.56$ by t-test). Of the 110 individual serial correlations (not shown), 5 are significant at the $p = 0.05$ level vs 5.5 expected by chance. The randomised means and standard deviations agree with the expected values $-1/(s-1)$ and $1/\sqrt{(s+1)}$ respectively, where s is the number of subjects, so the data are well-behaved. There is nothing here that would deny the previous indication. Furthermore the equated means after equating every n th subject are in good agreement with the expected increase $1/n$, which confirms that the test is sensitive and working. For 100 clients, a serial correlation of 0.001 is equivalent to getting 0.05 hits more than tossing a coin.

Finnish astro researcher Kyösti Tarvainen (*Correlation* 32(1), 75-79, 2018) dismissed the whole study on the grounds that it did not use t -tests (it did) and that the simulation used to validate the use of serial correlation was unrealistic (it wasn't). See 7.7.2018.2 for details.

8.7.11 Hey, why not look at actual charts?

If we choose time twins that differ in the most extreme way possible, can the astrologer tell one from the other? Put it to the test. Here are four such time twins. Can the astrologer tell?



Four time twins from the data accessed by Dean and Kelly. All were born at exactly the same time (2:40 pm) but in different suburbs of London, which has spread Ascendants and MCs over 6' and 4' of zodiacal longitude respectively. Chart positions are in decimal degrees x10.

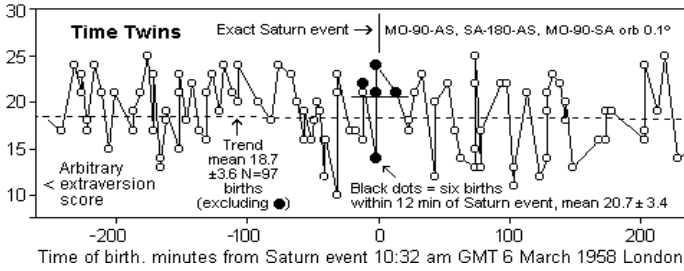
Two of the time twins were healthy births, two were stillborn, which must represent the most extreme difference possible in human destiny. According to tradition the charts have to differ in a really major way. But lunar movement is $< 1'$ of longitude. No planet changes its Placidus house position. The charts are far too similar to allow prediction of the outcomes.

So even allowing for imprecision in the birth times (here recorded to at least the nearest 5 minutes), there is no opportunity for differences of the kind required. An appeal to microscopic differences would make everyday practice unworkable.

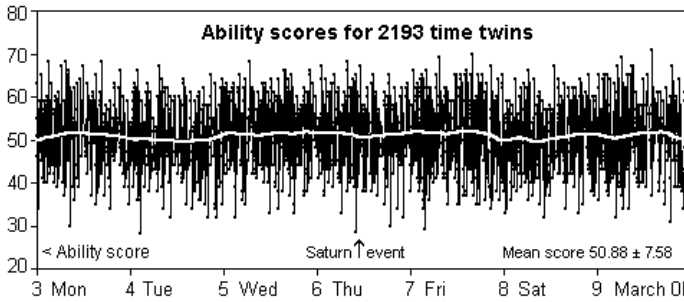
In this case the answer is no. But look at the birth charts in general. The charts for 3-9 March 1958 contain SO-0-ME and a T-square of VE-180-UR and VE-90-JU-NE, most of which stay within an orb of 5° during the seven days. According to tradition the natives should tend to be restless, unstable, self-willed, unconventional, and artistic. The calming effect of an angular Saturn (as distinct from say an angular Mars or Jupiter) should be very noticeable. So another way of looking at these time twins is to see if there are any changes when Saturn is angular.

Once a day in every birth location, Saturn is momentarily exactly opposite the Ascendant. At this time in London on 6 March 1958 Saturn was also square the Moon within 0.1° and one

minute of time. It was not just a strong Saturn event, it was the strongest Saturn event to occur during the whole period of 3-9 March. According to tradition it should have shown up as a dip in the natives' extraversion scores. But it did not:

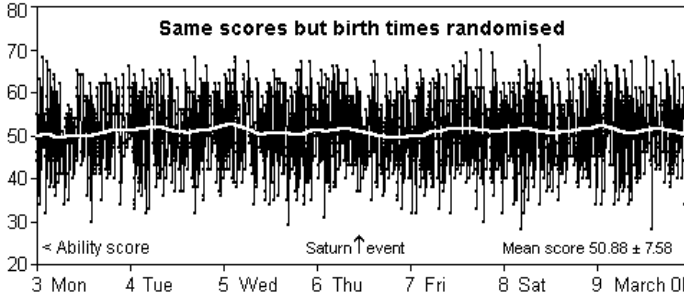


The plot is 8.3 hours wide and shows 103 births for which extraversion scores (a combination of ratings on 13 relevant scales such as impulsive-cautious, and liking parties) were available. According to astro tradition, the scores during the Saturn event should drop below the mean, but if anything they do the exact opposite. The difference is not even weakly significant ($p = 0.22$ by t -test).



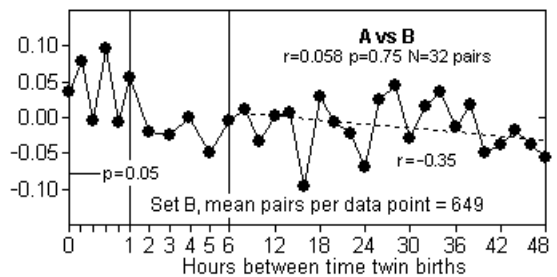
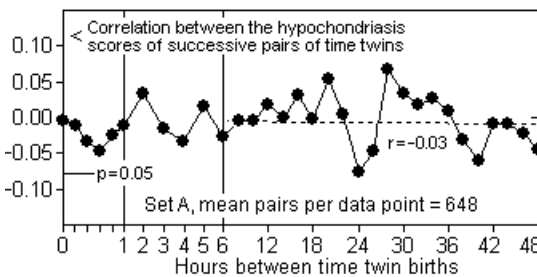
Even if the plots are enlarged to include all seven days, the results are no better, as in this example for ability scores:

The **ability score** is a composite of fifteen tests (such as IQ, reading, mathematics) and highest qualification, so it should have excellent validity.



The plots are 7 days wide and show 2193 births for which ability scores were available. There is no obvious link with the Saturn event, no obvious daily rhythm that might coincide with rising planets, and no clear visual difference when the birth times are randomised (lower plot). The overall impression is of pure noise, and indeed further analysis using a range of sensitive techniques failed to find anything useful. The white lines are 41-point moving averages (41 points averages 3 hours).

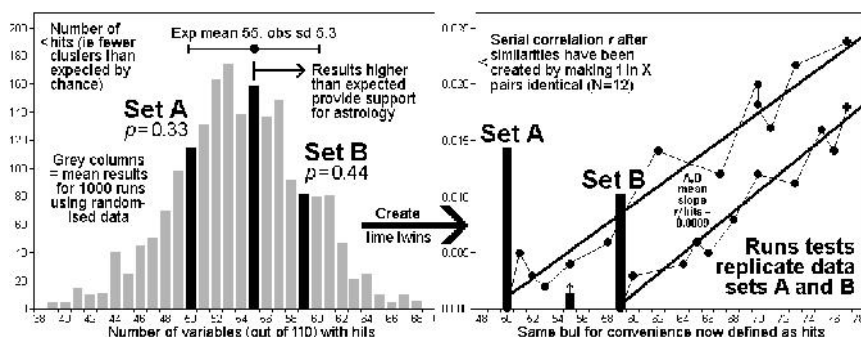
Now for a test of the idea that births up to an hour apart should show greater similarities than births more than a day apart. As well as extraversion, neuroticism was considered fairly easy to see in charts (see 7.6.1986.3), for which the nearest measure in the data is hypochondriasis scores (worry about imagined illness) measured by a 25-item questionnaire at age 23. Below, the time twins are first ordered by time of birth. Set A (left) has the odd-numbered time twins. Set B (right) has the even-numbered time twins. So the astrology is the same in both sets. Then in each set measure the correlation between hypochondriasis scores for successive pairs of time twins born 0, .2, .4, .6, .8, 1, 2, 3, 4, 5, 6, 8, 10, 12 ... 48 hours apart:



Correlation between **hypochondriasis scores** vs hours between birth times. According to tradition the black dots should start high on the left (much higher than the top of the box) and then fall away. But they do not. For every short-term trend in the right direction there is another in the opposite direction. Nor do the correlations replicate between sets A and B ($r = 0.058$, $p = 0.75$). For both plots together, 3 data points reach $p = 0.05$ vs 3.2 expected. This approach is free of the objections that Tarvainen (erroneously) raised about serial correlation in 7.7.2018.2

One way of avoiding arguments over measuring similarity is to artificially create known levels of similarity in time twin data to see if it can be detected, and then randomise the data to see how much of the similarity could be due to chance. As a precaution the resulting data can be analysed by methods that are not affected by how the data are distributed. Such a method is the *runs test*, which counts the number of runs (unbroken sequences) in a given set of data and is not affected by skew or non-normality. It is the ideal test. Here is a worked example:

(1) Order the data by time of birth. (2) Divide into two replicate sets A (odd numbered cases) and B (even numbered), each of the same 110 variables with each N up to 1050 (2100/2) depending on how complete the data are. (3) Test with a runs test, and count the number of variables with fewer runs (and therefore more clustering = more hits = more support for astrology) than expected by chance. In the left plot below, Set A has fewer hits than expected, Set B has more, and neither is significant. The controls (grey columns) show the results when the data are randomised, re-divided, re-tested, and repeated 1000 times. The distribution is symmetric about the expected mean of 110/2. The scatter is due to random sampling errors and is fairly ragged as expected for only 1000 randomisations.



Left plot: If time twins were in fact similar as predicted by astrology, there would be many hits, and the columns for sets A and B would be on the far right of the plot. But they are not. Sets A and B have p 's of 0.33 and 0.44 respectively, so they are close to what would be expected by chance.

We are now ready to test artificial time twins by repeating steps (1) and (2), with a new step (3) that makes every 1 in X time-twin pairs identical, ie by duplication. It may seem straightforward but it is essential to choose pairs that avoid upsetting the identical/nonidentical status of adjacent pairs, otherwise we lose control of what we are supposed to be counting.

Right plot: the dots show the results for sets A and B when successively 1 in X pairs are made identical, where X ranges in 12 steps from 500 down to 40, all plotted against the corresponding correlation r ($= 1/X$), see end of 8.7.10. As more pairs are made identical, the correlation increases, albeit untidily because the pairs made identical are chosen by spacing, not by size or scores, and some scores will differ in their effect on serial r . Thus changing a pair with scores 1 and 5 to scores 5 and 5 will have a different effect from changing scores 4 and 5. And of course the effect will depend on the measures involved for each variable. For the same reason A and B slopes are not identical.

We can use the mean slope of A and B to estimate the proportion of genuinely-similar time twins that the present dataset of 2101 time twins could detect at a p level of 0.05 two-tailed. If we reasonably assume that the hits are normally distributed, then the required value of hits/sd has to be 1.96 for $p = 0.05$, which will require $1.96 \times 5.3 = 10.4$ hits to be detectable. which from the mean slope is equivalent to an r of 10.4×0.0009 or about 0.009.

Recall that a correlation of r is equivalent to 1 in $1/r$ pairs showing the close similarities predicted by astrology. So $r = 0.009$ is equivalent to 1 in every $1/0.009 = 110$ pairs. In other words we conclude from the observed p 's of 0.33 and 0.44 that not even 1 in 110 (0.9%, which compares with Roberts and Greengrass's provisional estimate of <10%, see 8.7.9) of these time twins shows significant ($p = 0.05$) similarities consistent with astrology.

8.7.12 Controlling tests of time twins

The above conclusion would of course collapse if for some reason the measures used in the tests were invalid or were applied in invalid ways. But if the measures were invalid, the tests applied to time twins should give equally poor results when applied to controls made up of biological twins. Fortunately the NCDS data contains many pairs of biological twins that allow

this point to be tested. All were born during 3-9 March 1958. Here are the comparisons:

	Number of variables used for measure	Mean correlation between twin pairs		
		Time	Identical	Fraternal
Extraversion	11	-0.004	0.62	0.40
Neuroticism	5	-0.007	0.67	0.29
Ability	9	0.005	0.63	0.47
Mean of 110 variables		-0.003	0.58	0.43
Mean number of pairs		1446	41	90

Time twins are from London. Biological twins are from SE England.

So are the tests invalid or applied in invalid ways? The correlations for biological twins are generally two orders of magnitude larger than for time twins. The answer is a resounding No.

One objection to the usual tests of twins is that the twins' apparent similarity is an artifact of their similarity in appearance, which causes twins to receive similar treatment and therefore to exhibit similar behaviours and test results. If this were actually true, twins reared apart should be significantly different from twins reared together (but they aren't, see 8.7.3), and unrelated look-alikes should be behaviourally more alike than unrelated people in general. US twins expert Nancy Segal (*Personality and Individual Differences* 54(1), 23-28, 2012) tested this idea using look-alikes located via the French Canadian portrait photographer François Brunelle, who has for many years been collecting these rare pairs. Some examples are shown below:



Photographs by Francois Brunelle of unrelated look-alikes from four countries. www.francoisbrunelle.com

Segal obtained responses on nearly 30 personality dimensions from 23 unrelated look-alike pairs (about one-third of the pairs contacted), about half of whom were male pairs. Average age was 46 years, range 16-84 years Here are her Big Five results, plus twin results for comparison from Bouchard (in Hettema and Deary eds, *Foundations of Personality* 1993:15-440):

<i>r</i> observed by >>	-- Segal --		----- Bouchard -----			
	Unrelated look-alikes		Identical twins Reared Apart Together		Fraternal twins Apart Together	
Big Five dimension						
Extraversion	-0.07		0.51	0.53	-0.03	0.17
Neuroticism	-0.06		0.54	0.47	0.27	0.15
Openness*	-0.27		0.60	0.43	0.31	0.18

Agreeableness	-0.13	0.51	0.42	0.10	0.18
Conscientiousness	0.29	0.50	0.57	0.09	0.35
Mean	-0.05	0.53	0.48	0.15	0.20
Number of pairs	23	113	652	75	558

None of the results for unrelated lookalikes are significant at $p = 0.05$.

*Openness to experience, which is equivalent to intellectual curiosity.

These and Segal's other tests showed that physically similar people were not more alike than chance in personality, behaviour, and self-esteem. If looking alike did have an effect, the lookalikes should have been more alike than fraternal twins, who generally look much less alike than identical twins. But they were not. Interestingly, although slightly more than half the pairs lived in the same city (all were French Canadians), less than a third stayed in contact after being photographed. Evidently similarity in appearance does not mean similar interests. Nor similar birth charts, for their average age difference was 7 years, range 0-20 years.

Before leaving the above table, note how the results are much the same regardless of whether the twins are reared apart or reared together, a point covered in 8.7.3.

But the number of ways in which two people could be similar is almost without limit. Suppose two people compare just their cars and jobs. 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 good match, and $1.5N$ themes for a 95% chance (Diaconis and Mosteller, *Journal of the American Statistical Association* 84, 853-861, 1989). Because car categories can be multiplied almost indefinitely (colour, make, age, number of seats, place of purchase, and so on), as can themes, striking similarities of one kind or another are almost inevitable. Has this upset the above findings? See next.

US psychologist W Joseph Wyatt and his students recruited 13 pairs of identical twins aged 15-22 and 25 pairs of unrelated college students of the same sex and similar in age (*Skeptical Inquirer* 9(1), 62-66, 1984). Each pair working together had to explore 41 areas of functioning including political beliefs, musical interests, religious preferences, jobs held, hobbies, and favourite foods, and then (still working together) rate their similarity in each area on a 10-point scale from 0 = very strongly different to 10 = very strongly alike. As expected, the twin pairs were significantly more similar than the unrelated student pairs, but the latter still rated themselves as more alike than different (just as people are more alike than people and dogs?):

13 pairs of identical twins	7.94	sd 1.08	)	by t-test
25 pairs of unrelated students	6.46	sd 1.04	)	$p = 0.0002$

Some unrelated pairs saw themselves as highly similar, and none saw themselves as really different. Interestingly, it was not difficult for pairs to find similarities that others might see as unusual. For example one unrelated pair reported these unusual similarities:

Both are Baptist; volleyball and tennis are their favorite sports; their favorite subjects in school were English and Math (and both listed shorthand as their least favorite); both are studying nursing and both prefer vacations in historical places. Had these similarities been found in a pair of identical twins (who had been reared apart) they might have been used as evidence for astrology (p.64). [As indeed they were in the above *Brass Tacks* TV programme]

In summary, this survey of controls for tests of time twins has found no reason to doubt the previous test results. Nor the clear message from ordinary twins, triplets, and the McCaughey septuplets in 8.7.2. Now for an issue not yet addressed: can astrologers predict the future?

8.8 TESTS OF PREDICTION

8.8.1 Can astrologers predict future events?

I have not the honour of being a prince, but the celebrated Count of Boulainvilliers and an Italian, named Colonne, who had much prestige in Paris, both foretold that I should die infallibly at the age of thirty-two. I have been so malicious as to deceive them already by nearly thirty years, wherefore I humbly beg their pardon – Voltaire (1694-1778), *Voltaire's Philosophical Dictionary* 1764:31, in which year his deceiving had increased to nearly forty years.

The practice of astrology took a major step toward achieving credibility today when, as predicted, everyone born under the sign of Scorpio was run over by an egg truck – *Punch* cartoon 1983.

After any notable event, such as a major earthquake or an assassination, articles appear in astrology journals showing a link between the event and its birth chart. But the link means nothing unless it can predict the event in advance. In 8.4.5 we saw how attempts to rectify birth charts after the event were generally in disagreement, which suggests that predicting events *before* they happen is unlikely to be any better than guessing (we test this below).

In contrast, predicting events *after* they happen never fails, as when Suzi Lilley-Harvey (*Astrological Journal* 23(3), 167-170, 1981) compared the birth charts of Prince Charles and Lady Diana before their wedding. She found "very fundamental rapport ... general emotional and social compatibility ... strong social-cultural-spiritual bond ... excitingly attractive and romantic ... ability to work together in a very practical way". Yet Nick Campion (*Born to Reign* 1993:154), after their separation, saw in the *same charts* only trauma, anger, rebellion, and disaster. The general emotional and social compatibility had disappeared.

Similarly disagreeing explanations for the New York 9/11 twin towers terrorist attack of 11 September 2001 appeared *after* it happened. Yet according to Rob Hand, the eminent US astrologer and prediction expert, prediction *before* it happened was inexplicable:

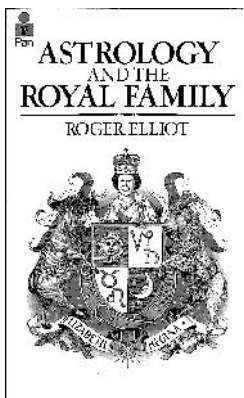
Only one person predicted the date of the attacks and that was Lynne Palmer. I don't know how she did it, I looked and looked [at the chart for the attack] and I don't know how anyone could have predicted it to the day (quoted on skeptico.blogs.com/skeptico2006/).

But look more closely. What Lynne Palmer actually said in her *Astrological Almanac for 2001* was "Avoid terrorist attacks on September 11, 2001" (p.95). She covers nearly 500 kinds of activity from cutting cloth to having surgery, and lists thousands of dates that ought to be avoided. Under "Avoiding Terrorist Attacks" she lists more than 130 dates in 2001, including sixteen for September. Under "Avoiding Travel by Air" she lists thirteen dates for September, none of them September 11. So her apparently inexplicable success is easily explained – make enough predictions and some will succeed purely by chance.

Again, we can easily avoid air travel but how could we avoid terrorist attacks? Where could we hide? Furthermore, in October 1992 a 747 cargo jet lost two engines due to metal fatigue shortly after takeoff and crashed into the 6th floor of a long 11-storey Amsterdam high rise, cutting the building in half and killing 51 people. Mars was then exactly (within a few minutes of arc) opposite the Ascendant. To most astrologers it made perfect sense. But not on 11 September 2001 when the same contact was completely absent. In the real world making astrological sense with perfect hindsight has no predictive value. But try one more time:

In astrological terms Campion's *Born to Reign* 1993 is a masterpiece of insightful research that shows how well Europe's royal families are described by their birth charts. Every page contains provocative links to signs as in this example for Queen Wilhelmina of the Netherlands (p.252):

Her Ascendant was in sensitive Pisces and her Moon in romantic Cancer, so it is clear she was driven by her feelings.



But apart from rejecting the incline-not-compel argument, to involve signs (the most disconfirmed idea in astrology) makes the whole work an obvious case of fitting fiction to reality. It also provides an example of picking hits and ignoring misses: Thus as evidence for astrology's "ability to pick out both the time and nature of future events", Campion (p.6) cites from Roger Elliot's 1977 book *Astrology and the Royal Family* this prediction by Elliot for Prince Charles in 1992:

This is the crucial year for the Prince of Wales and, by implication, the whole Royal Family. He will undergo a deep and important change, due to Pluto moving from a square aspect at birth to an exact conjunction with the Sun. This was the transit that accompanied Princess Margaret's declaration that she would not marry Group Captain Peter Townsend. Some similar kind of sacrifice may be required from Charles. That, or a calling to some ineluctable [ie unavoidable] destiny (p.185).

In December 1992, Charles became the first heir to the throne to separate legally from his wife. So the prediction seems a hit. But 6 years earlier in 1986 Charles had been reunited with Camilla, whom he had first met romantically in 1970, and they were married in 2005, so the supposed sacrifice seems questionable and hardly unavoidable. Elliot had made these other predictions for Prince Charles (pp.165-184), all ignored by Campion and most of them wrong:

- 1977 – wedding to the future Queen of England in autumn 1977 [he married Diana in July 1981].
- 1978 – birth of a child (provided he married) otherwise marriage if previously delayed.
- 1981 – Charles now happily married with one child and possibly two [William was born 21 June 1982].
- 1984 – moves house possibly to Australia as Governor-General.
- 1985 – numerous differences with his younger brother Prince Andrew.

Two were fairly close and could be shrewd guesses:

- 1983 – world tour with his wife especially in the Far East [they visited Australia].
- 1989 – narrow escape from disaster [narrow escape from avalanche March 1988].

But there were failures to predict major events:

- 1979 – great-uncle and mentor Lord Mountbatten killed by a bomb.
- 1982 – birth of his son Prince William.
- 1984 – birth of his son Prince Henry.
- 1986 – reunited with Camilla.

Campion's own fitting of after-the-event reality to isolated chart factors often leads to telling contradictions. For example Prince Charles "shares all the secrecy of the typical Scorpio" (p.144), despite which "His Leo Ascendant gives him an innate desire to show off" (p.147).

Elliot's predictions in the *News of the World's* "Sun Day" colour supplement for 29 December 1985 were evaluated by Bob Coultie (*Forbidden Knowledge: The Paranormal Paradox* 1988:67):

He assured readers that Prince Andrew would not get married, which he did six months later. Labour leader Neil Kinnock did not write the book that Elliot said he would and Bob Geldorf neither won the Nobel Peace Prize as predicted by Elliot nor persuaded the Russians to join in – indeed he refused to support a Russian charity event because of their refusal to be involved in his appeals for Ethiopia. In fact, one could have had much more success than Elliot simply by predicting the opposite (p.67).

The point here is that astrologers, even top academic astrologers like Campion, rarely do what is necessary to evaluate the evidence. For this we have to go elsewhere (see next section).

There is also a subtle technical point. As noted by UK neuropsychologist Nicholas Humphrey (*Soul Searching* 1995:203), it is possible for a simple event to trigger or co-occur with a complex event, as in opening curtains to start a stage play, but it is not possible for a simple event to *prescribe the content* of a complex event. You cannot get more information out than was put in. Opening the curtains cannot possibly prescribe what will happen on stage.

Similarly directions involving the whole chart may suggest *accident* on a certain day, but an actual accident will involve countless details such as nature of accident, nature of injury, how caused, and the type of people involved. All of which could be captured on film but never by the birth chart despite the richness of its symbolism. So it seems unlikely that astrology could predict future events other than in a very general way. Indeed, such predictions would be inconsistent with the results of previous sections. But what is the actual evidence? See next.

8.8.2 Tests of astrology forecasts in newspapers

The popular view is that astrology (not just sun sign) forecasts in newspapers began in 1930 with RH Naylor's weekly column "What The Stars Foretell" in the UK *Sunday Express*, see 7.1.1930.1. But as noted by Kim Farnell in her historical survey *Flirting with the Zodiac* 2007:

The problem is that it simply isn't true. Naylor was no more the inventor of Sun sign astrology than he was the first astrological columnist in the popular press. ... it wasn't a totally new concept as Sun sign writings appear in the mid nineteenth century [and] may date back to at least the sixteenth century (pp.xxiv–xxv).

But RH Naylor may have been indirectly responsible for the first *testing* of astrology forecasts in newspapers, specifically forecasts about World War II. The popularity of his own weekly

column had persuaded other newspapers to set up their own columnists, starting with *The People*, a Sunday newspaper similar in size to the *Sunday Express*, which on 1 October 1933 began a weekly column "Plan with the Planets" by Edward Lyndoe. Its first two appearances were accompanied by this cautious editorial disclaimer:

If you believe that the planets exercise an influence on your destiny – well, here's all about it, by an astrologer. He may be able to help you. But don't forget that man is master of his fate. Whatever the planets may say, it is you yourself who control the course of your life, even if you do feel inclined to take a hint from the planets. In short *The People* doesn't believe that planets or fate or anything of the sort can take the place of man's own power to work out his own salvation. But still, here's what the planets say (1 October 1933:13 and 8 October 1933:14).

Lyndoe's "Plan with the Planets" was divided roughly equally into political forecasts, forecasts for those born on each day that week, and forecasts for each sun sign, which format was later generally adopted by others. By 1940 an astrology column with forecasts was appearing in every mass-circulation Sunday newspaper, in most women's magazines, and in some daily newspapers. But Naylor and Lyndoe were the major players. In fact they:

have far and away the biggest followings in the country [UK]. ... Their predictions are repeatedly mentioned in conversation and used in argument among people of all classes and in all parts of the country (*New Statesman and Nation* 16 August 1941:152).

In 1941 the London investigative magazine *Picture Post* tested the accuracy of the UK's top five newspaper astrologers (Naylor, Lyndoe, Old Moore of the *Sunday Dispatch*, Adrienne Arden of the *News of the World*, and Gypsy Petulengro of the *Sunday Chronicle*) under this heading:

What the Astrologers Were Doing in the Year War Broke Out : Gospel Events are Foretold, War is Pook-Pooked
Picture Post, in 1939, were to the Astrologers' Convention at Harrogate. It saw Mrs. A. Sudbury Hurren, helped by Alexander Rupert, showing how
all the events in the Gospel could be foretold by astrology. As for the future—"There will quite definitely be no war this year," said one astrologer.
Another said, "There is no indication in the stars of a major war."

WHAT DID THE STARS FORETELL?

Newspaper astrologers have a following of millions. Since the war they have played an important role in our national life. The time has come to judge them—according to results.

Its report was illustrated with pictures of the leading astrologers and how a horoscope is cast. It noted that pre-war astrologers scorned the idea that astrology was wholly concerned with prediction, although they claimed it could be applied to medicine and psychology. Adding:

But it is the newspaper astrologer who controls the widest following, and in several Sunday newspapers his contribution wields far wider influence than the leading article. ... In order to estimate the actual success of the newspaper astrologers, PICTURE POST has taken the main events of the war and examined the predictions for these periods (*Picture Post* [London], 12(10), 17-21, 6 September 1941:17).

The examination occupies four pages. It lists nine major events of 1939-1941 namely German invasions (of Poland, Norway and Denmark, Holland and Belgium, Greece, Crete, Russia), the collapse of France, Italy entering the war, Britain's fighting in Libya, and compares them side by side in a two-page format with each astrologer's predictions in the weeks before the event:

<p>***</p> <p>1939: WAR</p> <p>Poland invaded September 1st. Britain and France declare War September 3rd.</p> <p style="text-align: center;">* * *</p>	<p>EDWARD LYNDOE, "THE PEOPLE"</p> <p>"Hitler will not do it".</p> <p>SCORE 0</p>	<p>R. H. NAYLOR, "SUNDAY EXPRESS"</p> <p>"There will be no war over Danzig".</p> <p>SCORE 0</p>	<p>OLD MOORE, "SUNDAY DISPATCH"</p> <p>"The power in [Churchill's horoscope] will crush the unholy [Hitler's horoscope]".</p> <p>SCORE 0</p>	<p>ADRIENNE ARDEN, "NEWS OF THE WORLD"</p> <p>No forecast.</p> <p>SCORE 0</p>	<p>GYPSY PETULENGRO, "SUNDAY CHRONICLE"</p> <p>"Planets ruling [Germany] will smooth over the difficulties".</p> <p>SCORE 5</p>
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Invasion of Poland. From left (quotes are from the page shown): Edward Lyndoe "Hitler will not do it". RH Naylor "There will be no war over Danzig". Old Moore "The power in [Churchill's horoscope] will crush the unholy [Hitler's horoscope]". Adrienne Arden no forecast. Gypsy Petulengro "Planets ruling [Germany] will smooth over the difficulties". Bottom right are the accuracy scores. 5 for a clear prediction. 2 for a correct point. Old Moore got 2, the rest 0.

Astrologers did not always make predictions (in 7.1.1930.1 Lyndoe says most predictions of war were censored). Of their possible totals, Lyndoe scored 9/40, Naylor 12/35, Old Moore 4/30 (his 1942 *Almanac* cover said "Hitler's World in Ruins"), Adrienne Arden 4/30, Gypsy Petulengro 13/40, total 42/175 or 24%. Readers had to "Study this survey carefully. Then you can judge whether or not astrology provides a safe guide to the future" (p.18):

Most notable is the fact that the astrologer so often fails to make any reference whatever to the event in question. The astrologer in these cases certainly avoids making a mistake, but is that to his credit? If the world's history is decided by the charts of its chief characters, then it is remarkable if these charts omit what is most important (p.17).

Each astrologer was a national specialist in event prediction, so their accuracy should be as good as it gets. But they scored no better than informed guessing, which led to a record mail from readers, some of which was later published under the heading "Storm over Astrology":

• You have performed a great public service in giving a true picture of the results achieved by astrologers. • Knowing I was sceptical [of astrology], a friend obtained for me, from one of the most celebrated Astrologers, a sealed prognostication, based on the exact time of my birth &c., which I was not to open until I reached the age of 40. I carefully preserved the document and opened it at the appointed time, but it was entirely incorrect. Not one of its elaborate forecasts had come true! • Thanks PICTURE POST. It's about time this mass astrology was dissected coldly. • On the day you published that feature, I once more became the boss of my household. For two years I've been a mere Opposition worm when the family fought for the "Astrology" page. Now I am vindicated. They always accept your word. • My only criticism is that your markings were far too generous, and that negative marks should have been awarded for "reversed" forecasts. By this system it is doubtful whether any of the professors would have had a credit balance. • [The editor replied] "True we were generous with marks. This was deliberate. We gave stars benefit of every doubt". Adding "In justice to serious astrologers, it must be pointed out that they do not claim that the stars indicate actual happenings. What they do claim is that from their positions and movements ... it is possible to observe certain tendencies by which they think we should direct our lives" (*Picture Post* 12(12), 20 September 1941:22).

In the following issue (12(13), 27 September 1941:3) one believer condemned *Picture Post* for daring to criticise astrology. And UK predictive astrologer PJ Harwood pointed out:

Like other astrologers, I have made my mistakes and omissions (the latter often purposely for lack of reliable data), 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.

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 foresee and fighting in Europe and popular riots."

To which the editor 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; considered Russia unlikely to "be implicated seriously" in war [all wrong, including Harwood's prediction that war would end on Christmas Eve 1941].

But there was more. A few weeks later, in its issue of 15 November 1941:21-23, *Picture Post* reported (again with many pictures) a luncheon meeting at Grosvenor House, London, at which 450 people (mostly women) listened to RH Naylor and Gypsy Petulengro defend themselves:

Denouncing his critics, Naylor made the following observation: "First of all, they have the immovable idea that astrology postulates that the stars influence mankind. The modern astrologer makes no such absurd statement." In the speech which followed, Petulengro said: "I firmly believe that the stars rule the destiny of mankind and nations." In view of a disagreement so deep and fundamental, how is it possible for anybody to take newspaper astrologers seriously? Only in denouncing their critics as an ill-informed, ill-natured collection of busybodies and spoil-sports are the newspaper astrologers generally agreed. ... Ardent disciples of astrology must have left Grosvenor House little better equipped than before to defend themselves against their critics. They were not unrewarded, however, for their heroes generously offered them the newest batch of predictions. The war will end in 1943 [wrong], Mussolini is done for [right], the German push against Russia will go on relentlessly [it failed] ... Perhaps the wisest astrologer announced to speak at the Grosvenor House lunch was Mr Lyndoe, who failed to appear (p.23).

Above: A UK report reprinted in the *North Queensland Register* of 24 December 1938. Shirley was also editor of *The Occult Review*. The child Prince Albert was later King George VI (1895-1952). The "Great War" is World War I.

Also notable is Léon Lasson's 1938 book-length prediction of 15 years of peace in Europe, see 6.4.2. But astrologers were not alone in making mistakes. Melvin Harris (*Sorry – You've been Duped! The story behind classic mysteries of the paranormal* 1986:117) takes up the story:

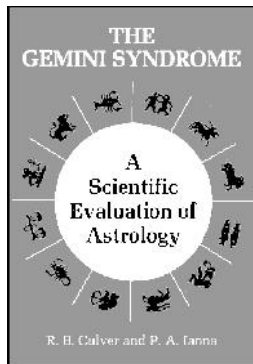
Throughout the earlier part of 1939 spirit guides galore were lipping, whispering and even bawling that there would be an age of peace. War was not on the cards, or in the stars, or in the offing. There was such unanimity that Maurice Barbanell, editor of *Psychic News*, was able to write: "I am confident there is no possibility of error when the prophecy is so unanimous. From every well-known guide and from home circles all over the world there has come the assurance that never again will England be involved in war. While individual spirits are fallible when dealing with lesser issues I refuse to believe in the possibility of a mistake in this particular instance" (*Psychic News* 22 July 1939. Germany invaded Poland on 1 September 1939. Britain and France declared war on Germany on 3 September 1939).

After the war ended, astrology forecasts in newspapers generally became sun sign forecasts, tests of which were described in 8.3.1, all with negative results. Now back to astrology:

8.8.3 General tests of predictions

US astronomers Culver and Ianna (*Gemini Syndrome* 1979:168-180) note that no scientific description of nature is accepted unless it can make successful predictions, yet in astrology:

attempts to answer this highly crucial question are almost always made in terms of a few examples, usually pre-selected in favor of the given point of view (p.168).



Accordingly they kept track of the outcomes of predictions made during 1974–1979 in the leading US astrology magazines. A prediction was rated as a hit even if it could be attributed to vague wording (a tragedy will hit the eastern US this spring), shrewd guesses (East-West tension will continue), or inside information (starlet A will marry director B). A prediction was rated as a miss if it did not come true within the time set by the astrologer. No astrologer was counted unless at least ten public predictions could be found, and no astrologer was analysed separately unless at least a hundred of their predictions could be found. Although the test lumped together different branches of predictive astrology such as mundane and horary:

we would hope that those astrologers who proferred [sic] their predictions for public consumption would not have done so unless they themselves felt competent to do so in the particular area of astrology that is involved (p.169).

The outcomes (p.170) are listed below:

Source of prediction	--- Total predictions ---		
	Counted	Hits	% Hits
<i>American Astrology</i> (1)	462	71	15.4
<i>Horoscope Guide</i> (1)	532	68	12.8
<i>Astrology</i>	544	62	11.4
<i>Astrological Guide</i> (2)	118	13	11.0
<i>Horoscope</i> (1)	509	54	10.6
Jeanne Dixon	134	14	10.4
Carroll Righter	123	11	8.9
Various astrologers (3)	461	39	8.5
Sybil Leek	128	6	4.7
Totals	3011	338	11.2

(1) Jan 1974–Mar 1979. (2) By Sydney Omarr 1974, 1975, 1976, 1977, 1978 editions. (3) Minimum of ten predictions per astrologer.

Culver and Ianna conclude that the results paint "a dismal picture indeed", especially as the astrologers were always given the benefit of the doubt due to vagueness, shrewd guesses, and inside information, making the observed 11% hits more of an upper limit than an average. In other words there was no clear evidence that astrologers could predict future events.

An unexpected finding was the large number of repeated predictions (p.176):

N if 10+ Prediction

- 26 Assault on the President
- 23 Contact with Alien Beings
- 22 Medical Breakthrough in Cancer Research
- 19 Marriage of Jacqueline Onassis
- 17 Divorce of Farrah Fawcett-Majors
- 14 War in the Middle East

- 11 Medical Breakthrough in Heart Disease
- 11 Economic Hard Times
- 10 Economic Good Times

Apparently the tack taken here is to continue time after time to predict a single occurrence such as an assassination, medical breakthrough, etc. with the hope that ultimately it will come true. It is a tactic that is particularly insulting to the general public, since it assumes that people will tend to forget the number of times the given prediction was made and then went awry and remember only the one time that the given prediction was a hit (p.177).

Culver and Ianna looked at individual predictions in some detail (pp.174-177) and concluded:

The one response to the astrological catastrophe [only 11% hits] that is seldom if ever advanced by astrologers is, of course, the complete overhaul of the correspondences and methodology. ... the astrological community has instead developed an impressive army of methods and techniques for the sole purpose of excusing or minimizing their predictive failures without even remotely threatening the basic "truths" of the astrological gestalt. Such is not the road to the scientific credibility and respectability that so many astrologers for so many years have complained about not having (p.179). [Or as George Bernard Shaw said, *The more things a man is ashamed of, the more respectable he is*]

Châtillon (*Skeptical Inquirer* 9(4), 398-399, 1985) checked 30 predictions for North America in 1984 made by Huguette Hirsig, one of Montreal's most famous astrologers. Only two (7%) were hits. Of 10 prominent astrologers predicting the outcome of the 2000 USA presidential election on the Stariq website, 4 said Bush would win, 4 said Gore would win, and 2 were unclear (www.stariq.com/Main/Articles/P0001683.htm) (the election was effectively a draw).

Jess Stearn (*A Time for Astrology* 1972:232-256) describes in rare detail a US astrology class held in 1970 in which the female teacher makes numerous confident predictions from the birth chart of Richard Nixon. The class found most of them hard to believe. Nixon was:

definitely humanitarian ... very moral ... his popularity will grow ... unprecedented popularity ... peaking in 1975.

In 1972 Nixon ordered heavy bombing in Viet Nam, then (after mass protests) ended US involvement early in 1973. Watergate occurred in 1972-1973 and Nixon resigned in August 1974. All precisely the opposite of what the teacher had predicted.

Peter Roberts (*The Message of Astrology* 1990) notes that "astrologers are nearly unanimous in averring that transits are effective" (p.121), and then describes an unpublished test of transits that he made with Margaret Hone in the early 1950s:

In order for the experiment to exclude bias, we arranged for the subjects to keep diaries rather than ask them what had happened at some special time. Having calculated all the transits which had applied, it was necessary to compare the diary entries for those periods when transits should have been "active". Although one would not expect a large number of striking events during the months of our trial (by definition a striking event is a rarity) nevertheless there should have been a few cases of interest because of the size of our group. Indeed there were, and some people suffered accidents, at least one subject moved house, and so on. I have to report that the correlation of events with transit indications was so poor that we were discouraged from continuing the exercise (p.151). [The group is not described but may have been an astrology class of about twenty or perhaps more. His observations are supported by the individual tests of transits summarised in 7.4, which are either inconclusive or more usually negative.]

In his 1975 book *Astrology: What it can do for you*, Hans Holzer (1920-2009) interviews nearly twenty leading US astrologers including Charles Jayne, Henry Weingarten, Maria Crummere, and Lynne Palmer, and singles out Gar Osten (1923-1991) as:

a man who has an uncanny ability to avoid generalities, duplicity, and vagueness, and instead comes up with facts and figures that invariably check out as accurate ... even where only the day of birth was known to him, not even the hour. ... [Note the] amazing retrospective horoscope he cast for the Holy Roman Emperor Rudolf von Habsburg, which appeared in my book *The Alchemist*, and which pinpoints every event in that unfortunate ruler's life, although Osten had no idea for whom he was casting the horoscope. What better way is there to check on the accuracy of astrology and a particular practitioner than by such a test? Osten had to rely on mathematical calculations and intuition only. [Which] is why I am presenting his story and cases so prominently. ... Nevertheless, I cannot help feeling that much of the accuracy of his intuitive interpretations must be due to a deep psychic sense and not to purely logical calculations [ie to astrology] (pp.87-88).

Holzer was so impressed by Osten that he devotes 25 pages to Osten, which include 8 pages of Osten's predictions for the USA 1977-2137 based on the US chart for 4 July 1776. They include the following predictions for the future of astrology during 1994-2024:

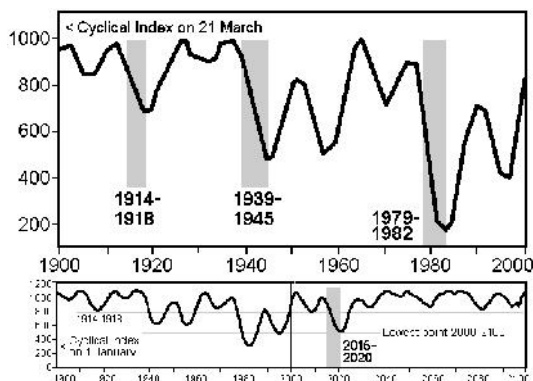
Great new discoveries [during 1964-1994] will have changed our thinking ... and astrology and the psychic will both be highly respected areas of study in all our universities. In fact, I believe there will be a crash program of some sort, in the period beginning around 1994, sponsored by the government in an attempt to catch up with other countries. Psychic ability will now be treated with the same respect as any other ability and much will be known about how it operates. Communication with the dead will be commonplace, important events will be chosen astrologically ... there will be landings of an instrumental nature on Uranus (pp.104-105). [During 2013-2014] There will be important discoveries in the area of science, the psychic, astrology (p.106)

With less than 4 years to go there seems little hope that Osten's predictions for astrology will come true. Nor did he predict the decline in astrological research. Could Barbault do better?

In a word, no. French astrologer André Barbault (1921–2019) was the world's leading specialist in mundane (ie socio-political) astrology. He devoted his life to a systematic search for reliable methods. For example ingress and lunation charts have always been popular despite being rejected by Johannes Kepler and Charles Carter. So in 1970 he counted the number of times a planet was within 10° of an angle in the ingress and lunation charts for 93 major outbreaks of war 1850-1969. The results showed no clear deviation from chance, see 7.4.1970.1. Such results did not deter Barbault from continuing his searches – and to his credit he always published his predictions in advance. This allowed Jaques Reverchon, a colleague of Michel Gauquelin, to analyse Barbault's predictions for the French-Algerian war that had been made in *Les Cahiers Astrologiques* during 1958-1961:

Reverchon found them to consist of vague generalities and hazy language. Their accuracy was no better than informed guessing. As each prediction failed (the end was very protracted), Barbault was able to find further indications, which failed in turn until no less than 11 successive predictions had been made before the inevitable hit was achieved, thus reducing everything to a "childish game". Reverchon then compared Barbault's predictions for world crises in 1965 (published in 1963) against an independent list of 105 major world events for that year. There were 5 hits vs 8 expected by chance. Predictions for a dozen world leaders included many "high quality blunders," for example Kennedy would be re-elected in 1964 (assassinated in 1963), Khrushchev would remain in power until 1966 (deposed in 1964), de Gaulle would resign in 1965 (re-elected), and both Erhard (Germany) and Wilson (UK) would enter a decline (both were re-elected). Reverchon concluded "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" (*Valeur des Jugements et Pronostics Astrologiques* 1971:13).

Barbault also developed the *Cyclical Index*, a technique first proposed in the 1940s by French astrologer Henri Gouchon. The index on any given date is the sum of the angular separations between each pair of outer planets from Jupiter to Pluto. As the planets come together so the chance of war supposedly increases:



Top: Barbault-Gouchon cyclical index 1900-2000. From Baigent, Campion, Harvey, *Mundane Astrology* 1984:170, who note "striking correspondence with the main periods of international crisis and, most impressively, major and sustained lows for the period 1914-18 and 1940-45" (p.169). But these two periods (shown shaded) seem more like near misses than convincing correspondences.

Bottom: Same index on 1 Jan 1900-2100. From Hawley, *Correlation* 21(2), 45-52, 2003. The index after 2000 does not approach the lows of the two world wars except during 2015-2020, indicating (unsuccessfully) a third world war at this time. After 2020 almost no wars are predicted. Can we really believe this? See also 7.4.1993.3.

The cyclical index became popular among mundane astrologers. In 1984 Michael Baigent et al (*Mundane Astrology* 1984:141) rated it as "highly promising", perhaps the most promising of the fifteen different predictive techniques they had considered. So what was it predicting? In 1979, when referring to the cyclical index, US astrologer Rob Hand commented:

I think it would be fair to say that the general opinion among astrologers is that the early 1980s will be troublesome in the extreme. The planets are forming into arrangements which have occurred only twice before in this century – 1914-1918 and 1940-1945 (from an interview on Canadian radio with radio journalist Malcolm Dean as reported in his book *The Astrology Game* 1980:325). [The period mentioned by Hand is shaded in the upper diagram].

It sounds like a third world war in the early 1980s. But the only wars of note were Iran-Iraq 1980-1988 and Falklands 1982, neither a plausible candidate. The Gulf War of 1990-1991 coincides with a peak, not a trough, and is a clear miss. Other astrologers have modified the cyclic index by adding or subtracting various planetary pairs, by taking the mid-point of the peaks and troughs, by including outer planet conjunctions, by adding the hypothetical Trans-Pluto, or (ironically) by reducing it to its component pairs. The result has been the usual flood of after-the-event symbolic matches but no systematic evaluation and no clear winner.

In 1987 UK astrologer Dennis Elwell (*Astrological Journal* 29(6), 263-272, 1987) described what at first sight seems a remarkably convincing case of astrology's ability to predict:

in February I sent registered letters to two shipping carriers about the likely effects on their operations of the March eclipse. At the very least they were promised disrupted schedules, and at the worst a *Titanic*-like disaster. The tragic capsizing of the *Herald of Free Enterprise* came just nine days after P&O wrote to say their procedures could cope with the unexpected. As for Cunard, the catalogue of troubles surrounding its principle operation, the relaunch of the QE2, one of the world's biggest ships, has been ample confirmation of the minimum option presented by this eclipse. It was the first time I had issued such an uninvited warning, so if you want to explain it away you could put it down to beginners' luck (p.265).



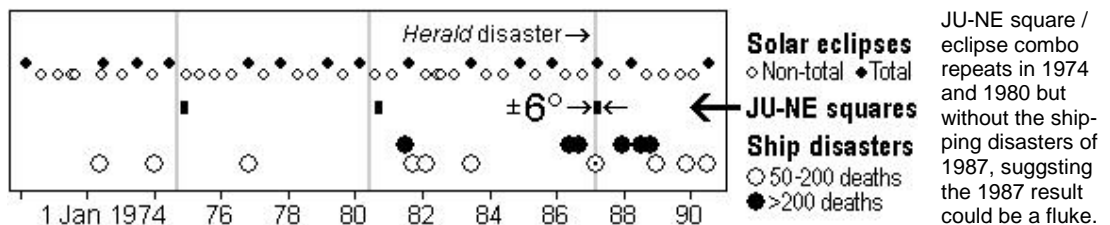
The eclipse of 29 March 1987 was a 5-km wide total solar eclipse lasting 8 seconds not visible in Europe. It occurred 23 days after the ferry *Herald of Free Enterprise* capsized shortly after leaving Zeebrugge harbour in the early evening of 6 March 1987. It capsized because a crew member failed to close the bow doors (he was asleep). Of the 539 people on board, 193 passengers and crew died.

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Elwell provides this brief explanations of his reasoning:

Technically the eclipse was raising the temperature of a square of Jupiter and Neptune, planets which together suggest (among many other things) both sea travel and big ships. Eclipses bring the matter signified into high profile, and – perhaps because our attention is more surely grabbed when things are going wrong – they do tend to be associated with misfortunes, although positive outcomes are also possible (p.265). ... Eclipses – and indeed other astrological phenomena – can produce effects in advance, and indeed sometimes they will throw a long finger of a shadow months ahead (p.269). ... the Jupiter-Neptune square of the March eclipse engaged very closely the United Kingdom 1801 ascendant, which suggested it would be relevant for this country. As regards P&O, the latest chart for this company is dated December 21 1966, and the eclipse fell opposite Mars, square Venus and antiscion Pluto. As for Cunard, it [was] converted to a public company on February 3 1966. Stationary Jupiter quincunx Neptune in this company chart must be important for its "big ship" operations. Well, at this eclipse Saturn was stationary opposed to the company's Jupiter. There were other indications, but this gives you some idea of what to look for (pp.269-270).

The Jupiter-Neptune square was exact on 5 April 1987, again after the capsizing. Elwell gives no orb for any of his explanations, and does not survey the state of shipping during the square (which lasts about 50 days for an orb of 6°) or during previous squares or previous eclipses. The plot below fills the gap for 1970-1990. There seems to be an eclipse for every occasion:



An independent analysis of charts for the *Herald* sinking (*Astrological Journal* 29(3), 139-142) found many indications of disaster – the *departure chart* has a close Mars-Pluto opposition, Saturn on the IC, fixed stars Bellatrix conjunct the MC and Markab opposite the Ascendant, the *sinking chart* has Uranus and Neptune in 4th, Mars in Taurus, Pluto in Scorpio, South Node in Libra, and so on. But none of the indications agreed with those cited by Elwell.

Conclusion: Beginners' luck may not be needed to explain Elwell's success when the lack of controls does a better job. Cynics experienced in assessing predictions might no doubt suggest that Elwell sent more than two letters and reported only the hits. We may never know.

8.8.4 Tests of Indian predictive astrology

Throughout the Indian subcontinent every astrologer worthy of the name must be able to predict. It is the accepted norm. Indeed, astrology in India depends on it – no prediction, no clients. So we might expect Indian astrologers to outperform Western astrologers. But in India, as in the West, predicting the future without controls is also the accepted norm. For example Dr BV Raman (1912-1998), publisher-editor of what was then the world's longest-running English astrological monthly *The Astrological Magazine* (1895-2007), concluded that:

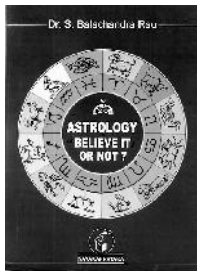
when Saturn was in Aries in 1939 England had to declare war against Germany (*Planetary Influences on Human Affairs* 1992:119, a work intended "to present a case for astrology" p.vii),

But Saturn was also in Aries in 1909 and 1968, when nothing much happened other than overseas state visits by Edward VII and Elizabeth II respectively.



Although astrology in India has few controlled tests, some come close. Rakesh Anand (*Astrology Tested Fake* 2010) had used astrology to make several important decisions in his life, all ending in disaster. So he prepared Indian birth charts for 24 celebrities and 9 close friends, changed their names, and got 101 astrologers from northern India to predict their life and events. But none succeeded. They predicted no political career from the chart of George Bush and no big money from the chart of Bill Gates. He concluded "astrology is a misleading and useless superstition" (p.6). He offered a prize of one million rupees (about \$20,000) to any Indian astrologer who could demonstrate that astrology works, so far with no takers.

In general the nearest we get to regular tests in India are follow-ups to predictions of public events such as elections, but failure is the norm. Many examples are given by astronomer and astrology critic Dr Balachandra Rao in his 2000 book *Astrology Believe It Or Not*. The Indian elections in 1971 were a showdown between Mrs Indira Gandhi and her political opponents, and *The Astrological Magazine* was filled with predictions by both amateurs and professionals, most of whom predicted that Mrs Gandhi would lose. She won by a landslide (pp.113-115).



The 1980 elections attracted another frenzy of predictions, most of which saw Mrs Gandhi losing. For example Dr BV Raman, in a rare departure from vagueness, predicted that Mrs Gandhi's efforts to regain office "may misfire. Her ability to influence the Government will be disconcertingly limited in effectiveness" and the outcome "may not see a stable Government". An Indian horary astrologer predicted Mrs Gandhi "can never become the Prime Minister". In fact she won with a huge majority, was prime minister, and formed a stable government (pp.115-119).

Also in 1980, at a large international conference organised by the Indian Astrologers Federation, both the president and secretary of the Federation predicted a war with Pakistan in 1982, which India would win, and a world war between 1982 and 1984. All wrong (p.120).

Dr Balachandra Rao notes that no astrologer predicted Mrs Gandhi's assassination in 1984. He sees a short public memory as one of the keys to being a successful astrologer in India (p.119). The rule seems to be "predict only those things which please the listener's ego" (p.121).

Indian Nadi astrologers, when located by a client (and this may not be easy), are found to have a huge collection of horoscopes on ancient palm leaves, one of which is the client's. If it

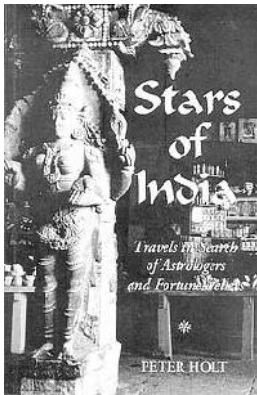
were true it would be a miracle. In reality, after providing birth details, the client is asked to return a few days later on the pretext that it will take time to find his horoscope among the thousands held by the astrologer. Once the client is gone, the astrologer writes the horoscope on a fresh palm leaf and soaks it in a slurry of coconut kernels and mango bark, both of which are rich in tannin. This gives the palm leaf the ancient look that is needed for the deception to succeed (Premanand et al, *Astrology: Science or Ego-Trip?* 1993:331).

In 1995 the UK astrologer John Dudley (*Correlation* 14(2), 7-11, 1995) used Vedic astrology (the modern name for Indian astrology) to pick genuine road deaths from controls in 20 pairs of birth data. He scored 11 hits and 9 misses, $k = 0.10$, binomial $p = 0.41$, see 7.4.1995.1.

In July 2005 *The Astrological Magazine* had two articles on the birth chart of the just-elected Pope Benedict XVI. They agreed on the time and date of the Pope's birth, but not on the place, which were >500 km apart. One was correct. The other was the birthplace of Pope John Paul II elected in 1978. Despite the difference, each chart perfectly matched Benedict XVI's life.

In 2009 a milestone occurred when a research team led by Professor JV Narlikar made India's first controlled test of astrologers predicting intelligence in a horoscope. Another occurred in 2020 when a research team led by physicist Dr Nagesh Rajopadhye made an impressive series of controlled tests of Vedic claims. Their (negative) results are in 7.6.2013.1 and 7.7.2020.13.

Finally there is Peter Holt, a Western investigator in search of Indian predictive supremacy, who ended up disillusioned (*Stars of India: Travels in search of Astrologers and Fortune-Tellers* 1998). During a previous visit unconnected with astrology, he had, out of curiosity, visited a Nadi astrologer with a reputation for accuracy, and was told enough to secure his interest in Indian methods of divination. A few years later he returned in search of more information:



Virtually everyone I spoke to over the next five months of travelling admitted they had been to an astrologer, palmist or clairvoyant at least once in their lives. Many people said they visited a soothsayer of some description once a week or more. I was to meet experts in divination of all backgrounds, from village fortune-tellers to venerated seers who offer predictions to senior government officials. Everywhere I went I heard of new astrologers and assorted mystics with whom I "must" meet if my researches were to be complete; and I discovered that most Indian cities boasted "astro research centres". They usually turned out to be nothing more than a local soothsayer in partnership with a jobbing printer, probably a relative, churning out unintelligible pamphlets purporting to be on the occult sciences. ... I was to discover that day-to-day life in India is almost totally influenced by the planets. For Hindus believe that God created the ever-changing cosmos as an indication of his will for us; that astrology aids spiritual growth because through the horoscope you can see a creator controlling the universe. That is the crux of it – a belief in God, a need for His guidance. ... In India, your astrologer will give you a precise reading based on events that have happened, or will happen, in your life (p.20).

Highlights were a meeting with UK-trained Dr RM Verna, one of India's top neurosurgeons and former head of India's top psychiatric hospital, and Dr BV Raman, then India's most famous astrologer. The opinionated Dr Verna had a talent for ambivalence, and regarded awkward questions as evidence of a closed mind:

The trouble began when the doctor began telling a story about a late sage from Madurai who could tell everything about a person's background and personality by doing nothing more than feel their pulse. I had heard this sort of thing before in India. ... Everyone in this country [including Dr Verna] seems to know someone who is supposed to have gone to a person like this, but when it comes to the crunch no one [including Dr Verna] is prepared to come up with a name. ... My open-mindedness was stretched to its limits. ... I eventually left after Dr Verma and Hari [his assistant] promised to find that elusive expert in divination who could tell me everything about myself by merely looking at me. I left this challenge with several other people in India. I have not heard a thing since (pp.208-209).

The modest Dr Raman, then 81, looked more like a bank manager than the father of 20th-century Indian astrology. Virtually all of the dozens of seers Holt had met claimed humanity was heading for something like a Third World War, starting on 20 May 2000 when Jupiter moves into conjunction with Saturn (orb 1°, the last time it happened was 1981). But Raman

was evasive when asked for his own views. Things would not be as bad as that:

But on 20 May 2000, you can expect events of a very great magnitude to take place ... Probably a fight between the West and Islam ... There will be a new world order, a new spirituality ... The western democracies will win (p.218).

But Holt had seen too much to believe it. His findings are a convincing correction to the idea that astrology and prediction in India are somehow better than in the West.

[The most significant world event of May 2000 was the withdrawal of Israeli troops from Lebanon after 22 years of occupation. The nearest thing to a war between the West and Islam was the successful offensive launched in October 2001 by the US and UK to liberate Afghanistan from the Taliban. Nothing significant happened on 20 May 2000.]

8.8.5 Tests of horary astrology

In horary astrology a chart for the moment a question is asked is said to show the answer:

It is used in ascertaining the whereabouts of a missing person; the probability of recovering stolen goods; by what manner of thief they were stolen, the direction in which he went, and his disposal thereof; whether a certain rumour is true or false; whether a case will be prosecuted in court, and its ultimate disposition; whether one ought to accept a proposition made to him and the outcome thereof; whether a contemplated marriage is advisable, and how it may be expected to result; whether one should accept proffered employment, sell or mortgage a piece of property, and so on (US horary astrologer Frederic van Norstrand, in Nicholas de Vore's *Encyclopedia of Astrology* 1947:201).

But logically how can horary work? Thus *the same question repeated at intervals* should give the same chart, or at least the same answer by a different route, but practitioners claim you cannot ask the same question twice, which conveniently evades the problem. But if it did work then bookmakers, casinos, employment agencies, doctors, scientific researchers, the courts, and all forms of government would be out of a job – and practitioners would be en route to ruling the world. Since none of this is true, many respected astrologers have rejected horary:

C Heydon, in a book mostly about horary astrology, saw it as useful only if the birth time was unknown. "Horary questions had better not be made use of if the querent's nativity can be had" (*The New Astrology* 1785:174). A century later Alan Leo called it "the vilest rubbish imaginable ... IT IS THE CURSE OF THE SCIENCE AND THE RUIN OF THE ASTROLOGER" (Editorial. *Modern Astrology* 2(7), 434-437, 1896, his capitals). Alfred J Pearce called it "absurd and unwarrantable" (*Science of the Stars* 1898:149), later "not worth serious consideration" (*The Textbook of Astrology* 2nd edition 1911:443). Ingrid Lind "savours of the bead curtain and fortune-telling booth and I will have nothing to do with it" (*Astrology and Commonsense* 1962:104). Jeff Mayo "sheer nonsense ... makes a mockery of a serious subject" (*Teach Yourself Astrology* 1964:184). Margaret Millard MD "horary does not work" (personal communication 1981).

To counter such opinions some modern astrologers (see later) see horary astrology as largely a psychic or supernatural process equivalent to divination, thus elevating it above ordinary astrology, whereas earlier astrologers saw no difference ("it contains nothing supernatural" says James Wilson, *Dictionary of Astrology* 1819:161-162). Others add a new kind of disagreement:

One major myth ... is the idea that horary can answer specific questions, but natal charts can't. [But] in the modern era, there are faster, easier ways to calculate an accurate answer using natal methods (RK Alexander, author of the 2011 Open Access *Modern Horary Astrology*, in www.modernhoraryastrology.com/p/archives.html. See also her 2.4).

Rules. In horary astrology the rules are quite different from those in natal astrology. The ascendant is the person asking the question. The subject of the question is the cusp of the relevant house. The answer is shown by the aspects between ascendant ruler and house ruler or house cusps, and (depending on which book you read) by other factors such as antiscions, lunar nodes, fixed stars, and Arabic parts. It seems simple. But not so fast. Belgian astrologer and computer programmer Koen van de moortel (*Astro-Logics* 2002:100-102) comments:

This branch of astrology is obviously wrestling with enormous logical problems. A question like "Will my wife come back?" is still relatively easy. In case 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 cusp, connected with partnerships). If there is a "good" aspect between both, the answer is "yes", otherwise it's "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' to the exact aspect angle suddenly doesn't count anymore and makes the answer turn into "no", while we would have a full "yes" if the deviation were 7°59'? Do only applying aspects count? Can aspects be blocked by an interfering third planet? ... 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 play a role 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? Take a co-ruler, the moon? But what if the ascendant is Cancer? Then take the degree of the ascendant? This starts to look like some technical game with very low credibility. Some astrologers will counterclaim that these are just rare cases, but it is exactly in border cases that one can optimally test the strength or the weakness of a theory. Further, everything will make or break with the choice of the house system to be used. Moreover, one can opt for the classical sign rulers or one of the modern variants. We already saw above which strings are attached to this.

Disagreement about the rules for interpretation extend to the *actual moment* (is it when the question is asked or when the astrologer receives it?), the *place* (is it the querent's or the astrologer's?), and even the acceptable *type of question*. For example horary expert Deborah Houlding claims that horary does not work for trivial questions such as "when will the repair man arrive?" whereas horary expert John Frawley claims the exact opposite (*Correlation* 26(1), 53-59, 2008). Geoffrey Cornelius says it is better to ask "what should I do?" questions than questions about the future (*The Moment of Astrology* 2003:130), even though this is contradicted by generations of classical horary astrologers from Dorotheus in 75 AD to William Lilly in 1650. Again, horary author Barbara Dunn (in a book of 526 pages) claims that:

Accurate judgement ... supplies clear evidence that the movement of heavenly bodies affects life on earth ... showing that life is one: as above, so it is below (*Horary Astrology Re-examined* 2009:xvii).

US horary author Anthony Louis (in a book of 259 pages) agrees:

Horary, like all astrology, is an empirical science. It establishes correspondences between the state of the heavens and the affairs of men – as above, so below (*Horary Astrology Plain & Simple* 1998:37).

But Geoffrey Cornelius (in a book of 385 pages) rejects any connection with *as above so below* because there are no causal or acausal mechanisms that could explain them. Which means:

we are bound to conclude that *there is some other element involved*, [namely] the perception and skill of the *astrologer* rather than supposed objective correlations of *astrology* (*The Moment of Astrology* 2003:55,57 his emphasis). [In other words, astrology is divination, ie it has a supernatural component that has nothing to do with *as above so below*.]

Note how all five (Houlding, Frawley, Dunn, Louis, Cornelius) are basing their conflicting claims on *personal experience*. Similar conflicting claims between horary astrologers Maurice McCann, Alphee Lavoie, and Erik van Slooten are noted by van de moortel, who concludes:



Apparently something is wrong with the way most astrologers draw conclusions from experiences (p.102, his emphasis).

The following long example from Anthony Louis (*Horary Astrology Plain and Simple* 1998) illustrates just how flexible experience can be, and therefore how difficult it is to prove a horary chart wrong (this was not his intention but you will get the message):

On Sunday, February 3, 1974, a friend of Joan McEvers asked the question "Is my house going to burn down at the end of this month?" [Joan McEvers was a skilled horary astrologer who later wrote the horary part of March and McEvers *The Only Way to Learn about Horary and Electional Astrology* 1986 and 1994.] The time was 2:58 pm PST in Canoga Park, California. ... The chart disturbed both McEvers and her friend, as shown by Saturn and the Moon in the 12th. The Moon, ruling the querent, will oppose Venus, ruler of 4th cusp representing the home that might burn. The two retrograde malefics, Pluto and Uranus, in the 4th house become co-rulers of the property. The querent's Moon will square both these retrograde signifiers. It looks pretty bad. Maybe we should call the fire department right now! Why wait till the end of the month?

McEvers pondered this chart for quite some time. She took it to other horary astrologers who also interpreted that the house would burn. But February came and went without incident, and today [24 yrs later] the house is still standing. No fire ever occurred. A lesser mortal might have abandoned horary astrology. McEvers, instead, persisted in trying to understand the meaning of the chart. Like a good Aquarius, she abstracted from the situation and hit upon the cornerstone of her method. McEvers deduced that squares and oppositions mean "no", and trines, sextiles, and conjunctions mean "yes". In this chart and in the McEvers system, the squares and oppositions between the querent's ruler and the property's ruler mean a "no" answer to the original question. The answer is, "No, the house will not burn down".

I approach the same chart differently and arrive at the same conclusion. Because the question is about the home and whether it will burn, I use derivative houses. Real estate belongs in the 4th house. Libra is on the 4th cusp and Venus

is the primary significator. Pluto and Uranus in the 4th are secondary rulers of the property. Since I know of no traditional mundane house for "burning down", I would use Mars as the natural ruler of fires. Lilly relied on the symbolism of Mars to predict the fire of London. If I wanted to use a mundane house, I would use the 8th house of the 4th which is the natural 11th house of the chart. Any 8th house represents the injury or death of its 1st house occupant. ... Venus is retrograde at 27° 48' Capricorn. Mars is direct at 17° 49' Taurus. They are mutually applying to a trine which will become exact, ephemeris time, on February 23, 1974. Instead of showing a fire at the end of the month, the ruler of the property is making the most favorable aspect possible to the ruler of fires. My answer is, "No, the house will not burn down". The ruler of fire looks with favor upon the home at this time. A square or opposition here would have alarmed me. ... We see here two different horary systems and three different approaches to the same chart. They all produce the same answer [but they did not] so long as we are consistent and proceed step by step, according to the method we have chosen. Horary is like that (pp.38-39).

In other words, despite the difference between horary astrology (question comes first) and natal astrology (chart comes first), both have few rules that astrologers agree on, and many excuses for error. Horary also has many obstacles for beginners. Here are three examples:

it [horary astrology] has twists and turns of nuances which take years of practice to understand. [You need] to devote a minimum of seven years to learning horary (Michael Munkasey, *Financial Astrology* 1989:29).

Some years ago I was getting very dissatisfied with horary. ... I was seeing clients at that time – *and the vast majority of answers were wrong*. ... [So] I stopped seeing clients. I have spent four years since then on horary – four, five hours a day, often more. I started testing it. ... I bought everything on horary – whether it was any good or not – just to see what people were saying (Maurice McCann, in Phillipson's *Astrology in the Year Zero 2000*:110, his italics. McCann declined to give his conclusions other than: Most of my questions are very personal, innocuous and not really that important – "Will so-and-so phone me today?" or "Will I get an email when I log on?" ... People are going to ... say "so what?". But it's working, it is really working (p.111). [In 1997 Koen van de moortel wrote software for calculating horary charts based on McCann's instructions, but McCann died in 2011 without publishing the results of his testing.]

In 1984 ... I asked the question: Will my article be accepted? ... My first real problem was to decide upon the significator of the quesited, my article. Should it be governed by the 9th house as a publication, by the 5th as a creative endeavour, or by the 3rd as an act of communication? [But none of these were encouraging] however I twisted the chart, I was left with only one positive indication – the applying direct sextile between Sun and Moon. I posted the article anyway, and it was purchased and published (Derek Appleby, *Astrology* 62(2), 34-36, 1992). [Appleby was co-principal with Maurice McCann of The Meonen School correspondence course in horary astrology.]

All of which boils down to horary astrology's Big Problem – it is supposed to give clear yes/no answers to questions that allow them, so its accuracy should be easy to test. So why weren't the disagreements resolved years ago? Indeed, you need only type questions into a computer program such as Alphee Lavoie's *Nostradamus Horary Program* and out pops the answer – or at least an answer. Research has never been easier. But disagreements have not been resolved, which creates a disincentive for researchers already disillusioned by astrology's general failure to deliver useful effect sizes, and by horary astrology's supposed embargo on asking the same question twice. Claims for horary astrology as in this example are clearly not credible:

Built upon scientific principles, it is easily understood and most advantageous. All questions can be answered satisfactorily (Geraldine Davis, *A Modern Scientific Textbook on Horary Astrology* 1948).

Unsurprisingly we have found no properly controlled tests. The nearest are given below:

In 1962 Charles Carter said of horary charts cast for him that:

they have usually been downright wrong and never strikingly right (*Astrological Journal* 4(4), 6-8, 1962).

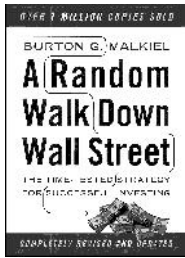
In 1976 US researcher T Patrick Davis (*AFA Bulletin* 38(8), 23-28, 1976) asked 11 horary astrologers and 2 natal astrologers to solve the mystery of a 13-year-old boy who went missing in mid-winter in a US town of 30,000 people. Despite massive searches the boy was still missing four years later, so the truth is unknown. The verdicts were in clear disagreement:

Verdict	Location of boy	
3 Killed in accident	N, SE, S, W/SW, NW	1 each
3 Death due to previous illness	No indication	8
3 Death from kidnapers	Below ground	3
2 Alive and well	Above ground	2
1 Dead, no cause given	--	
1 Alive or dead	--	

In 1997 astrologers Bernadette Brady and Lee Lehman computerised the horary rules of 13th century astrologer Guido Bonatti for judging the outcome of medieval castle sieges. They then applied the rules to the game of cricket, specifically to judging the outcome of test matches between England and Australia. The hit rate for 203 test matches was 137 or 67.5%, but the authors had selected the predictors to get the best hit rate, so it could not be claimed the result was due to astrology when it could be due to selection. That is, it would be like a card player looking at his cards, deciding the rules, and then claiming his wins were due to skill. The hit rate for a new sample of 6 matches was 50%, no different from that expected by chance (*Astrological Journal* 39(3), 27-44, 1997 and *Correlation* 16(1), 59-61, 1997).

8.8.6 Tests of financial astrology

All commodity and financial markets fluctuate. It is easy to pick combinations of astrological cycles that will give a good fit in the short term. But do they fit in the future? Unpredictable short-term changes make markets move in what is called a *random walk*, albeit with imperfect



long-term randomness. Ordinary forecasting tends to fail. Malkiel (*A Random Walk down Wall Street* 9th edition 2007) gives many examples. Thus when 19 respected Wall Street analysts had to forecast the future performance of a large sample of Standard and Poor's 500 companies, after 5 years their forecasts were worse than adopting the long-term growth in national income:

in each year some analysts did much better than average, but no consistency in their pattern of performance was found. Analysts who did better than average one year were no more likely than the others to make superior forecasts in the next year. ... Financial forecasting appears to be a science that makes astrology look respectable (p.154).

In other words the track record of financial analysts has failed to show sufficient predictability in the market to allow returns that exceed the market average. But that is not the end of it. Today's financial markets are shaped by the models used to understand them, especially new and often convoluted financial products designed to make money such as collateralized debt obligations (whose failure led to the subprime crash of 2008). Randomness in a simple model is well-behaved and can be described by a normal distribution. But the rarity of extreme financial events such as the dot com frenzy of 2000 makes modelling difficult (fatter-tailed distributions such as Cauchy can help, as can chaos theory) so all models are imperfect.

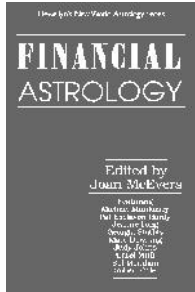
Furthermore a model is only a model. No model states laws which markets must follow. The aim is to make money, so research is secretive and (unlike scientific research) almost never debated. Nevertheless the application of state-of-the-art statistical physics and massive computing power to derivatives such as futures has found enough predictability to make large profits – but only if nobody else knows about it. Secrecy is crucial (Weatherall, *The Physics of Finance* 2013). Over 60% of all market trades in the USA are carried out automatically by thousands of battling pattern-detecting computer algorithms constantly updated by hundreds of world-class programmers (C Steiner, *Automate This* 2013:49). The algorithms comb through historical data, testing million of models at a time, searching for predictive signals. Today you can buy a trading platform that can execute more than 20,000 trades a second. Quick reaction times can of course feed back on themselves – many times in less than 0.1 second – to create liquidity problems. Indeed, since 2000 price fluctuations of 4% or more *in a single day* are six times more frequent than *in the previous 40 years* (Buchanan, *Forecast* 2013:169). Anything astrological (if it existed) would have already been exhaustively investigated and put into use.

So perhaps the prospects for financial astrology are not the best, which is contrary to these earlier views from *Financial Astrology*, a 1989 anthology by nine leading financial astrologers:

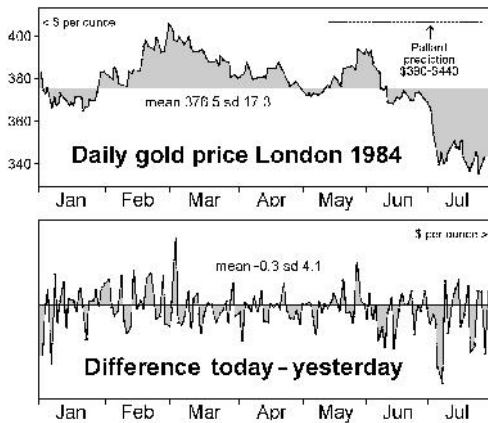
Financial astrology is one of the fastest-growing fields in the world of market analysis today. ... [But] the public admittance of its worth by Wall Street is still taboo. Many excellent market technicians who use astrology in their forecasts are still reluctant to acknowledge it publicly for fear of dismissal. ... It is indeed a shame that something that so many find to be of such value has not yet broken the barrier of public prejudice and ignorance (Ray Merriman, foreword). • It is important that your personal horoscope shows you can be a successful investor (editor Joan McEvers

p.4. Six successful investors had Pluto strongly placed, eg John Paul Getty has his conjunct Neptune, ruler of oil, orb 1.0° , but none of the strong placements is statistically special). • Astrology is a form of cyclical analysis which is very good at providing accurate information about market trends and also specific changes in market direction. ... [but] will not help you make a successful trade if you lack any sort of trading instinct (Michael Munkasey pp.28,35).

• Although these methods have proved reliable in the past, there is NO guarantee they will work in the future (Jeanne Long, p.116). • It's been an ill-kept secret that many financial moguls have used astrology, but – and this is a very important caveat – these are people of schooled instinct who intimately understand market workings and the influence of broader affairs on the speculative psyche. ... Astrology alone won't do it. Indeed, astrology as it is generally practiced will offer very little assistance (Mary Downing, p.151). • Most financial astrologers rely on half a dozen major aspects or cycles to predict the DJIA [Dow Jones Industrial Average], but in my Virgoan complexity, I blend 30 or so factors (Carol Mull, p.211. Her factors include economic cycles, various planetary cycles, sunspots, lunations, solar ingresses, planetary aspects, transits, and eclipses, but not what Bill Meridian uses, see next). • Price changes are most likely to occur when the planet goes retrograde, turns direct, or passes over the degree in the zodiac in which it went retrograde. (It will do this only after the planet has gone direct again.) Different planets rule different markets; therefore, not all stations will affect any given price series (Bill Meridian p.251). • The most commonly used birth time for a company is noon [which puts the Sun conjunct the MC]. ... The corporation chart is a breathing vehicle that can be read as accurately and specifically as a natal chart (Georgia Stathis pp.265 and 305). • I have monitored the global buying and selling patterns of the human species since 1978 and am totally convinced that such patterns are predictable (Robert Cole p.310, he predicts that by 1993 the world's resources "will be controlled by no more than five [unidentified] corporations" p.336).



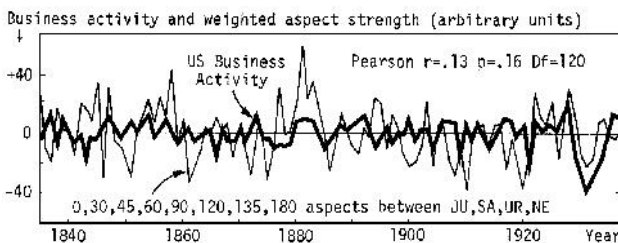
The above anthology gives a large choice of often contradictory methods but no comparison of market predictions vs actual outcomes, which is unhelpful but understandable to stop pirates. Nor is *random walk* mentioned. Indeed, the claim that astrology is widely used tells us nothing about its actual performance. And the claim is not helped by failed predictions like this one:



Top: The daily gold price in London shows large changes between January and July 1984. Anything showing seasonal changes (in fact any changes) such as sales of ice cream would show similar results. In December 1983 the British financial astrologer Daniel Pallant predicted gold prices would be around \$390-\$440 during March-July 1984, and could reach \$600 towards the end of 1984. In fact neither happened. Financial astrology had led to misplaced confidence and a failed prediction.

Bottom: Same as above but plotted as daily difference in gold price. Unlike the above plot, this one is steady (at least its fluctuations are shorter lived), and is as random as a plot based on tossing a coin. Hence the name *random walk*. Unless astrology can predict a coin toss, it is unlikely to predict gold prices. From Rotton, *Skeptical Inquirer*, 9(4), 339-346, 1985, an important analysis with 17 references.

A survey by *Recent Advances* (1977:516-527) of financial studies by more than 15 astrologers found that their approach was invariably oversimplified by selecting particular events and chart factors, and that the claimed links tended to disappear when events were not selected:



For example Belgian astrologer G-L Brahy claimed to find strong links between selected events in US market activity and selected aspects between outer planets (*La Clef de la Prévision des Evénements Mondiaux et des Fluctuations Economiques et Boursières* 1968). But with no selection in a correlation analysis, the link was weak $r=0.13$ and non-significant $p=0.16$. From *Recent Advances* 1977:527.

In 2001 UK psychologist Richard Wiseman asked a financial astrologer, a city analyst, and a four-year-old girl to choose four of the UK's 100 largest companies for investing £5000. The subsequent year was difficult with a global market drop of 16%. The analyst lost 46% and the astrologer lost 6%. The girl (who had chosen at random) gained 6% (*Quirkology* 2008:2-5).

There is also the problem that anything predictable about the market will self-destruct as analysts seek to exploit it. For example if they detected a pattern of stocks rising at full moon, they would sell at full moon in anticipation of a profit, thus sending prices down and cancelling the effect. Which is why secrecy is essential. It is clearly futile to search for patterns that are detectable by anyone with the means and inclination, because once detected that is the end of it (Taleb, *Fooled by Randomness* 2007:114). Even in 1965 it was shown mathematically how, if investors acted rationally on predictions indicated by the available information, their actions would wipe out the predictability (Samuelson, *Industrial Management Review* 6(2), 41, 1965). Very soon financial astrology (if it worked) would cease to provide anything but the most temporary benefit. And even then we would be unable to tell if the effect was due to astrology or to traders believing in astrology, in the same way that false rumours can have real effects. Market secrecy adds even more difficulty. In other words, in terms of providing insight into astrology, financial astrology seems to be a seductive road that leads nowhere.

Indeed, when in 1991 Matrix Software brought 21 of the best financial astrologers together for a conference, it was highly revealing. Michael Erlewine, director of Matrix, comments:

And to a person, no one seemed to have any money. I had to pay the way for many of them, under the cover, just to get them here, aside from the ones I'd already agreed to pay for. Whatever they were doing wasn't enough to even make a decent living (*Astro*Talk* 9(1), 13, 1992).

Which suggests a new definitive way of testing financial astrology. The International Society of Business Astrology founded in 1997 by the Danish astrologer Karen Boesen has about 200 members in more than thirty countries. In 1998 James Randi advised Karen Boesen that the \$1.1 million prize offered by his Foundation applied to the claims made by her about business astrology. In response to the usual claim by his critics that a test would not be fair, he stressed that it had to be mutually acceptable:

You will be asked to participate in designing a test that we will all agree on, in advance, one that will show clearly whether or not your claim is valid. It will be a double-blind test, one in which no person can affect the outcome except by your powers being applied. ... If the best of your astrologers can pass a simple, logical, clearly-defined, test of a basic claim made by astrology ... the James Randi Educational Foundation of Fort Lauderdale, Florida, USA, will pay the International Society of Business Astrologers (or any person or persons designated by the Society) the sum of One Million, One Hundred Thousand, American dollars, in accordance with our offer as outlined on <http://www.randi.org>. In addition, I will agree to appear at a public forum named by you, and assert that The International Society of Business Astrologers has established the value of the ancient art of astrology as a means of aiding business professionals to conduct their work efficiently and productively (from www.randi.org).

It might be hoped that business astrologers, if anyone, would jump at such an offer. After all, the ISBA website claims astrology "provides perspectives and reveals trends", and business is business. But Boesen's response to Randi was "Do not contact me again!". Randi comments:

if they [ISBA] avoid even discussing the possibility of a simple, direct, valid test, and if they can refuse a prize of over a million US dollars, I strongly suspect that their claims are without substance (from www.randi.org).

Given that the test had to be fair and mutually acceptable, it is hard to disagree.

8.8.7 Tests of predicting earthquakes

Sun-Moon effects on earthquakes are dominated by conflicting results and a huge amount of data. Around 20,000 earthquakes are documented every year, and on average 17 earthquakes exceeding magnitude 4 occur every day. In principle earthquakes are ideal for astrological study because the time and place are known exactly. But a test by Arthur Mather (*Astrological Journal* 18(3), 59-64, 1976) of 12 major earthquakes of magnitude 7.8 or more during 1906-1950 vs 12 controls (same data but plus one year) was inconclusive. As were tests by others:

For example there was a marked peak in declination around 23 degrees, presumably linked to the obliquity of the ecliptic, but it was more marked in the controls. Similarly the charts of 238 earthquakes of magnitude 8.5 or more during 1930-1980 revealed no particular sign, house, or aspect preferences (Vail, *Kosmos* 14(1), 2-10, 1985).

Earlier Rudolf Tomaschek (*Nature* 184, 177-178, 1959) had famously found that the world's biggest earthquakes 1903-1952 tended to have Uranus conjunct or opposition the MC, orb

15°, for which $p < 0.001$. But he had wrongly assumed the diurnal distribution of Uranus was uniform. When the actual distribution was used, the Uranus effect disappeared (Gauquelin, personal communication 1975, see also 7.4.1979.2). Nor could a Uranus effect be found in a computerised and controlled study of 900 earthquakes of magnitude > 7 (Arthur Mather, Neil Michelsen and Tom Shanks, personal communication 1977). Here 95 had Uranus conjunct or opposition the MC orb 10° vs 91 for the controls. More elaborate tests of other factors were negative, see 7.4.1986.5. These of course were statistical surveys. Could astrologers do better?

Astrologers were tested in an evaluation of earthquake prediction by Hunter and Derr of the US Geological Survey, who invited people to send in predictions (*Earthquake Information Bulletin* 10(3), 93-96, 1978 and personal communication 1986). The biggest response was from astrologers, with psychics and amateur scientists next. Analysis of a total of 240 earthquake predictions by 27 astrologers showed their accuracy to be worse than guessing. The predictions by psychics and amateur scientists were better but only because they were no better than guessing. The authors also noted that in the first eight months of 1970 there were 17 major earthquakes, during which time *American Astrology* magazine had 16 forecasts (they named only the month and country) but missed all of them.

In 1974, based on a Jupiter-Saturn conjunction in late 1980 and all planets being within 64 degrees in late 1982, astrophysicists Gribbin and Plagemann introduced the Jupiter Effect:

By disturbing the equilibrium of the Sun, which in turn disturbs the whole Earth, the planets can trigger earthquakes ... [In 1982] the Los Angeles region of the San Andreas fault will be subjected to the most massive earthquake known in the populated regions of the Earth this century ... Los Angeles will be destroyed (*The Jupiter Effect* 1974:78).

But nothing happened – except in 1983 they wrote a sequel *Beyond the Jupiter Effect* making excuses, not admitting error, and again providing no evidence. Both books were best sellers. Similar predictions for May 2000, when all planets except Uranus, Neptune and Pluto were within 25° of each other, and for 1962 when they were within 16° , were equally wrong.

In 1980, in unpublished work, US researcher Colin James III analysed 50 major earthquakes for SO through PL to see if the number of parans between pairs of planets, or specific parans between different bodies, differed from 50 controls (same dates plus one year). A *paran* (short for *paranattellonta* "rising side by side") exists if two planets transit the angles at the same time, or are in aspect to each other in the circle of houses, so their use allows specific points on earth to be selected as opposed to just a line of longitude. The orb for parans was 0.5° , deliberately small to avoid large expected frequencies. But the observed differences were not significant. Conclusion: Earthquakes do not select time or place to maximise parans.

Now to a very different but important topic not yet addressed, namely theories of astrology:

8.8.8 Tests of theories of astrology

There are many theories of astrology (spiritual, physical, informational, magical, psychic, time quality, synchronicity, formal causation) all of them either untestable, incompatible with existing knowledge, or not useful, see 7.7.1996.2. But we have seen how astrology fails to work when non-astrological variables are controlled, which means there is nothing for a theory of astrology to explain – and no need for astrology to be true. Indeed, many astrologers strongly deny the need for factual truth because meaning is the only thing that matters:

Dane Rudhyar denies that a factual astrology can be objectively tested when the only thing that matters is its personal value: "If, after having studied ... his ... birth chart, a person ... is able to feel a direction and purpose ... in his life ... then astrology is ... effective" (*Aquarian Agent* [USA] 1(10), 5-8, 1970:7).

Ronald Harvey sees factual testing as a "vain attempt to prove something" where no proof is possible, for astrology is "an experience, and only to that extent, real" (*Astrological Journal* 39(6), 77-78, 1997).

Garry Phillipson sees astrology as something "not capable of being understood in terms of the scientific method", ie as testable facts, because it more validly offers "a framework of understanding ... for the individual to address for him or herself", ie personal meaning (*Correlation* 23(2), 4-23, 2006:5,20).

To them the issue is not whether astrology is factual but whether it delivers meaning. This has the advantage that nobody can dispute your claim that astrology is meaningful *for you*, and the disadvantage that nobody can dispute your claim that *for you* astrology is preposterous nonsense. This holds even though you may be labelled a materialist, albeit wrongly because you can believe in non-material things and still be opposed to astrology (think of the Pope).

IMPORTANT NOTICE

Astrology is no mere system of fortune-telling. It is a Universal Philosophy, founded on demonstrable scientific fact. The object of the Lodge is to form a strong body of earnest students, able to study and promulgate astrological truth, and to purify it from unworthy associations of all sorts. In this work we bespeak the help of every serious student, each according to his or her capacity.

All who are seriously interested in Astrological Science are invited to join and assist in our work.

BEFORE ▲ ▼ AFTER

The Astrological Lodge of London is a registered educational charity No. 296451.

'Astrology is no mere system of fortune telling, but a Universal Philosophy. The object of the Lodge is to form a strong body of earnest students, able to promulgate ASTROLOGICAL TRUTH. In this work we bespeak the help of every serious student, each according to her or his capacity' (Charles Carter).

An example of the drift from facts to meaning is provided by the Astrological Lodge of London, which in 1983 abandoned its bold claim that astrology was "founded on demonstrable scientific fact". The statement first appeared in 1945 on the back cover of the Astrological Lodge's quarterly journal *Astrology* founded in 1926 with Charles Carter as its editor. The statement (**top**) continued unchanged for nearly forty years, including the years from 1959 when Ronald Davison was its editor, until a year after the Lodge became legally distinct from the Theosophical Society. The back cover then remained blank until 1991, when new editor Nick Campion introduced a new science-free version (**bottom**), Evidently for this journal truth is now founded on meaning not fact.

Let us be clear about this. We can test the *factual* claim "Moon opposition Saturn means problems with your mother" because we can know if it means something else, such as problems with your turf accountant. But we cannot test the purely *meaningful* claim that "Saturn on the IC means your task is to find the father within" because we can never know precisely what is being claimed. The first claim is testable (data could count against it). The second claim is untestable (no data could count against it). It is nonfalsifiable.

But astrology is only one of numerous techniques such as numerology, Tarot, and the I Ching that claim to reveal metaphysical insights unattainable by science. They do this by providing clouds for you to see meaningful faces in, which cannot fail to work because it is subjective and, for you, nonfalsifiable. So with you its secrets are always safe.

Except perceived meaning does not survive when hidden persuaders are controlled. In other words *perceived meaning lies not in clouds but in minds*. Which leads to our final topic:

8.9 TESTS OF MIND-RELATED FACTORS

8.9.1 Eligible factors

Mind-related factors are factors that create meaning by means other than *as above so below*, that is by factors such as intuition, psychic ability, divination, and unconscious processes generally. Claimed by some (but denied by others) to be relevant to chart reading. In what follows we explore each mind-related factor for its relevance to astrology. Contrary to popular views, we discover no ancient mysteries that still defy explanation today.

8.9.2 Tests of intuition and unconscious processes

According to Campion, *Astrology and Popular Religion in the Modern West* 2012:ch12, about 77% of 783 astrologers at conferences in Western countries saw intuition as essential for an accurate chart reading. Everything depended on it. Here are some opinions:

The way to the symbolic truth contained in the Horoscope is through the intuition. No amount of rational thought will enable us to understand the real meaning of the symbols (Szanto, *The Marriage of Heaven and Earth* 1985:116).

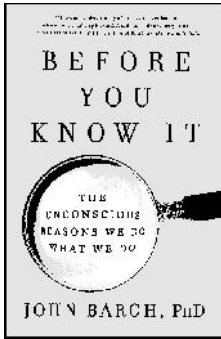
Chart reading can be defined as a process whose "reliability depends on the quality of the astrologers' intuition" (Phillipson, *Astrology in the Year Zero* 2000:167).

UK astrologer Anthony Thorley distributed a questionnaire to 246 attendees at the 2004 AA Conference and received 63 responses. To the question "Do you often utilise insights from intuitive processes in your interpretation of the astrological chart", 80% indicated they used intuition at least half the time when reading a birth chart; the rest were sure they did not (*Correlation* 24(2), 5-33, 2007).

Here intuition is generally seen as akin to psychic ability where information arrives by means unknown. But not in psychology, where the term *intuition* (or *insight* or *hunch* or *gut feeling*)

refers to unconscious data processing that operates alongside conscious data processing without us knowing it. The two are effectively the same, but one crucial difference is that, unlike our conscious mind, our unconscious mind never sleeps. It is always on the job.

The essential features of intuition are: **(1)** Everything happens in our head, so if we prefer to figure things out on paper it is not intuition. **(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 sure of being right but can still be hopelessly wrong, so we can be led astray and not know it.



However, such answers do not pop up out of nowhere but are based on stored information whether or not we are aware of it. So a rest period can be essential to allow the unconscious retrieval and processing of possibilities. In his 2017 book *Before You Know It: The unconscious reasons we do what we do*, based on 30 years of research in this area, Yale professor of social and cognitive psychology John Bargh illustrates it via the brain imaging of subjects who had to decide which car to buy or apartment to rent from a list of features that was complex but had been constructed to give an objective right answer. Half the subjects did a distracting task before deciding (count backwards from 643 by sevens) and most made a better choice than the others – a result confirmed by many other studies:

the areas of the brain that had been active while the participants were consciously learning ... remained active during the time they were distracted (and were thinking unconsciously). ... In other words, the same part of the brain that was first used to acquire the important information was then used by the unconscious "gut" processes in solving the problem, while the conscious mind was elsewhere (p.160).

But because our conscious mind can rarely juggle more than three things at a time:

Unconscious decisions tend to be better when the judgement is complex and many different dimensions or features have to be combined and integrated. [But only if you] consciously eliminate any options that fail to meet the necessary criteria, such as too expensive or too small, too far away, and so on. Only then should you give the unconscious judgment process the options that pass the first test by doing something else and not thinking (consciously) about the choice for a while, and then seeing how you feel about it later (pp.160-161).

This is how intuition works. Yes, it may seem to justify what astrologers say about it – except it won't work unless each chart factor has the objective meaning it is said to have, which of course is denied by the studies in this book. If our experience, training and knowledge are based on invalid information (like astrology?) then our intuitions will be equally invalid.

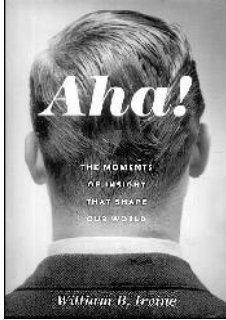
Thus "leaps of intuition" have given glowing descriptions of life on other planets with exotic landscapes, undiscovered moons, and abundant life (usually humanlike), most of them disagreeing and all of them wrong (Gardner, *The New Age: Notes of a Fringe Watcher* 1988:252-263). The supposed leaps of intuition were to no avail and produced only heroic delusions. To be fair, early scientific speculations about say the nature of Venus were not much better (Corfield, *Lives of the Planets: A Natural History of the Solar System* 2007).

Many more examples of how intuition leads us astray (in sports, investment, interviewing, risk assessment, gambling, psychic ability) are given by Myers, *Intuition: Its Powers and Perils* 2002.

Because intuition gives correct answers only if our training and knowledge are based on valid data, seeing the future is ruled out – unconscious processes have no more access to the future than do conscious processes. Indeed, most of our mental processing is unconscious even when it seems conscious. Thus electrical activity in the brain occurs about 0.2 seconds *before* we consciously decide to move a finger (Libet, *Behavioral and Brain Sciences* 8, 529-566, 1985), and we register and acquire more information than we are consciously aware of. Thus logical thinking and data processing can be carried out without any conscious awareness of doing so. The extent to which we can do this is not yet settled, but the ability is generally unrelated to age, intelligence, and education. Nor are Freudian ideas about the unconscious even a small part of the process (Augusto, *Advances in Cognitive Psychology* 6, 116-141, 2010).

8.9.2.1 Using unconscious processes

Due to a process known as priming (see 9.9.2) things not important enough to be remembered can still affect our later actions. What we see or hear may seem so trivial that we retain no conscious memory of it. But our unconscious hangs on to it, so it can end up affecting us without our being aware of it, which is not without problems. As US philosophy professor William Irvine notes in his 2015 book *Aha! The Moments of Insight that Shape our World*:



Although intolerance for aha moments can slow human progress, lack of skepticism toward such moments can also be hazardous. Imagine a world in which people uncritically accepted whatever new ideas were expressed. Every crackpot suggestion, every delusional rambling would be given full consideration (p.16). [Does this sound like astrology?]

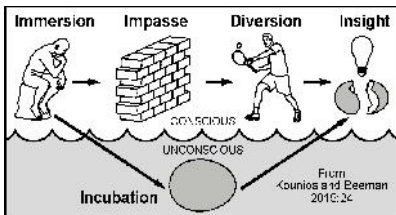
It is important to realize that the unconscious mind will yield meaningful insights only if it has first been "primed" by the conscious mind. More precisely, a scientist's unconscious mind will turn its attention to a scientific problem only if the scientist has spent hours, days, or even years pondering that problem, unsuccessfully, with his conscious mind. This is why significant scientific discoveries are rarely made by people who, despite having vivid imaginations, lack scientific training. It is also why scientific problems are rarely solved by those who, despite having scientific training, lack the fortitude necessary to spend months or years trying, unsuccessfully, to solve them (p.134).

Or as Newton explained, he came upon the idea of gravity "by thinking on it continuously", although a similar success did not reward his considerably longer thinking on alchemy. The ways to improve problem solving can depend on the person, but are essentially:

(1) Build up a good store of information, focussing on the details, so your unconscious has something to work on. The process may take hours, days, weeks, depending on complexity. If you need to stop for regular mealtimes you need more focussing. (2) Eventually turn off and do something completely different. Prefer watching happy movies to tense ones. Sleeping is even better. (3) Wait for ideas to arrive. This may take a day or two. If nothing happens, go to (1) and try again. None of this reduces the need to critically assess the outcome. (Based on Irvine 2015)

In his 1986 book *The Intuitive Manager*, Roy Rowan offers these guidelines for success:

Concentrate on what is unique. Beware gaps in your knowledge. Invoke diverse factors. Avoid information overload. Let your subconscious do the work of synthesising from stored data. Remember everything depends on its validity.



How insights arise from sustained mental activity called incubation of which we are not consciously aware. When an insight pops into awareness, a burst of EEG activity and increased blood flow occurs in the brain area involved in making connections between distantly related ideas as in metaphors. Such activity is absent during normal conscious thinking. From US neuroscientists John Kounios and Mark Beeman, *The Eureka Factor: Creative insights and the brain* 2015:24,70.

Sleeping, or doing nothing, can work better than thinking furiously. John Bargh (see 8.9.2) offers advice for success, some of it relevant to astrology:

- Supplement your intuitions with at least some conscious checking if you can.
- If you don't have time for this, and there are big risks for small gains, then forget your intuition.
- When you have many variables and absolutely no reliable data, take your intuitions seriously.
- But if you do, be careful. Your current situation may have biased your stored information.
- Don't trust your intuitions from faces or photographs [or charts?]. You need actual behaviour.

The role of unconscious processes was shown by an ingenious study in 1990 in which subjects had to guess a certain word, for which they were given two sets of clues such as:

- (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? The test seems completely bizarre and meaningless. Unsurprisingly, only 4% of subjects could guess the word, yet (and this is the important bit) 67% picked the correct set. Why? Each word in the correct set of clues had an association with the target word, so the set was coherent. Each word in the wrong set of clues had no association with the target word, so the set was not coherent. The subjects seemed to have 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 how or why.

In this case the correct set of clues is (2) and the word is *Mountain* (Bowers et al, *Cognitive Psychology* 22(1), 72-110, 1990). If you see no connection between *Mountain* and *Green*, think of alpine meadows and mountain greenery. The ability to perceive coherence is diminished if you are feeling sad or bad or anxious (Baumann and Kuhl, *Journal of Personality and Social Psychology* 83(5), 1213-1223, 2002), so it is not helpful to be an N+ person. See also 8.9.2.5.

8.9.2.2 The unconscious is not infallible

Unconscious processing is only as valid as the unconscious data it uses, which is why intuition can be wrong even when it feels right. Thus UK experimental psychologist Donald Broadbent firmly believed in hunches even though his strongest ones were usually wrong:

Hunch is essential and never to be trusted. All new ideas come from hunch, and there is nowhere else they could come from, but on the other hand most ideas are false and you need to try them out empirically before you know which are true and which are false (David Cohen, *Psychologists on Psychology* 1980:53).

Indeed, Robyn Dawes, a leading expert in judgement psychology, suggests that unless a person relying on intuition has good evidence for its validity (meaning valid empirical data rather than plausible stories), then the use of intuition

is in my view arbitrary, stupid, and unethical (*Rational Choice in an Uncertain World* 1988:204).

This may seem insulting to experts who think their intuitions set them apart from machines. But they are wrong. Experts and people generally are so bad at *combining factors in their head* that their results are usually worse than *adding factors via an equation* (except it depends on human evolution, see 8.9.2.3). Give them more than a couple of cues to juggle and they are lost, whereas an equation never gets lost, can handle any complexity, and is never distracted by irrelevant factors. In general the equation is derived by comparing relevant variables with known outcomes using the regression methods given in any statistics textbook.

The equation's superiority has been repeatedly tested in more and more studies (20 by 1954, 140 by 1996, 200 by 2011) involving all kinds of judgements from people to economic trends, and in almost every case the finding has been confirmed (Grove and Meehl, *Psychology Public Policy, and Law* 2, 292-323, 1996. Kahneman, *Thinking, Fast and Slow* 2011:223).

Here are some examples:

Area	N	Judgement	Number of experts	-- Effect size --	
				Experts	Equation
Academic	90	Student performance	80	.35	.60
Astrology	120	Extraversion and neuroticism	45	.01	.14*
Economics	60	Which firm will go bankrupt?	43	.50	.64
Graphology	52	Job performance	3	.19	.30**
Medical	193	How soon will patient die?	3	.00	.42
Personality	861	Neurotic or psychotic?	29	.28	.34
Shapes	180	Ellipse size and colour	6	.84	.97

*E+N+, but if age >35 then E-N-. **Versus nine variables such as army rank and neat writing.

The last two columns show the correlation between prediction and reality for experts using their intuition and for an equation using the same data. In each case equations outperform intuition (from Beyerstein and Beyerstein, *The Write Stuff* 1992:356). Experts of course deny they can be outperformed by equations. For example, predictions of Bordeaux wine prices based on just three factors related to quality (mean temperature during the growing season, rainfall at harvest time, rainfall in the previous winter) were extremely accurate – the effect size vs actual prices was $r = 0.90$ or more, which is very impressive. But French wine experts called the results ludicrous and absurd (Kahneman *Thinking, Fast and Slow* 2011:223-229).

The surprises keep coming. Accuracy is unrelated to confidence. Comparisons usually show that experts have nothing useful to add to an equation. Minimally-trained people do as well as experts. Equations do better than whole teams of experts. Even simple equations can be sur-

prisingly effective. Thus marital happiness is well predicted by frequency of lovemaking minus frequency of quarrels, whereas neither predictor is effective by itself.

8.9.2.3 Attempts at configural synthesis make it worse

The superiority of equations is particularly evident in areas where many interacting factors have to be weighed against each other to produce a balanced synthesis as is traditionally the case in astrology. Technically this is a *configural analysis*. But humans cannot do it:

Although many studies have now been conducted, virtually none of them have demonstrated or uncovered clinical capacities for complex data integration or configural analysis that even begin to approach the level of complexity described or demanded by the many clinicians who advocate for such strategies. Individuals often have difficulty properly integrating even two or three variables, much less the dozens and dozens of variables produced, for example, by a series of psychological tests (Faust and Ahern, Coping with Psychiatric and Psychological Testimony 2012:147-208, their italics).

The inability to perform a configural analysis is easy to see among astrologers and palmists, where "audiences were swayed in their judgements by the presence or absence of relatively few factors such as this aspect or that line", see 8.6.7, and where guru astrologer Nicholas Campion suggests you "just focus on the essentials and don't clutter your brain with excess baggage" (*Astrological Journal* 41(4), 57, 1999).

At which point we need to look at the role of human evolution. Here is Professor Bargh again:

We developed our conscious thinking abilities late in human history. ... unconscious thought mechanisms worked better for those types of problems we were more likely to encounter "back in the day" of our ancient past, like judging the fair treatment of others or detecting who was harming others in a group (p.161).

In other words evolution has shaped our unconscious mind to give accurate guidance in areas of social behaviour over the millions of years when life depended on it and objective data did not exist. And for most of life's important choices (like what clothes to buy or when to start dating) this is still the case, which gives our unconscious its best chance of success. But when it is not the case (as for bank managers analysing your credit history) our unconscious is no longer reliable. It needs more evolution time. So we need valid predictors to guide us.

8.9.2.4 Picking valid predictors

In orthodox fields the trick is to pick valid predictors and know how to add. In astrology there are as yet no valid predictors, so it makes no difference what astrologers do or how much they evade criticism by citing intuition. Their unconscious has nothing reliable to work on:

For all practical purposes, the *whole chart* of astrology, the *whole person* of holistic health care ... are convenient fictions. Although they may lend a superficial plausibility to holistic practitioners' claims ... they contribute little or nothing to an understanding of reality. Through the use of evasive language, holists sidestep the burdens of (1) determining what information is relevant, and (2) following a justifiable procedure for assessing and integrating the information to reach a decision (Ruscio, *Scientific Review of Mental Health Practice* 2(1), 38-48, 2003:44, our italics).

However, the above conclusions do not apply in areas such as physics or auditing, where (unlike astrology) there are proven principles and systematic feedback, and successful practitioners who have qualities that set them apart. They ignore irrelevant information, are up to date on the latest developments, and know which problems to avoid. They seek feedback from associates, learn from past mistakes, use aids such as written records to minimise hidden persuaders, and solve large problems by dividing into parts and reassembling the partial solutions (Shanteau, *Organizational Behaviour and Human Decision Processes* 53, 252-266, 1992). None of this denies the value of making a decision after not thinking about it. Or of applying computers via algorithms that evaluate every possible variable. But again none of this is relevant to astrology, and no astrologer fits the above description (any that do have quit).

Today vast quantities of forms, letters, emails, and phone conversations are stored, sorted, chopped, and analysed for patterns using many thousands of algorithms (lists of questions that lead to a particular answer) developed by hundreds of world-class programmers, all a spin-off from the secret algorithms applied to making money on the stock market (see 8.8.6).

Your own input (if sufficient) allows prediction of your behaviour, personality, habits, honesty, IQ, political views, and so on. Thus when a call centre advises that your conversation "may be recorded for training purposes", your responses are being analysed by algorithms.

In principle the analysis of a large set of birth charts by similar algorithms would quickly identify reliable patterns that would then outperform any astrologer, if only because there is no limit to the complexity the algorithms could handle. In practice this would require useful links between charts and reality, which as shown by the tests in this book do not exist.

8.9.2.5 More on using unconscious processes (intuitions)

The confidence we have in our intuitions is no guide to their reliability. So what can we do? One answer is to focus on the two basic conditions needed for acquiring any skill:

- An environment that is sufficiently regular to be predictable.
- An opportunity to learn these regularities by sufficient practice and systematic feedback.

Environment are regular if indications have the same outcomes, eg the link between dark clouds and rain is sufficiently regular for dark clouds to predict rain. But the link between experience and hidden persuaders is also sufficiently regular for sun signs to make money despite being astrology's most disconfirmed idea, see conclusion to 8.3. So beware artifacts.

When basic conditions are met and artifacts are excluded, intuitions are likely to be reliable. Chess is a good example because outcomes are governed by rules that impose total regularity. To understand complex chess positions at a glance requires about six years of playing chess five hours a day (about 10,000 hours of dedicated practice with thousands of configurations) before a player can become sufficiently intuitive. This is similar to the ten or more years of practice (not casual workouts but working with a coach) that tennis players, football players and athletes require – plus talent – to reach the highest level in their sport.

In principle the same should apply in astrology. But hidden persuaders and a lack of adequate effect sizes mean there are no links strong enough to be learned between chart indications and reality. In short, neither of the two basic conditions (regularity and learning) can be met in astrology, so any claims that depend on intuition as defined here are effectively meaningless.

Indeed, when the claimed use of intuition in astrology was tested directly on 45 astrologers from beginners to recognised experts, there was no evidence that it was effective. Their self-rated use of intuition from none to lots was unrelated to their observed performance, and hits were no better than chance, see 7.6.1985.2. The claimed accuracy of intuition is inconsistent with the disagreement over chart factors that exists everywhere in astrology, see 4.6.

Indeed, the most plausible explanation of the apparent success of chart readings even when using wrong charts see 8.9.9 is *artifacts* (they are far more numerous than you might think, see Chapter 9), not the mind-related factors explored here. Nor is it any better when intuition is defined in other ways such as psychic ability, see 8.9.3 below.

Daniel Kahneman notes that the use of intuition does not make psychotherapy more effective, simply because assessing the current state of a patient (which a psychotherapist should be good at) is not the same as assessing the patient's likely progress (which is what matters):

An experienced psychotherapist knows that she is skilled in working out what is going on in her patient's mind and that she has good intuitions about what the patient will say next. It is tempting for her to conclude that she can also anticipate how well the patient will do next year, but this conclusion is not equally justified. Short-term anticipation and long-term forecasting are different tasks, and the therapist [and any forecaster generally] has had adequate opportunity to learn one but not the other. ... The unrecognised limits of professional skill help explain why experts are often overconfident (*Thinking, Fast and Slow* 2011:242).

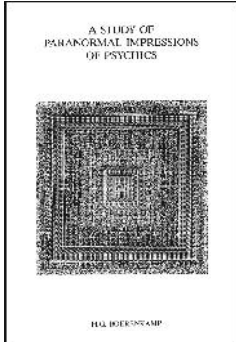
Because unconscious processes underlie most of the other eligible factors listed in 8.9.1, the above conclusions also apply to them. At which point you could skip to 8.9.8, but for completeness we look at them anyway, even though they do not change the conclusions.

8.9.3 Tests of psychic ability

Some astrologers are convinced that astrology involves psychic ability. Others are equally convinced it does not. Here *psychic ability* implies mental abilities that transcend known physical laws to provide information without the use of ordinary sensory channels:

It is only when an individual produces information which would seem impossible to obtain by normal means that the term *psychic* is invoked. ... [So] if we are interested, we must look deeply into the matter before even considering the need to posit a psychic explanation (JE Alcock, in J Nickel (ed) *Psychic Sleuths* 1994:172-173, 189).

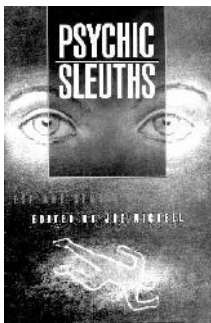
In other words we need controls. Here is a good example. In the 1980s, in a study lasting five years, the Dutch parapsychologist Hendricus Boerenkamp monitored a total of more than 130 personal readings by twelve of the Netherland's top psychics, and then rated their accuracy against matched control groups of non-psychics who were given the same task as the 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 in astrology readings. Nearly 10,000 statements were obtained, 10% were sufficiently specific to be tested, of which 14% were correct. That is, only 1.4% of all statements were both specific and correct, and for every such statement there were six that were both specific and incorrect. Unknown to the psychics, the same person was sometimes the target in two successive readings, but no psychic noticed it, and the second reading was often in conflict with the first. There was no appreciable difference in hit rate between psychics and non-psychics [which would seem to deny that psychic ability could play a role in astrology]. Boerenkamp concluded that the factual accuracy of psychics was no better than that of non-psychics, but their huge experience and sensitivity to human ills (their own lives were often traumatic) made them useful counsellors (summarised from Boerenkamp, *A Study of Paranormal Impressions of Psychics* 1988:191-207).

Psychics who feature in the popular press generally have a very poor track record well hidden under the excitement generated by their latest prediction. US psychologist Andrew Neher (*The Psychology of Transcendence* 1990:156-164) checked predictions not in areas of general knowledge and specific enough to evaluate. Hit rates were: Edgar Cayce 1 in 9; Criswell 1 in 52; Jeanne Dixon 1 in 14 (1971) and 1 in 8 (1973); nil for end-of-world prophecies; 1% for the first 3500 on New York Premonitions Registry; 0 for 32 cases filed with the SPR in London.

Wallechinsky et al (*The Book of Predictions* 1981:403-406) checked predictions made during 1976-1979 by the ten US psychics most frequently quoted in the supermarket tabloid *National Enquirer*. Of 364 predictions only 4 were hits, and even these were outcomes of marriages or political elections (tossing a coin would perform equally well). Six scored 0 in 34 or 0 in 48. The top psychic scored 1 in 25. Stretz (*Atlanta Journal* 1 January 1986:15A) checked 486 predictions made in the *National Enquirer* during 1978-1985. Two were hits.

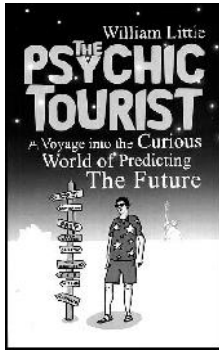


In the 1994 book *Psychic Sleuths* edited by Joe Nickell, a former stage magician and private investigator, a team of experienced researchers (professional magicians, private detectives, paranormal investigators and writers on pseudoscience) each examined the claims of a famous psychic crimebuster such as Gerard Croiset and Peter Hurkos, but generally found only media hype, distortion, fabrication, and lack of clear evidence. There was not a single case of psychic sleuthing that could be rigorously confirmed. The book also reprinted five independent studies which found no evidence that US police departments tended to use psychics, or that psychics were any better at sleuthing than controls. Such sleuthing was not a minor activity – publicised cases of missing persons could attract hundreds of psychics all offering their help. Police departments that had listened to psychics had found them to be a nuisance rather than a help.

Closer to astrology, UK investigative journalist William Little's sister was traumatized by an astrological prediction of her demise, so he visited the world's top psychics including astrologers (and also, to be properly informed, the world's top skeptics and parapsychologists) to discover the truth about their claims. He concludes:

In my search, I've found no evidence that people who claim to be psychic are channelling energies, talking to dead people, or bobbing along on a sub-atomic entangled universe. Not one of my many [predicted] futures ... has been consistent or foretold something that has taken place. ... Yet I've found out something far more interesting and

compelling. I've discovered that the human mind is so powerful that it can make us believe in something when it doesn't exist. ... What I've discovered on my journey is that the false hope given by psychics isn't always harmless. I feel uncomfortable that some of my cleverest and most charming friends will sit in the pub and tell me about how



numerology or astrology can determine the character of their next boyfriend. Looking across the wine-stained table, I don't understand why this amazing and resourceful person wants to defer their intelligent judgement to something that doesn't work. Is that what belief really is – putting your critical faculties and initiative on hold? (*The Psychic Tourist* 2009:308-309).

Controlled tests of psychic ability require precautions beyond those normally applied in astrology, as in the tests reported by Richard Wiseman in *Deception & Self-Deception: Investigating Psychics* 1997, none of which were convincingly positive. Even the speed with which you answer yes or no to a psychic's questions can provide an experienced psychic with useful clues. So what happens when huge samples are tested?

Mass-media tests via newspapers, radio and TV can generate big numbers of guesses and offer a way of seeing whether worthwhile effects really exist. A meta-analysis of 8 tests involving nearly 90,000 participants and more than 1.5 million individual trials gave a mean r effect size of -0.0046 , or -0.0004 when weighted by sample size, which was neither significant nor in the right direction (Milton and Wiseman, *British Journal of Psychology* 90, 235-240, 1999). The result "will provide considerable relief to lottery organisers worldwide".

8.9.3.1 A test of psychic ability using degree areas

Traditionally each degree of the zodiac is said to have an individual significance – and there are more than a few sets of them. PJ Carruthers (*Journal of Astrological Studies* [USA], 1, 158-160, 1970) gives a bibliography listing 17 different sets of degree meanings. By the mid 1970s more than 30 different sets of degree meanings had been published, the earliest being by 4th century Firmicus Maternus, and 14 sets were still in print. Notice two key points:

(1) Nearly all sets have been obtained by psychic means or meditation and not by astrology. For example ME Jones (*The Sabian Symbols in Astrology* 1953) obtained all 360 meanings from a medium in a few hours; they filled nearly 450 pages and were claimed to give insight into almost any human situation and relationship. A comparison of sets of degree meanings should therefore reveal the extent to which agreement exists between psychic insights.

(2) In fact there is essentially no agreement between sets, yet new sets (seven during 1972-1976) continue to be added, the latest in *Correlation* 31(1), 43-69, 2017 complete with no controls. In 1951 the Italian astrologer Adriana Carelli tried extracting the symbols on which four popular authors (including Charubel and La Volasfera) showed agreement:

But I soon realized that, had I pursued such a course to the end, I should have come out of it empty-handed; as in some cases the views were so glaringly conflicting as to bar any point in common. ... Then it dawned on me that each controversial degree – in other words all of them – called for a process of thought and meditation on spiritual lines, the only course enabling me to rise above the clash of jarring opinions (*The 360 Degrees of the Zodiac* 1951:iii).

In other words, rather than reject the idea of degree areas, he created yet another set. But if psychic ability did explain astrology, planets would then be essentially no different from tea leaves or coffee grounds, and nobody could claim that astrological methods had any special validity in themselves. Presumably not a view astrologers would wish to promote.

But before moving on there is one more issue we need to consider:

8.9.3.2 How good is your response bias?



Psychic ability is often formally identified as the ability to guess the order of cards in a shuffled pack of 25 Zener cards, where the number of hits expected by chance is calculated as $25 \times (1/5) = 5.0$. But (1) Such a pack of cards is too small to provide a truly random sequence. (2) Given a choice, 35% pick zero. (3) When asked to generate a random sequence of two things (heads, tails) or five images (Zener

cards), people always fail. They just can't do it. Which of these two sequences is random?



Most people pick the first. But they are wrong. The random sequence is the second. Contrary to popular expectation, it has fewer alternations, and longer sequences. So try again: You toss a fair coin five times. Which of the following sequences is the more likely?

H H H H H T T T T T H T H T H

Most people pick the last. Again they are wrong. Each toss is independent of the others, so any sequence is as likely as any other. The last merely *looks* more likely. Asked to pick five H or T at random, HHTHT is 30 times more popular than TTTTT, and HHTTH is preferred to HHHTT or HHTTT, but the least popular 3:2 split is HTHTH. Given a choice of H or T (or *light* or *dark*) 78% (or 66%) choose the first (Poundstone, *How to predict the unpredictable* 2014:36-37,163). Asked to choose any number 1–10 (not 3), or any odd-digit number 1–50, or two geometric images, one person in three chooses 7, 37, or circle-triangle, all nearly twice as popular as the next choice (6, 35, circle-square) (Marks and Kammann, *Psychology of the Psychic* 1980:221).

Back at psychic ability, a target sequence that happens to match human response bias will inflate the result above apparent chance, while a target sequence that happens to oppose human response bias will lower the result below apparent chance, a case of "psi-missing" (Brugger and Taylor, *Journal of Consciousness Studies* 10(6-7), 221-246, 2003, who re-interpret psychic ability as the inevitable result of subjective probability). It is hard to disagree.

Indeed, it has been known for nearly a century that a shuffled pack of Zener cards can predict the order in another shuffled pack of Zener cards generally better than any supposedly psychic person, which suggests that the expectancy among N choices is not necessarily the theoretical $1/N$ but should be empirically determined by actual control matchings (Willoughby, *Journal of Applied Psychology*, 119, 543-550, 1935). This has awkward implications not just for psi but also for the interpretation of chart matching tests – how much of an accurate match is due to astrology and how much is due to similarity in subjective choice of numbers?

8.9.4 Tests of divination

In antiquity divination (from the Latin *divinare* "to be inspired by a god") tried to know the unknowable via diverse methods and rituals. Historians have always seen astrology as divination:

The 1910 *Encyclopaedia Britannica* saw divination as "the process of obtaining knowledge of secret or future things by means of oracles, omens or astrology" (8:332). In the 2002 edition divination is "known in the Western world principally in the form of horoscopic astrology" (*Micropaedia* 4:132). Occult encyclopedias such as Spence (*An Encyclopaedia of Occultism* 1920:42) and Guiley (*Encyclopedia of Mystical & Paranormal Experience* 1991:34) see astrology as divination, as does *The World Atlas of Divination* (R Matthews 1992). Astrology is "the most durable, widespread and complex form of Western divination" (Curry, *Divination: Perspectives for a New Millennium* 2010:5).

Divination is said to operate via transcendental agencies or entities including angels, archetypes, daemons, deities, divine intelligences, divinities, gods, goddesses, numina, paranormal powers, providences, signifiers, spirits, spiritual essences, supreme beings, symbolic links, the Tao, transcendental realities, universal orders, and things beyond human understanding. As if this list was not confusing enough, deities alone provided plenty to choose from. Thus Coulter and Turner's 2000 *Encyclopedia of Ancient Deities* identifies over 10,000 ancient deities alone. Nevertheless, when properly approached, all transcendental agencies or entities have one thing in common – they are said to allow men to know everything.

But despite this commonality the above list of possibilities contains many dissimilar items, for example *divinities* would seem to have little in common with the *paranormal* or with *symbolic links*, and none of these would seem related to *archetypes*. It will therefore come as no surprise to discover there is no agreement on what the actual agency is. For example:

Such unknowable knowledge "could only come from supernatural beings" (*Encyclopaedia Biblica* 1899:1117), or "from the gods directly or indirectly" (*Encyclopaedia Britannica* 1910:8:332). Or it comes from the archetypal conditions that lie behind "all divinatory or intuitive techniques" (Jung *The Collected Works of C.G. Jung* 1960 Vol 8:846,866).

But despite the lack of agreement, divination was still the natural outcome. UK professor of psychology John Cohen explains why in his 1964 book *Behaviour in Uncertainty*:

Divination follows naturally from a belief in gods and spirits, for once man acknowledges the existence of super-human beings whose will governs his fate he feels irresistibly driven to decipher their intentions (p.162).

For modern readers he adds:

It needs an effort on our part today to realize the enormous influence of divinatory rituals in archaic peoples at all levels of civilization. ... their preoccupation with these rituals expressed their relationship with the unknown powers that "rule" the universe. Not only celestial events but everything mundane was the intimate concern of the gods. The overriding need was to know what lay ahead in time, and to obtain approval for an action already completed (p.190)

Fortunately ancient divination is the subject of a vast literature covering at least 2000 years that (unlike modern astrological literature) makes it clear what is happening. So it will pay us to start with divination in ancient times:

8.9.4.1 Aims of divination

Divination in antiquity was aimed at knowing the will of the gods, being in harmony with their will, and being reassured that all was part of a divine plan (Potter, *Prophets and Emperors* 1994:2). Like psychotherapy, it was about helping people find "a reason for making a decision when no reason is apparent" (Flacelière, *Greek Oracles* 1965:86). In the 1987 *Encyclopedia of Religion* the historian EM Zuesse describes how divination is fundamentally directed:

by religious, not scientific, concerns. Its basic curiosity is not about how the world is constructed [ie the concern of science] but about the existential meaning of particular human lives. Above all, divination illuminates suffering and alleviates doubt. It restores value and significance to lives in crisis. But to achieve this, all systems of divination demand the submission of the inquirer to transcendental realities [typically belief in gods] (Vol 4:380).

In short, if gods exist, then something exists beyond ourselves, and there is more to life than being (as Thomas Hobbes famously put it in 1651) "solitary, poor, nasty, brutish, and short".

The idea of gods brought a welcome certainty – if a divination fails, the fault lies with the interpretation, never with a god – just as fallibility is always a property of astrologers but never of astrology. The ritual of divination varied between cultures with a huge diversity of method:

Mackay (*Extraordinary Popular Delusions and the Madness of Crowds* 1852:292-293) lists over fifty specific methods "formerly in use", which include divination by air, ashes, asses heads, beasts, birds, bones, candles, cheese, circles, cocks, crystals, devils, dice, dreams, earth, entrails, feet, figs, fire, fishes, flour, grain, hands, herbs, idols, incense, knives, lamps, livers, logarithms, looking-glasses, lots, nails, names, navels, numbers, rings, saws, scriptures, shadows, sieves, skins, smoke, stars, stones, swords, vessels of metal, water, wax, wine, and writings.

Cohen (*Behaviour in Uncertainty and its Social Implications* 1964:162-194) mentions over seventy methods, including forty not on Mackay's list (arrows, axes, barley, Bible, bowls, breasts, coals, comets, cups, dead bodies, earthquakes, eclipses, eggs, elements, excrement, finger nails, foreheads, fountains, keys, laurel leaves, lightning, maps, meteors, mirrors, molten lead, oatmeal, onions, pearls, pebbles, plants, pools, precious stones, salt, shoulder blades, sneezes, straw, sweat, thunder, wheat, and winds).

In 2013 **Wikipedia** listed nearly 300 unique methods including 190 not mentioned above (Aeneid, altars, anagrams, animal behavior, animal shoulder blades, ants, apt occasions, ashes (from human sacrifice, from incense, from ritual fire), atmospheric conditions, auras, ballots, bamboo, barley cakes, beans, beetle tracks, birth dates, black magic, blemishes, blood, blowing, bodily fluids, boiling a donkey's head, books, bouncing pearls, brushed cloth, burning, buttocks, cards, cats, celestial bodies, chance events, clouds, cockfights, coffee grounds, coins, colors, constellations, convulsions, copper bowls, corpses, crab behavior, cracks formed by heat, crystal ball, cylindrical tools, demons, dictionaries, divine speeches, dizziness, dog howling, dogs, dominoes, dragons, drawing lines in sand, dreaming, dust, experience, experiment, eyes, faces, fashion, fearful feelings, films, fingers, flames, flowers, foolishness, footprints, four elements, frogs, fruit, galvanism, gazing, gems, geography, geology, gongs, guttural sounds, handwriting, Hebrew alphabet, hogs, horoscopes, horses, human form, human sacrifice, ice, I Ching, icons, Iliad, initials, insects, itches, Kabbalah, large cities, large objects, laughter, leaves, letters, letters in a name, lines, lips, looking over one's shoulder, magic, Mahjong, mathematics, minerals, mistletoe, moles, money, moon, mountains, needles, nursing, oaks, Odyssey, Ogham letters, oil, old shoes, omens, one's shoulders, ouija board, overheard words, palm nuts, palms, paper, pendulums, physical appearance, pig bladders, placenta, poetry, random shouts, ravings of lunatics, reflective objects, rodents, rods, roosters, rose petals, runes, sacred relics, sacrifices, sage, saints, sand, second glance, secrets, seeds, shade, sharp objects, shells, sitting in a drawn circle, skin bumps, skulls, sky, sleep, sleeping, small objects, snakes, soles of one's feet, soot, sounds, spiders, spindles, spirits, spots on skin, stars at birth, statues, sticks, strangers,

sun, tarot, tea leaves, teeth, things accidentally seen, things found on the road, toenails, tree bark, trees, umbilical cords, urine, visions, walking, wands, weights, wheel ruts, wheels, wood burning, wood texture, words).

The 1965 *Encyclopédie de la Divination* had entries for each of nearly 300 contemporary approaches from *abacomancie* (dust) to *zooscopie* (animal behaviour). In each case the basic premise (divine help) remains the same.

Australian philosopher Gordon Oppy (*Naturalism and Religion* 2018) reduced the above seemingly impossible diversity to things that are either dangerous, environmental, living, linguistic, mathematical, non-living, sacred, or chance:

it turns out that proponents of particular divinatory practices are sceptical about the efficacy of some – perhaps even most – other divinatory practices. And, of course, where these divinatory practices are connected to religions, it is very often the case that adherents of a given religion condemn the divinatory practices of competing religions (p.183).

Others have made simpler divisions. For example Cohen (1964:162-190) points out that the ancients including Plato, Aristotle and Cicero distinguished divination by *natural events* (eg comets, dreams, entrails, stars) from divination by *contrived events* (eg throwing lots, feeding chickens, firing arrows, opening a book at random, seeing shapes in melted wax).

Cohen concludes by noting that divination

is an archaic method of decision-making. It is based not on the [actual] situation ... but on ... a message purporting to come from the gods whose will decides the issue. ... the methods were not irrational; they were the best that could be done within the existing framework of knowledge and understanding (pp.191-192).

Indeed, given such a huge diversity of methods and their associated symbolism, it could be argued that there is nothing special about divination by astrology.

In 1981 the same conclusion was reached by UK physicist and mathematician Dr Anthony Stone, who worked in India, learned Sanskrit, and then explored the development of Indian astronomy and astrology:

The "divination model" of astrology explains all its peculiar features, such as: the multiplicity and inconsistency of its rules; the lack of explanation of the rules; its use of symbolic connections; use of chance events; the stress on the predictive capacities of the individual astrologer; the uncertainty of success (*Hindu Astrology: Myths, Symbols and Realities* 1981:212-213, over 250 references).

Stone makes this comparison with science (p.172):

Science	Divination	Science	Divination
Empirical	Symbolic (ie non-empirical)	Replicable laws	Works in different ways*
Undogmatic	Dogmatic	Process is public	Is personal to astrologer
Focussed	Uses different methods	Success expected	Success doubtful

*For example it can work by chance or by intuition. Stone did not consider hidden persuaders, which is why they are not mentioned here. However he does note that the Western idea of synchronicity is "certainly not the whole story" (p.243) simply because archetypal [ie synchronicity-related] symbolism cannot provide the required detail (p.227).

Today the *transcendental model* of divination is slowly being replaced by the *random-chance model*, where divination loses its traditional connections with gods and spirits. Instead it is seen as a way of investing chance with a meaning it would not otherwise have. You get an ambiguous outcome that you are forced to explore to make sense of it, thus exploring areas of your problem you might not otherwise explore, thus obtaining answers you might not otherwise obtain (Scott Cunningham, *Divination for Beginners* 2003, for details see 7.2.2003.1).

Similarly historian EM Zuesse (we met him earlier) sees the divination ritual as giving it the appearance of an objective legitimacy that misdirects the user away from the underlying random process on which it depends (think of the I Ching). So the user has no idea he is actually doing the equivalent of tossing a coin. Which is turned to advantage, for having freed the user: from customary ways of thought, it frequently reveals fresh insights into problems. Thus the cryptic proverbs or aphorisms (as in the I Ching) or the nonbinding details and universalizable generalities (as in astrology) opens up a cosmic perspective that in itself bestows tranquility and a renewed ability to cope effectively with crises (p.381).

We return to the random-chance model later in 8.9.4.14, but for the moment we stay with antiquity for its uniquely valuable insights:

8.9.4.2 Biblical views of divination

According to *Strong's Concordance* (1980) of the 774,000 words in the King James Bible, the words *divination* or *divinations* occur 13 times and *astrologer* or *astrologers* occur 9 times (*astrology* 0 times), most often in Ezekiel where divination is variously described as flattering, divine, lying, or false, with an example of the king of Babylon where "he consults with images, he looks in the liver" only to achieve the false variety (Ezekiel 21:21-23).

There are many instances in the Bible where divination as *knowledge of the future* is accepted, as when Jesus speaks of future events such as "when ye shall see these things come to pass, know that it [his second coming] is nigh, even at the doors" (Mark 13:29).

But divination as *knowledge on demand* is accepted only when it occurs via Jesus's relationship with his heavenly Father. Otherwise the Bible forbids it, as in Deuteronomy where users of divination are dismissed as "an abomination unto the Lord" (Deuteronomy 18:12).

The biblical scribes were generally as unsympathetic to astrology as they were to divination:

Thus in Daniel, four children of Judah (renamed Beltshazzar, Shadrach, Meshach, and Abednego by Nebuchadnezzar c.580 BC) were found in all matters of wisdom and understanding to be "ten times better than all the magicians and astrologers that were in his realm" (Daniel 1:20), a group that later included "Chaldeans [astrologers] and soothsayers" (5:11). In Isaiah "the astrologers, the stargazers, the monthly prognosticators" are challenged to be effective but "they shall be as stubble" (Isaiah 47:14); interestingly there is nothing about the 3 wise men (astrologers?) from the east.

8.9.4.3 Divination in Mesopotamia

Mesopotamia, now part of Iraq, was roughly the land between the great rivers Tigris and Euphrates. Its southern part (Babylonia) was a vast alluvial plain of alternating swamps and desert stretching 500 km from present-day Baghdad to the Persian Gulf. Rain was scarce, but once the fertile soil was irrigated and protected by dykes, the hot climate and abundant sunshine made Babylonia one of the richest agricultural areas in the ancient world. In an area one quarter the size of



England or Alabama, it supported cities of typically 50,000 people and a total population of perhaps 2 million. Today the ruins of Babylon, its largest ancient city, cover more than 8 km².

England or Alabama, it supported cities of typically 50,000 people and a total population of perhaps 2 million. Today the ruins of Babylon, its largest ancient city, cover more than 8 km².

But in Babylonian times it was not a paradise. Summers were very hot, winters were very cold, storms and floods destroyed crops and human lives, and on average every 200 years Babylonia would be invaded by nomads driven by famine or war from the vast surrounding deserts. In short, life in Babylonia was hard and uncertain.

There was no natural explanation for observed phenomena. Nor was there an explanation for imagined, dreamed, or hallucinated phenomena – all would have seemed as real as normal perceptions. So gods were necessary to explain weather, seasonal changes, growth and decay, every human event. Man was created to serve these gods, so the first duty of the king was to act on their instructions. It all seemed very sensible at the time.

The will of the gods was divined from omens. Like irrigation, divination was so basic to life that omens were seen everywhere. Sometimes the reasoning was entirely logical: The liver was the seat of the soul, therefore it showed the will of the god accepting the sacrifice. The heavens were the seat of the celestial gods, therefore by reading the heavens one could know their plans. Indeed, a favourable omen was required before almost any event could take place. Babylonia and its people lived and breathed omens.

Divination scholar Robert Temple wondered how liver reading worked, so he went to an abattoir and personally removed the insides of freshly slaughtered lambs according to ancient

directions. He discovered that the liver acts as a perfect mirror for up to 20 minutes, after which it goes dull and ceases to reflect. He concluded that the ancients saw the liver as acting as a mirror for the divine rays that the gods continually send down. So if you looked closely enough, it would yield traces of the future left behind by rays that had streamed into it up to the moment of sacrifice (*The World Atlas of Divination* 1992:65-73).

8.9.4.4 Mesopotamia's celestial omens

In Mesopotamia sometime before 2000 BC celestial omens were adopted that eventually became the astrology we know today. They involved anything seen in the sky including clouds, rainbows, eclipses, planetary risings and settings, They were based on records of events and on the association of ideas. Thus an eclipse might indicate flooding because it had once been followed by a flood, and a lunar halo might indicate a long reign because it resembled a crown. Less fanciful was an association between rain and dark clouds or rainbows.

Similar omen ideas can be found in any land, but the Mesopotamians were unusual in that by about 1700 BC the omen records were being systematised into look-up tables that were then copied and re-copied. Babylonian scholar Otto Neugebauer comments:

From the purely astronomical viewpoint these observations are not very remarkable. They were probably made in order to provide material for omina [ie prognostications]; important events in the life of the state were correlated with important celestial phenomena, exactly as specific appearances on the livers of sacrificial sheep were carefully recorded in the omen literature. Thus we find already in this early period the first signs of a development that would lead centuries later to judicial astrology and, finally, to the personal or horoscopic astrology of the Hellenistic age (*The Exact Sciences in Antiquity* 2nd edition 1957/1969:100).

In common with sacred writings everywhere, omen records were couched in deliberately obscure writing. Because omens affected national security and required specialised knowledge, omen work was restricted to small teams of scholars who were more like academics than magicians or priests. They were men of high rank who reported directly to the king:

The task of these experts, these scholar-scientists, was to scan the face of nature in order first to find significant patterns there, and then significant departures from those patterns; then they would proceed to fathom what these things meant. ... but only to the king. ... for he was the gods' representative on earth. The king's wisdom and just rule on earth mirrored that of the gods over the universe as a whole (Whitfield, *Astrology: A History* 2001:10-11).

Because the omen records refer only to the king and state matters, they tell us nothing about the celestial beliefs of ordinary people. However other records show that ordinary people offered prayers and sacrifices to their personal gods, and frequently consulted exorcists to ensure protection against evil spirits. Here are some examples of national celestial omens:

- If the Moon can be seen on the first night of the month, the country will be peaceful.
- If the Moon occults Jupiter, that year a king will die.
- When Jupiter goes forth with Venus the prayer of the land will reach the heart of the gods.

Quotes are from Thompson, *Reports of the Magicians and Astrologers of Nineveh and Babylon in the British Museum* 1900. RC Sachs, *Journal of Cuneiform Studies* 6(2), 49-75; 1952. Oppenheim, *Centaurus* 14, 97-135, 1969.

8.9.4.5 Birth of horoscopic astrology

The Persian invasion of 538 BC broke the domination of the temple over celestial matters. The new kings owed allegiance not to Babylonian gods but to Persia. And around 250 BC the omen scholars were focusing their skills on ordinary people, thus preparing the way for horoscopic astrology as shown by these (abridged) omens for planets rising at birth:

Planet	Child's life will be	Planet	Child's life will be	
Moon	bright and excellent	Mars	[hot tempered?]	) Omen for
Mercury	brave and influential	Jupiter	rich and long	) the Sun is
Venus	favourable and fertile	Saturn	sick and constrained	) missing

The last four are similar to their modern astrological meanings, showing a clear line of descent and a remarkable resistance to change (or at least a clear inability to detect error, see 3.8 ff).

Zodiac signs and the corresponding constellations were originally used as a calendar, usually

via the sign rising at sunset. The origin of their names is uncertain. Some names are from Mesopotamia, eg Scorpio comes from the scorpion-man of Babylonian boundary markers bearing the landowner's particulars together with symbols of the gods and curses invoked for protection. Some names are from Egypt, eg Aquarius and Pisces coincided with the annual Nile inundation, while others could come from either, eg Libra coincided with the weighing of (mythical) souls in Babylon and of the harvest in Egypt. Only Gemini the twins is clearly related to its appearance, two prominent stars a finger-width apart.

Around 500 BC Mesopotamian omen lore reached the Greeks who, with a philosophy that predisposed them to accept it, were to change everything. 200 years later Alexander the Great united Greece and conquered neighbouring regions including Egypt, Mesopotamia and Persia, making Greek the common language. Alexandria, a new Greek colony on the Nile delta became the centre of Greek learning with a population of half a million. Here the Greeks mixed together the omen-based planets and zodiac of Mesopotamia, the 24-hour day of Egypt, and their own ideas such as the number symbolism of Pythagoras, the elements of Empedocles, the planetary deities of Plato, the sacred earth-centred universe of Aristotle, and especially the Stoics' oneness of nature that required *as above so below*. It was a huge celestial melting pot in which gods and the heavens were ideals to strive for, not literal descriptions of reality.

8.9.4.6 The Greeks take over

Greek life ran on omens and oracles. Disbelief in gods was inconceivable:

"An omen was not merely a sign of what was going to happen, it was inherently connected to it" (Flacelière, *Greek Oracles* 1965:6). Oracles addressed a profound spiritual need to feel a "connection with the larger matrix of existence" (Skafté, *When Oracles Speak* 1997:2). There were no ancient words for ESP or psi, and such things (if recognised at all) were lumped together under the notion of *divinatio*. "The paintings and sculptures that filled Greek public areas and adorned temples; the stage dramas and speeches that attracted huge crowds; all reminded the Greeks that no area of life was without gods" (H Bowden, *Classical Athens and the Delphic Oracle* 2005:63,133).

The stronger the spirit of religion the greater the importance of divination. Historian Franz Cumont describes how Greek thinkers saw the existence of gods as entirely logical:

Reason, reflecting on the marvellous [celestial] phenomena which are perceived by the eye, realises that they cannot be due to chance or to the action of a blind force, but recognises that they are ruled by a divine intelligence. The ceaseless harmony of movements so diverse is inconceivable without the intervention of a guiding Providence. The stars themselves prove to us their divinity so clearly that to fail to see it is to be incapable of seeing anything (*Astrology and Religion among the Greeks and Romans* 1912/1960:57-58).

Very soon, by at least 1 BC, the Greeks had established the basic ingredients of modern astrology (planets, signs, houses) and their associations with plants, animals, stones, colours, metals, medicine, the human body, and the entire realm of nature, albeit with important differences from modern astrology and with much disagreement over detail. The hereditary scholars interpreting omens for kings had now become astrologers casting horoscopes for anyone who could afford it. Astrology had ridden on the unity of Greek ideas into the hearts and minds of learned people, where in similar fashion it followed the fortunes of learning and flourished (in Rome, in Islam, in the Renaissance) or declined (in the Dark Ages):



Astrology as part of astronomy was progressive. But on its own in Europe it stagnated. Dates from Nicholas Campion, *An Introduction to the History of Astrology* 1982.

The astrological journey from Mesopotamia to Europe

At which point we need to look at Cicero's famous attack on divination:

8.9.4.7 Cicero's *De Divinatione*

Cicero (106-43 BC) wrote many famous speeches, letters, and works of philosophy that would influence the style of speakers and writers everywhere. He was equally at home with Greek

and Latin, and was possibly the most cultured man that Rome had produced (Breasted, *A Brief History of Ancient Times* revised edition 1936:305). His *De Divinatione* [On Divination] incorporates earlier Greek arguments now lost. It takes the form of a dialogue between himself and his brother Quintus. Quintus presents arguments in favour of divination, which Cicero then demolishes with merciless logic. Here Cicero is arguing as an insider, because he was also an augur (official interpreter) of bird behaviour. He denies any conflict of interest because augury was little used in Rome, and even then only to control the public's "excesses", presumably by manipulating the outcomes. More importantly, he saw a soothsayer as a wise counsellor where what mattered was not the soothsaying but the wisdom. All quotes are from the English translation by WA Falconer (*Cicero: De Senectute, De Amicitia, De Divinatione* 1938):

Cicero begins by noting that divination exists everywhere. "A really splendid and helpful thing it is – if such a faculty exists – since by its means men may approach very near to the power of gods". But it has no place where the senses "are sufficient in themselves and require no aid from divination", which include science, art, philosophy and politics. "And since it is of no use in these cases there is no use for it anywhere". It cannot foretell things that happen by chance, because such things by definition cannot be foretold, and if they could they would not be chance. Even if divination could tell the future, the disadvantages would outweigh the advantages, for example it would allow a person "to peer into every man's house to see what he needs" (p.489).



Roman augurs divining the will of the gods by observing chicken behaviour (from Place, *Astrology and Divination* 2008:48). "The tenets of the Roman augurs were that for signs of the gods one must look towards the sky ... He carefully observed every sign ... such as lightning, the appearance of birds, and so forth. ... The reading of omens was also effected by the feeding of birds and observing the manner in which they ate" (Lewis Spence, *Encyclopaedia of Occultism* 1920:126).

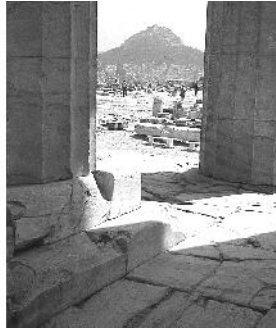
Cicero then looks at each kind of divination and argues that each one is preposterous. His description of the things that contradict the claims of astrologers takes up about 9% of *De Divinatione*. Most of his main arguments still apply today:

- Given their "almost limitless distances, what influence can the planets exercise?"
- Weather has a big effect on man but is ignored by astrologers, who consider only "some subtle, imperceptible, well-nigh inconceivable force which is due to the condition of the sky".
- It is clear that "the carriage and gestures of children are derived from their parents", which would not be the case if they were derived from the sky's condition.
- Re time twins: "the fact that men who were born at the very same instant, are unlike in character, career, and in destiny, makes it very clear that the time of birth has nothing to do in determining man's course in life".
- From the striking differences between Indians and Persians: "it is evident that one's birth is more affected by local environment than by the condition of the moon".
- In 216 BC, at Cannae in SE Italy, Hannibal had massacred an army of 70,000 Romans. Every family in Rome was in mourning. "Did all the Romans who fell at Cannae have the same horoscope? Yet all had one and the same end".
- "Were all the men eminent for intellect and genius born under the same star? Was there ever a day when countless numbers were not born? And yet there never was another Homer. ... What stupendous power delusion has!"
- He concludes: "why say more against a theory which every day's experience refutes?" (pp.469-483).

When Quintus is asked if they can now discuss divination by gods and dreams, he replies:

Delighted, I assure you, for I am in entire accord with the views which you have so far expressed (p.483).

Cicero then discusses divination's supposed link with gods. He notes how the argument for such a link starts with: "If there are gods and they do not make clear to man what the future will be, then they do not love man", and ends by asserting that the gods love man "for they are the friends and benefactors of the human race", therefore divination exists. Cicero then uncovers fatal assumptions. Who says the gods love man? Who says they should give us signs and the means to interpret them? "The truth cannot be proved from false premises. Hence their entire argument falls to the ground" (pp.483-491).



But if "their entire argument falls to the ground", how can we explain the apparent success of oracles such as Delphi?

Greece is a mountainous country. And high places with soaring scenery were natural homes for the gods. **Left:** the Temple of Apollo home of the Delphic Oracle 2000 feet above sea level. The ruins date from 350 BC and give little hint of their former glory, which once had a dozen more columns and an outer structure of 38 columns. **Right:** views like this from the Parthenon built 500 BC must have been a constant reminder of gods. Photos by Geoffrey Dean.

8.9.4.8 How successful were oracles?

The ultimate diviners in antiquity were the oracles, a source of divine responses to questions. They were numerous and expensive. The most famous was the oracle of Apollo at Delphi, where the fee is said to have been equivalent to two days' pay for an Athenian jurymen (which was more than 3x the equivalent rate in Egypt), or 11x this amount if consulting for a city. So the resulting cash flow would have been substantial, as were the paintings and sculptures it afforded, all of which – plus the inspiring location – would have ensured Delphi's reputation.

Other famous oracles were those of Diana at Colchis, Mars at Thrace, Jupiter at Dodona, and Venus at Paphos. The Delphic oracle was unlike the others because (1) it was a going concern for over a thousand years until it closed around 400 AD after some ups and downs, and (2) it has attracted over a hundred books and many cherished but wrong beliefs. But the reality is not at all like its famous reputation. There are no amazing prophecies known to be authentic, and little evidence that its authentic responses involved actual divination:

Fontenrose (*The Delphic Oracle: Its responses and operations with a catalogue of responses*, 1978). was able to divide Delphic responses into 75 *historical* (occurring in the lifetime of the writer), 268 *quasi-historical* (occurring before the birth of the writer), 176 *legendary* (as in folk tales), and 16 *fictional* (as in plays), total 535. Most of the quasi-historical accounts were non-authentic, only 23 were authentic or probably authentic, 9 were possibly or dubiously authentic

The most famous but non-authentic of all Delphic responses was to Croesus, king of Lydia (now part of Turkey) and reputedly the richest man in the world. He had asked about a planned war. The response was: "*When Croesus passes over the river Halys, he will overthrow the strength of an empire*". Croesus read this to mean he would win, but it was his own empire that was destroyed. This was after his famous challenge to the country's seven best oracles to say what he was doing on a particular day (to eliminate chance hits he was stewing a lamb with a tortoise in a bronze cauldron), which only the Delphic oracle succeeded in describing. But the lamb stew is non-authentic, being without contemporary support and disagreeing with known historical events. Also the supposed ambiguity in the war outcome "is to say that every war must be decisive, which is far from true: Croesus' campaign could have ended without the destruction of either kingdom" (p.114). Hence the response was invented after the event.



Vase painting c.5th century BC. The King of Athens consults the Delphic oracle Pythia who is seated on a tripod in a cloud of intoxicating sulphurous gas from a volcanic vent in a miniature temple indicated by the single column. However the enquirer did not actually enter the sanctum where the Pythia sat. He could hear her but not see her. In every authentic account the enquirer speaks directly to the Pythia, who (on behalf of the god) responds directly to the enquirer.

Sometimes she was asked to draw lots, for example lots inscribed with names. If the question was conveyed by an envoy, a priest wrote down the response for the envoy to take away (from Fontenrose *The Delphic Oracle* 1978:205-224). Interestingly the 16th century seer Nostradamus also sat on a tripod inhaling sulphurous fumes for many of his divinations in deliberate imitation of the Delphic oracle (John Hogue, *Nostradamus: A Life and Myth* 2003:149-151).

Here are some (abridged) Delphic questions and responses that are known to be authentic:

- To what god should he sacrifice and pray to make his intended journey successful? *Answer: Zeus.*
- Is it sanctioned [approved] to reject a truce when offered to Sparta only whenever Spartans intend to invade?
It is sanctioned not to accept a truce unjustly offered.
- What should we do if Jason takes the god's money? *Don't bother, it is my concern, not yours.*
- Should the legislation be approved? *Yes, it is to the city's advantage.*
- How can we please the gods, what will be the outcome of defeat in battle? *Make sacrifice to Zeus, you will feel better for it, and will win. Also, honour the gods and keep licentiousness away from you.*

Note how there is nothing here not answerable by commonsense, wisdom, religious correctness, or insider information gathered from influential clients. In most cases the Pythia merely repeated the question when asked for sanction (which was always granted) and named the gods the questioner should worship (Fontenrose, *The Delphic Oracle* 1978:223, 248, 258). Ironically we know surprisingly little about the details of a Delphi consultation, because the procedure was so well known to the Greeks that it seems nobody bothered to leave a precise description (Sartre, *Histoires Grecques* 2009:59). Now for a crucial point:

8.9.4.9 Ambiguity was essential in divination

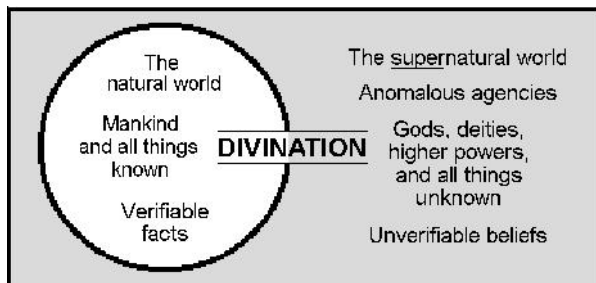
The Greek biographer Plutarch (c.46-120) saw ambiguity in divination as essential, because the oracle was generally consulted by powerful people with mighty ambitions, and to annoy them with "harsh truths that conflicted with their desires would have had its disadvantages for the priests of the oracle. [So] Apollo, though not prepared to conceal the truth, manifests it in roundabout ways" (Flacelière, *Greek Oracles* 1965:54). But ambiguity, however obtained, requires no special pleading – it is inherent in the divinatory process, where gods are infallible but seers are fallible. For example here are two famous ambiguous responses:

When Maxentius asked about the outcome of his battle with Constantine, the Sibylline prophetess told him it meant death to *the enemy of the Roman people*, but whether Maxentius or Constantine was the enemy was left undecided.

Ahab, king of Israel, about to wage war on the king of Syria, asked the prophet Micaiah if the city of Ramoth-Gilead would be his. The answer was *Go, for the Lord will deliver the city into the hands of the king*. Ahab thought he was the king referred to, but in fact it was the king of Syria (Brewer, *Dictionary of Phrase and Fable* 1993:918).

The above responses may or may not be authentic, but they make the point – nobody could doubt oracles when their claimed predictions were impossible to falsify. Especially as doubting would be equivalent to doubting the existence of gods, which of course was sacrilege. People

who valued their necks did not do that. It was safer to believe.



How divination was said to work.

Inside the circle is the knowable natural world of mankind verifiable by observation. Outside the circle is the unknowable supernatural world or transcendental realm that may or may not exist, but about which we can only speculate. Divination was said to provide a bridge between the two.

Similarly clients rarely asked why the gods could do complicated things like create storms, shape livers and direct bird flight, but not simple things like write messages. Or why battles could be lost when the divination on both sides was presumably favourable. Or why simultaneous rolls of five dice never agreed, at least not more than the 6 in 6^5 (= 1 in 1296) rolls expected by chance. Or why the gods should be bothered by the need to avoid "harsh truths" and not by human wars, pillage and massacre. Or why, if the gods loved humankind and knew their knowledge would be useful (as was argued by the Stoics), they had to be *asked* to reveal it. Or why they should be so user-unfriendly.

8.9.4.10 Why are gods so user-unfriendly?

There is a point here that is seldom appreciated. Momentous events such as the San Francisco earthquake, fall of the Berlin wall, the independence of Eastern Europe, and the destruction of New York's twin towers, none were foretold by divination. Yet the universe does allow us to accurately predict future events such as Jupiter's position six years from now and the exact

time of the next solar eclipse. We can also predict that in 100 tosses of a fair coin, heads will occur approximately 50 times, and that the more the tosses the more reliable the prediction.

So it seems reasonable to imagine that advanced entities might exist who can predict future events better than we can – without having to use any supernatural power – just as we today can predict better than our ancestors. But it is less reasonable to imagine that such entities would be willing to be on call to answer questions such as the location of our pet cat, any more than we would be willing to be on call to answer divinatory questions put to us by cows.

But even if such entities were willing, is it reasonable to suppose they would insist on silly ways of communicating such as via yarrow stalks or sheep's entrails or the flight of birds rather than simply speaking or writing? To argue that speaking or writing is somehow not possible is to confirm the silliness. We can of course argue that the pattern of stalks or entrails or birds is characteristic of the moment. But *anything* that happens at that moment has to be just as characteristic of the moment, so why should other patterns be somehow less valid?

Back in ancient Greece, it hardly mattered if an outcome was actually chance, because belief in its divine origin reassured the user that he was following the correct course of action, which in turn could improve the result. In other words any well-defined course of action may be as good as any other if it can be confidently and resolutely followed. Which may explain the modern popularity of the *I Ching*. Even tossing a coin can end indecision and lead to action.

8.9.4.11 Manipulation, rapport, and charisma

Although the approaches to divination varied, all were open to **manipulation** whether conscious or unconscious (Flower, *The Seer in Ancient Greece* 2008:191). For example a divination based on the feeding behaviour of chickens could be manipulated by starving or overfeeding. But manipulation was essential if the divination was to be workable. It was not enough to ask a question and expect a direct answer, because the gods communicated only by signs – and signs had to be interpreted. To complete the sentence "this liver means ..." the diviner had to know the context. In other words the outcome was determined less by the sign and more by the diviner's ability to establish rapport with his client and invent a plausible meaning. Or as Halliday (*Greek Divination* 1913:56) puts it, the diviner needs "not only knowledge but a wise and understanding heart, or at least something of the genius of successful opportunism".

The importance of **rapport** emerges again and again in studies of divinatory practices around the world. In a recent anthology *Divination and Healing: Potent Vision* (Winkelman and Peek 2004), most of the authors stress how a successful outcome depends on a good relationship between diviner and client. If there is no rapport, if the diviner and client do not share a basic social knowledge, or if the context is kept hidden, no plausible meaning can be identified, so divination loses its potential to resolve the client's problem. Burkert comments: "Looked at in this way, divination is nothing divine but rather an accumulation of experiences about the relevance and meanings of signs" (in *Mantike: Studies in Ancient Divination* 2005:32).

Psychologist Ray Hyman comments that in any sign interpretation "the contributions of the receiver [client] almost totally determine the message and its interpretation. [But] receivers do not realize how much of the message and its meaning is their own contribution" (in *The Clever Hans Phenomenon* 1981:169-181).

Thus the client accepts the message as true if it provides a plausible new viewpoint or agrees with what the client already knows, especially if the client sees the diviner as having mysterious powers. In other words both the diviner and client falsely attribute the message to occult sources. Hyman compares this with a fake divination by a cold reader, where the reader (1) knows the client will supply all the information, and (2) takes steps to both maximise the supply and disguise what is happening. Result: the client accepts the message as true and ends up convinced that mysterious powers are involved. So what sort of people were diviners?

In ancient Greece anyone could call themselves a diviner, and success could bring fame and wealth. But what brought success? Other than high status (many sought-after diviners came from elite families), and a belief in divination, the key ingredient was personal **charisma**, the magnetic charm that allows its owner to establish rapport and influence others (Flower, *The Seer in Ancient Greece* 2008:243). Charisma was more important than book learning or technical expertise, and was essential for attracting and retaining clients. Charisma reassured the client that he was dealing with someone he could trust. And it was largely charisma that distinguished one diviner from another. In short, *client satisfaction depended on the diviner's charisma, social knowledge, and manipulative skills, and at the same time divination itself was protected from disconfirmation*. Which also happens to be exactly true of a cold reader.

This dependence did not go unrecognised:

It is a long established anthropological truth that faith in diviners and incredulity about diviners go hand in hand: societies that abuse seers are also those that believe in them, and vice versa (Parker, *The Long March: Xenophon and the Ten Thousand* 2004:131-153 p.143).

But abuse had little effect on belief. Some Greeks might have agreed that a seer "tells a few truths and many lies" and that "the best seer is the one who guesses well" (both expressed by characters in plays by Euripides around 400 BC), and with Cicero's later criticisms in *De Divinatione*. Later still an informed critic would have been aware of Hippolytus's "impressive inventory" of the mechanics of deception (Anderson, *Sage, Saint and Sophist* 1994:68), which included faking the famous drawing down of the moon. But there was no general disbelief in divination. In all cultures it was normal to abuse individual seers as a way of explaining failures while allowing the belief itself to remain intact and nonfalsifiable (Flower 2008:ch.5).

8.9.4.12 Arguments from Pico against divinatory astrology

The Italian scholar Giovanni Pico della Mirandola (1463-1494) raised many objections to divinatory astrology (which he lumped together with judicial astrology of all kinds) in his 12-volume *Disputationes adversus astrologiam divinatricem*. Ironically all are still applicable today:

- Not based on observation (because too complex) but on number mysticism and fallacious analogy.
- Astrologers disagree widely on method and interpretation, eg Ptolemy rejects what Dorotheus accepts.
- Absurd ideas, eg the sky has no inherent properties.
- How can a fortunate hour for starting a journey make it safe and comfortable?
- Predictions rarely come true and then only by chance or ambiguity.
- If astrology merely reinforces wise judgement, what has been gained?
- If astrology contradicts wise judgement, why trust it over reason?
- The stars can act only by light and motion (gravity), which apply universally not individually.
- In any case the required accuracy in celestial positions is not achievable.
- Analogy can prove anything, eg life began in the sea so the zodiac begins at Pisces.

From Pico in Shumaker, *The Occult Sciences in the Renaissance* 1972; and Garin, *Astrology in the Renaissance* 1983.

At the time astrologers had no answer to Pico's arguments, so they were the basis for most subsequent attacks. Today Pico's arguments are either ignored by astrologers or answered in ways which imply that at least some of them believe in divine entities:

8.9.4.13 How many astrologers believe in divine entities?

Among modern astrologers a belief in divine entities is quite common. Ankerberg and Weldon interviewed nine lecturers at the 1988 AFA Convention and found that seven "claimed spirit guides or were spiritists, and another was involved with spiritistic literature". One in four of the astrologers they talked to "freely admitted contacting the spirit world. Many others were evasive, hesitant, or refused to answer", but exactly how they contacted the spirit world was not explained (*Astrology: Do the Heavens Rule Our Destiny?* 1989:219).

Many astrologers have seen gods or spirits as guiding our planetary evolution:

Planets are the vehicles of the great spirits (Alan Leo, *What is a Horoscope and How is it Cast?* 1910:92, which of course reflected the views of the Theosophical Society). ... Each visible planet is the embodiment of a great and exalted spiritual intelligence who is the minister of God in that [planetary] department of His kingdom (Max Heindel, *Simplified Scientific Astrology* 1928:4).

Planets are "spiritual existences ... and their influence is universal" (John Addey, *A New Study of Astrology* 1996:9).

The god responds to our concern and our desire and to our question ... This is the root and origin of what we astrologers do (Geoffrey Cornelius, *The Mountain Astrologer* 1998, see 7.7.1998.3).

[The term] "gods" ... implies that the universe, rather than being an inanimate, mechanical "thing", is alive, interconnected, and pulsating with energy, stories, and meaning (Charles and Suzi Harvey, *Principles of Astrology* 1999:67).

Astrology is ... a demonstration of the Universe as an intelligence that is constantly spreading communication throughout itself to its parts (Rob Hand interviewed by Garry Phillipson, *The Mountain Astrologer* 109, 103-111, 2003:110).

And surveys of astrologers have found support for the role of divinities and divination:

Nick Campion's survey of 783 Western astrologers found that 55% believed in a Supreme Consciousness and 33% believed in a personal god who answers prayer (*Astrology and Popular Religion in the Modern West* 2012:ch.12).

British astrologer Anthony Thorley taped 90-minute interviews with six experienced astrologers and found broad support for the hypothesis "all astrology is divination and, therefore, all astrologers are practicing and experiencing divination" (*Correlation* 24(2), 5-33, 2007).

After four years of observing astrologers in British astrology classes and workshops, Alie Bird found most of them were reluctant to see astrology as divination. Nevertheless it was her observation that "astrology patently is a divination system" (*Astrology in Education: An Ethnography*. DPhil thesis 2006:80).

Danish ethnographer Kirstine Munk talked to astrologers in Denmark, the UK and USA and concluded that astrology is a "divination system ... a means to get new perspectives on life" (*Signs of the Times: Cosmology and ritual practice in modern Western astrology*, PhD thesis, University of Southern Denmark 2007:304, her emphasis).

Some astrology books are said to have been dictated by spirit guides, and some have even been dedicated to spirit guides, for example Joan Hodgson's *Reincarnation Through the Zodiac* (1978) is dedicated "with deep love and gratitude" to her spirit guide White Eagle.

Alan Leo considered these spirits to be benign – mighty angels presiding over our evolution in Wisdom, Power, and Activity. But according to former astrologer Charles Strohmmer, the spirits are not benign, they are "knowledgeable yet deceptive", and astrologers develop:

in a most unthought-of manner: as a spirit medium. Without contact with spirit beings, there would be no astrological self-disclosures. Or if they did come, it would be almost entirely from guesswork; they would be very rare. There would be no self-disclosures to "confirm" astrology apart from the intelligence imparted by these spirit beings to their spokespersons, the astrologers (*What Your Horoscope Doesn't Tell You* 1988:57).

Some astrologers describe how they are helped by spirit guides, for example they will feel somehow "directed" to focus on particular chart factors, or something in a chart will jump out at them, which conflicts with the Golden Rule about using only the whole chart (isolated factors are still isolated factors even when selected by spirits).

Marcus Allen (*Astrology for the New Age* 1979) refers to astrologers being guided by spirits, or what Geoffrey Cornelius (*The Moment of Astrology* 1994:191) calls *daemons*, non-malignant intermediaries between gods and man. Gray Keen, former vice president of the US certification body Professional Astrologers Inc, describes the effect of such guidance on the astrologer:

he knows he has stepped across a divide that separates the material from the mental or unknown [spirit] world ... He will attempt to develop some form of association with this unseen magical power that resides within ... the horoscope he holds in his hand (in McEvers *Spiritual, Metaphysical and New Trends in Modern Astrology* 1988:19-20).

Which is why some astrologers see the chart as a mandala (a circular figure whose design symbolises the universe) that helps them contact the spirit powers that guide a person.

8.9.4.14 Divination today

Divination today is the "practice of discerning the hidden significance of events and foretelling the future" (*Britannica Concise Encyclopedia* 2003:543), "to which many persons frequently resort, but never in terms of discovering the will of the gods" (*Encyclopaedia Britannica* 2002, *Macropaedia* 25:81). Kirstine Munk gives this description of an astrological divination:

the visual symbols, the unusual use of language, the strange metaphors, the semantic "blanks", and the lack of univocal and concrete meaning ... forces clients to actively discriminate and select possibly meaningful elements from the mass of sensory impressions and to constantly organise what they select into dynamic gestalts (*Signs of the Times: Cosmology and ritual practice in modern Western astrology*, PhD thesis, University of Southern Denmark 2007:294)

In her description there are no detectable messages from gods in an unknowable world, only cold reading, unconscious data processing, and seeing faces in clouds. Indeed, it is not unknown for the involvement of gods to be seen as a mistake and a misdirection:

Plato in 400 BC held that divination was not divinely inspired and was just the artless fumbling of human error (Lawrence, *Hellenistic Astrology*, in the *Internet Encyclopedia Philosophy* 2006).

Nearly 2400 years later philosopher Bernulf Kanitscheider says: "Why should we possibly need to introduce the magic [ie supernatural] correlation argument into modern thought, when we can observe no phenomena that call for such supernatural treatment?" (*Interdisciplinary Science Reviews* 18(3), 258-266, 1991:263).

Similarly UK neuropsychologist Nicholas Humphrey notes that our powers of perception have been tested in thousands of experiments using methods exquisitely sensitive to any anomalous information transfer such as ESP or messages from gods. Yet nothing has been detected:

there really are sensory stimuli that people *cannot* see [his emphasis], cannot hear, cannot feel, cannot smell, cannot discriminate, cannot recognise, even when these stimuli are physically distinct and known to another person (*Soul Searching* 1995:139). [Similar observations are made by the astronomer Victor Stenger in 7.7.1990.2]

In other words our inability to detect things *known to be present* is bad news for any claimed ability to detect things *unknown to anyone*. As is the lack of evidence for divine entities:

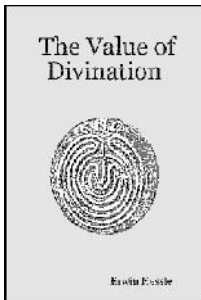
By definition spirits are not physical or material entities. They are incapable of reflecting, refracting, absorbing, scattering or radiating light, and are therefore incapable of being seen. ... They are also indistinguishable from imaginary entities (Nickell and McGaha, *Skeptical Inquirer*, 37(2), 34-39, 2013, based on years of empirical investigations).

If spirits really existed we might expect to know it by now. But a century of parapsychological research, despite quite enormous effort, has found no convincing evidence for their existence (Wiseman, *Paranormality* 2011) although they are a known attribute of fantasy-proneness (Nickell, *The Science of Ghosts* 2012). Indeed, the survival advantage of spirit guidance would be so decisive that evolution would have spread it fairly widely by now, to the extent that no casino or betting shop could stay in business. But they do stay in business. At which point we return to the random-chance model of divination introduced in 8.9.4.1.

8.9.4.15 So where is the value in divination?

Now for a surprise. Regardless of the existence of divine entities, and of putting casinos out of business, seeing divination *only in terms of foretelling the future* is itself highly problematic:

In his 2007 book *The Value of Divination*, Erwin Hesse recaps the problems: (1) There is no evidence that gods exist, or (if they do) that they know the future in contradiction of the laws of physics. (2) They are required to have intimate knowledge of every system and the location of every planet / Tarot card / yarrow stalk / bird in flight, plus control of every diviner so that the appropriate conclusion is reached – all of which is extraordinarily unlikely. (3) If we explain



divination by some attribute of the diviner, that attribute must prevent us from answering our questions ourselves, which again is extraordinarily unlikely. (4) If we explain divination as reflecting the quality of the moment, we have no reason to believe it is better reflected by divination than by anything else happening at that moment including writing down a sentence ("tomorrow I will win a million dollars"). (5) Every system is in principle testable (which box contains the ball?) but not in practice on the grounds that the gods "will not debase themselves in this manner, which is just a little too convenient for the scientific mind to accept" (p.10).

Even if we have no alternative but to accept that divination does not involve gods and is merely a way of investing chance with meaning, Hesse points out that divination can have a more useful purpose. Regardless of the approach (Tarot, entrails, etc), the ritual of interpretation can help the subject to explore unfamiliar viewpoints that might otherwise never be considered (p.11).

In other words the value of divination is not its supposed ability to foretell the future but the expansion it can bring to our awareness and self-understanding. It gives us new viewpoints and perspectives. Of course the same can be said of talking to close friends or reading self-help books or discussing classic novels or travelling in strange countries or subscribing to a course in critical thinking, all of which will give us new viewpoints and perspectives.

But to what extent can each approach expand awareness and what are its particular benefits and liabilities? No doubt different people will prefer different approaches, but until controlled

tests are made we have no objective grounds for choosing one rather than another.

As it happens the process that underlies divination (ie seeing meaning in ambiguous stimuli) also underlies projective tests, where subjects describe what they see in inkblots, incomplete sentences or vague pictures – a process essentially no different from seeing meaning in birth charts or hand prints. Projective tests have been explored during 80 years of development resulting in a vast literature, but the term *divination* is never used due to its supernatural affiliations, so retrieving potentially relevant information from this literature is handicapped. Nevertheless we have a good idea of how divination works (see 8.9.4.18) even though the provision of norms in divinatory astrology (as is common in projective testing, ie using an identical stimulus for all subjects) has so far not been attempted.

That said, studies have failed to show that projective tests such as the TAT (vague pictures) are valid, ie that they measure what they are said to measure. Another problem is that their value depends on the subject and on the skill of the practitioner, so they cannot be evaluated independently of their users. The same of course is also true of astrology, divination, and indeed of all similar techniques such as palmistry and the Tarot.

The above problems are a real challenge to progress in this area. Empirical tests to evaluate the relative merits of divination are long overdue but so far have not been attempted, which of course does not remove the onus on claimants to deliver or the right of critics to expect delivery. For more on this important issue and on the relevance of projective tests to the use of astrology and divination in counselling see 10.3. For empirical tests of the Tarot (with a do-it-yourself visual test) and the I Ching, see 7.2.1986.2.

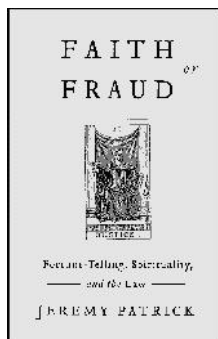
8.9.4.16 Views by the media

The way fortune-telling is reported in the print media was analysed by US psychologist Taryn Lyon (*Beyond the future: Fortune telling as constituted in the media*, Master's thesis, University of Edinburgh 2011). She selected 43 online articles on fortune telling from major international news outlets (eg *Time*) and US news sources (eg *Salem News*) during 2002-2011. All were widely available and were aimed at the average reader. Here (abridged) are her findings:

Fortune-telling was popular – 1 in 7 Americans had visited a psychic or fortune-teller. In parts of New York psychics and tarot card readers exist on almost every block with fees from \$5 to over \$100 . Business was booming despite the 2008 recession as if people were seeking reassurance that a brighter future lay ahead. Fortune-telling was variously:

- A business that earns money and provides popular and positive entertainment.
- A practice that can be legitimate or fraudulent, light-hearted or serious.
- A type of counselling that gives reassurance and peace of mind not available elsewhere.
- An area unconcerned with whether fortune telling can actually tell the future.

Lyon failed to note that the last was potentially misleading because people concerned about fortune telling (by her count 6 out of 7) would not be visiting fortune tellers in the first place.



8.9.4.17 Views by the law

In legal terms divination and fortune-telling can be seen as unorthodox religious beliefs existing at the margins of orthodox religious beliefs. So how do the legal rights of religious freedom adopted in the West affect divination? What do they say about its use? And imply for its future?

These difficult questions are answered by Dr Jeremy Patrick, a US lecturer in law at the University of Southern Queensland, in his 2020 ground-breaking book *Faith or Fraud: Fortune-Telling, Spirituality and the Law*.

The blurb on the back cover describes the book as "filling a major gap in the literature about religious freedom and fortune-telling", and "an excellent piece of legal scholarship".

Patrick looks at the history of divination and fortune-telling laws in the UK, USA, Canada, and Australia, and at many dozens of court cases, to see exactly what is going on, and how far the state can go in determining "metaphysical truth". Because his findings are insightful (and very

precisely expressed compared with most astrology books), and because much is applicable to astrology generally and not just to divination, we look at them in some detail. In what follows Patrick treats the terms *divination* and *fortune-telling* as effectively interchangeable:

The picture is seriously complicated. To start with, jurisdictions at different times in different countries can disagree completely on much the same issue. An 1887 case in the UK and a 1914 case in the USA provide a telling example. Start with the former:

After spotting a newspaper advertisement that offered to cast nativities and answer astrological questions by mail, a police detective posed as a would-be client and made inquiries. The detective was told by the astrologer, who called himself Neptune, that after receiving some basic information he could give "general descriptions of person, the diseases liable to, health, mental abilities and disposition, the occupation most suitable, where and when successful, marriage, travelling, friends, etc., and the events of everyday life". Neptune made it very clear that he considered astrology a science and specifically disclaimed reliance on the "black arts, the spirits of the so-called dead, or the use of any unlawful means" (p.37).

Nevertheless Neptune was convicted as a public nuisance under the UK's 1824 *Vagrancy Act*.

He argued on appeal that he had not actually told a fortune to the detective, that he never purported to have special powers, and that, most importantly, there was no evidence of an intent to deceive because he sincerely believed in the scientific credibility of astrology. Justice Thomas Denman rebuffed the appeal, in words that would be frequently repeated in subsequent cases: "It is nonsense to suppose that in these days of advanced knowledge the appellant really did believe he had the power to predict a man's future by knowing at what hour he was born, and the position of the stars at the particular moment of his birth. No person who was not a lunatic could believe he possessed such power. [Therefore] the appellant had an intent to deceive and impose on the prosecutor" (p.3).

In 1914 New York the situation was the same but the outcome was the exact opposite (this was the famous Evangeline Adams case, see 5.9):

[It] involved an undercover female police agent having her horoscope read by an astrologer, leading to the latter's arrest for violating the state's law against "pretending to tell fortunes". ... The court stated "she claims no faculty of foretelling by supernatural or magical means that which is future, or of discovering that which is hidden or obscure; but she does claim that nature is to be interpreted by the influences that surround it". ... Thus, the defendant was acquitted because "every fortune teller is a violator of the law; but every astrologer is not a fortune teller. There is a line of distinction between the person who pretends to be able to read the future and tell with positiveness what will or shall happen; and the one who merely reads a sign as indicating what ought to happen but is particular to make it plain that he is not attempting to predict future events. The former is a charlatan, an oppressor and an impostor; the latter is surely not a fortune teller as is commonly understood (p.79).

This might seem to reflect the familiar judicial debate about whether honest belief and good intentions by the astrologer is a defence. But the judge did not take this view, stating that:

The relevant question to ask, instead, is whether the predictions were made with certainty and finality (unlawful fortune-telling) or, instead, were made with qualifications of possibility and contingency (lawful astrology) The former type of predictions are bound to be misleading to gullible people, while the latter category represent opinion and advice that have a legitimate place in society. ... [The verdict] was seen by astrologers as a major victory (p.80).

Interestingly, judges could disagree not only on different cases in different countries but also on the exact same case. For example one appellate judge might conclude that no offence was committed because there was no intent to deceive while the other could conclude:

If the Legislature forbids a thing, it matters not that the defendant believes he can do it (p.40).

Patrick points out that it doesn't help that the term "fortune-telling" is never exactly defined. He then looks at why fortune-telling is so popular and pervasive in the West and has not been effectively controlled by legislation opposed to it. He points out that legal cases focus on what the fortune teller did and almost never on why they were consulted, which as we shall see is a fatal mistake. So why do people visit fortune tellers? Patrick suggests three main reasons:

- **Personal support.** The fortune teller is not really predicting the future but offering something far more valuable – reassurance. For stressed clients a confident assertion from a perceived expert brings a welcome dose of optimism and hope, all without the stigma of visiting a trained professional (to say nothing of their high prices), or the risk of visiting friends whose advice is free but who might gossip or be the source of stress in the first place.
- **Entertainment.** Hearing one's future can be an interesting diversion even for disbelievers.
- **Spiritual connection.** A major appeal of fortune-telling for many people is that it can provide a sense of being connected to something larger and loftier than the vagaries of everyday life (all abridged from pp.130-134).

(Which agrees with Lyon in 8.9.4.16 and us in 1.7.2, leading to our conclusions in 11.10 ff.)

Whether these supposed higher forces are conceptualized as God, the Universe, the True Self, Fate, Mother Earth, or something else, interest in divination is often tied up with a person's sense of spirituality. This is usually a spirituality that is almost distinctly non-religious (in a traditional sense) insofar as it does not require doctrine, organization, fellowship, or commitment. It is an individualistic personal spirituality that allows one to feel special and connected simultaneously. The fact that it is an amorphous, idiosyncratic spirituality whose composition and description could vary dramatically does not necessarily make it any less "real" or important to the believer (Patrick, 2020:134).

Indeed, to him the fascinating thing about these three uses of fortune-telling is that:

the question that lawmakers and skeptics are most concerned about – whether the predictions are "real" or "true" – is a thing of trifling importance to most clients of fortune tellers. [They] are far less concerned with accuracy than they are with the perceived emotional, recreational, or spiritual benefits of divination (p.134).

A client's vulnerability to serious fraud, evil curses, and spiritual extortion will of course still justify legal intervention if such cases arise (and they do), but Patrick concludes that laws against fortune-telling are not needed and should be repealed, ie fortune-tellers who operate for profit should be subject only to the same regulations that apply to other businesses.

But that was relevant when astrological claims could not be tested. Today it is different. If a claim can be shown to be false, does this make a difference? We asked Patrick. He pointed out that the law relies on experts rather than direct tests, so the answer was "probably not", which echoes our point in 1.6.4 that true believers are seriously immune to negative evidence.

8.9.4.18 How does divinatory astrology work?

In terms of providing answers to problems, divinatory astrology works in three broad ways:

- (1) The answer is based on **chance** as in tossing a coin and therefore cannot work better than chance. But it may help a person stuck in indecision. Many people feel it is better to make a decision – any decision – than do nothing.
- (2) The answer is based on what the person sees in the **ambiguity** of their **own chart**. It may give new perspectives, but its usefulness depends on the diviner's ability to extract valid information from what is essentially fantasy.
- (3) The answer is based on the **ambiguity** seen in **symbolism** rather than in charts. In principle charts are not needed, and disconfirmed factors are irrelevant. It is here that the similarity to cold reading is strongest. But clients may resist using an approach that lacks the personal touch of their own charts.

The last two are cases of *symbolic healing* where the approach depends on a symbol-filled mythic world shared by therapist and client (a *mythic world* is one with no physical basis but is considered real by participants). The therapist links the client's problems to symbols and then manipulates the symbols to resolve the problems (Dow, *American Anthropologist* 88(1), 56-69, 1986). Thus persistent crying in children can be linked to ghosts (Burma) or night witches (Mesoamerica); Christian sufferers can be linked to Jesus and biblical injunctions; a difficult birth can be linked to heroic characters on a difficult journey (Dow pp.59-60); and particular challenges can be linked to a particular birth chart (or indeed any birth chart, see 8.9.9).

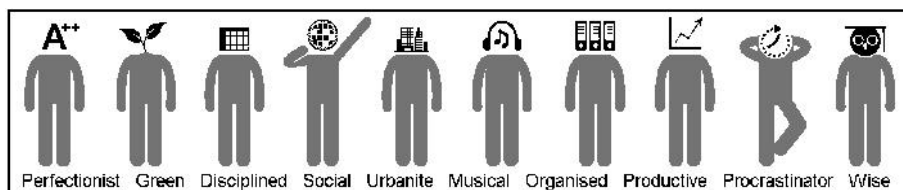
But there is a problem. The client's concerns cannot plausibly be linked to symbols unless both therapist and client believe in the mythic world. Which is problematic because here the mythic world is astrology. It is one thing to claim we can learn about ourselves by following the interaction of Mars and Venus like toy soldiers in a psychological war game, and quite another to claim these interactions are related to what Mars and Venus were doing when we were born. If successful therapy requires acceptance of false claims like the latter, is it ethical?

Or as Cicero put it, what matters is not the soothsaying but the wisdom. Which unsurprisingly is seen as making the difference between an average counsellor and a highly effective one (Hanna and Ottens, The role of wisdom in psychotherapy, *Journal of Psychotherapy Integration* 5(3), 195-219, 1995). Or as one modern astrologer who recognised the problem put it:

Any good I've done as a consultant, and I have done some good, had less to do with my being a good astrologer than with my being a good person (Joanna Ashmun, *The Seattle Astrologer*, 16, 4-5. 1984).

In summary, symbolic healing is a projective device in which the subject sees faces in clouds.

The clouds may be wonderfully rich but they are still clouds whose utility depends on the therapist. People with problems need to learn coping skills but this will not happen unless the therapist is properly qualified. Mere appeals to divination alone are not likely to be helpful and could be unethical. The magic, dear Brutus, is not in our charts but in ourselves.



Unsurprisingly In money matters wisdom is one of 10 characteristics seen as desirable. From www.moneycrashers.com.

8.9.5 Tests of shamanism

If astrology involves spirits it becomes similar to shamanism, of which there are many varieties all with three things in common: **(1)** Belief in spirits. **(2)** Belief that a trance induced by say ecstatic dancing allows the shaman's spirit to enter the supernatural world. **(3)** Belief that the shaman (or "master of spirits") can then treat some diseases and help to overcome problems. US astrologer Jane Evans describes reading a birth chart as a ritual with shamanic parallels:

The astrologer can be taken ... inward to realization. Like a lightning flash that reveals a whole landscape formerly in darkness, insight suddenly illuminates the horoscope giving pattern and meaning to what was hitherto just a collection of symbols ... A door opens to communication with the Inner Self, whether your own or that of the person whose horoscope is being studied (*Twelve Doors to the Soul* 1979:5). [Compare Rose Elliot in 8.9.6.1]

In this view, both shamanism and astrology relate consciousness to a transcendent reality, a divination in which beliefs and expectations (as opposed to reality) are everything. But the reality is little known because anthropologists and sociologists are seldom interested in the truth or falsity of shamanism, only in its social value and the social behaviour of shamans and clients. An exception is the anthropologist Alice Beck Kehoe, who comments:

That shamans really can heal by sucking out or blowing off disease or retrieving souls by interior journeying is well documented. Two scientific explanations account for this: the placebo effect involving hormonal changes induced by emotions, and the fact that many illnesses simply heal given enough time. ... During the time a shaman is being asked to intervene, prepares the ritual, and carries it out, the patient has gained several days of recuperation. Add to that a possible placebo effect from being assured there is likely to be improvement, and many patients do indeed improve after a shaman's therapy (*Shamans and Religion* 2000:28).

Another exception is the French anthropologist Claude Lévi-Strauss, who gives this account of Quesalid, a Kwakiwilt Indian of a century ago from the Vancouver region of Canada. Quesalid was convinced that shamans were tricksters:

Determined to expose them, he found a shaman willing to give lessons, and duly learnt there were indeed many tricks involved. Tricks such as feigning fits, singing sacred songs, inducing vomiting, listening to internal body sounds, being informed about obstetrics, and using spies to obtain information. The best trick of all was hiding a tuft of down in his mouth, then spitting it out covered in blood (after having bitten his tongue) to convince patients that their disease had been removed. Quesalid now had proof of trickery, but by chance he was asked to treat a patient in distress. He did the tuft trick, and was disturbed to find it was so successful that he was hailed as a great shaman.

Subsequently he met shamans from another tribe, but instead of using the tuft trick to show how a disease had been removed, these shamans merely spat into their hands. To Quesalid this was a technique even more dishonest than his own (at least his clients received something). So, as a control, he tried his tuft trick on a sick woman where the spitting technique had failed, and was even more dismayed when the sick woman declared herself cured. Despite his skepticism, Quesalid was able to spend the rest of his life as a successful shaman, never revealing his tuft trick despite approaches from disgruntled colleagues. ... Quesalid did not become a great shaman because he cured his patients; he cured his patients because he had become a great shaman (*Structural Anthropology* 1963:180).

Belief was everything. Spirits were not needed. Yet another exception is *The World of Shamanism* 2011 by Roger Walsh, a professor of anthropology who is also a student of shamanism. In it he reviews the astrological approach and its negative research findings, and concludes:

Sensitive astrologers can offer valuable care, empathy and support. Shamans also offer this, and since astrology is not an essential element of their practice, its negative findings do not diminish the shaman's claims (p.233).

8.9.6 Tests of creativity and fantasy proneness

How could really clever people believe in astrology if it was all artifacts? In his best-selling *Why People Believe Weird Things* 2nd edition 2002:283, Michael Shermer gives this answer:

Smart people believe weird things because they are skilled at defending beliefs they arrived at for non-smart reasons.

In other words because they use the unscientific approach. Clever people focus on hits and ignore misses. They see a pattern, look for meaning (thus creating a belief), and then seek *confirming* evidence. Any evidence will do, any dark shape or distant legend, if it *confirms* the Loch Ness monster or *confirms* Velikovsky's expulsion of Venus from Jupiter. Disconfirming evidence and awkward facts (insufficient breeding population, rocks cannot be emitted by a gas giant) are seen as largely irrelevant. As Bertrand Russell said, *what people want is not knowledge but certainty*. Including the certainty provided by a belief system – any belief system – whose falsity we then automatically resist. Most people can't help it. As in this study:

Psychologist David Perkins (*Outsmarting IQ* 1995) looked at the reasoning used by over 300 people to justify their views. He found that: (1) Most did not realise that being informed was important, and were unable to give reasons supporting a view they disagreed with. (2) Clever people produced more complex support for their views but (contrary to what we might hope) were no more likely to consider opposing views. Their cleverness was used to *preserve* beliefs, not *analyse* them. They needed the critical approach of science (think *disconfirm* not *confirm*).

Studies have also found that we can no more improve our critical skills by reading about them than we can improve our tennis or driving skills, although reading is better than not reading. Our legacy from evolution (we learn mostly by doing) cannot be overcome just by reading, always supposing we could be bothered. The key point is whether we *understand what is going on*, not whether we have learned new facts. Here are two examples:



In her 1991 book *The skills of argument*, Professor Deanna Kuhn interviewed 160 people from different backgrounds to see what evidence they gave for their opinions on everyday matters such as "what causes unemployment". Unexpectedly, most gave what they thought was good evidence, but it wasn't evidence at all, let alone good evidence. They could cope when asked why a ticket was needed to travel by bus. But when asked why some children stay away from school they had only opinions ("because they dislike school"), not evidence such as the results of talking to 100 truants (which for her purpose counted as evidence even if not actually available).



In his 2005 book *Expert Political Judgment: How good is it? How can we know?* US psychologist Philip Tetlock interviewed 284 experts on political and economic trends. They had to estimate the probability that certain events would occur in the not too distant future, such as crisis X in country Y, and the probability of three different outcomes (gets worse, gets better, no change). He obtained over 80,000 estimates that he later compared with reality. Experts performed worse than making all outcomes equally likely. Specialists were not significantly better than nonspecialists. Experts were led astray not by their beliefs but by their reasoning. They resisted having to admit they were wrong, otherwise yes they were wrong but for the right reasons (this is called cognitive dissonance see 9.9.8).

The above studies show that most of us have no idea what sound evidence is. Set us down before artful propaganda and if we don't know any better we will end up hooked. Advertising agencies and scam artists rely on it. They know that clever believers can always find reasons why contrary evidence is wrong, which is why all the critical books in the world including this one will have absolutely no effect on most believers in astrology other than to raise a storm of outrage against what they perceive to be bias, bigotry and ignorance.

Nevertheless the answer to being led astray by our cleverness is the *impartial* collection of sound evidence and its *impartial* but *informed* analysis, as we hope our book demonstrates. Undeceiving ourselves may not be easy but it has never been easier than now.

8.9.6.1 Fantasy-proneness

In a study of hypnosis, Wilson and Barber discovered by accident that some people have what they called fantasy-prone personalities. Their fantasy is as vivid as reality, and they typically see, hear, smell, touch and fully experience what they fantasize. They have many imagined psychic experiences such as voices, visions and getting help from spirits, and they see themselves as psychic. But they have learnt to conceal their fantasy-proneness for fear of being thought weird (in Sheikh, *Imagery: Current Theory, Research, and Applications* 1983:340-387).

To illustrate what it is like, here are examples of fantasy-prone people from Wilson and Barber (in Klinger, *Imagery Vol 2: Concepts, Results, and Applications* 1981:341-387), all female:

As children they would feel as if they were the character (orphan, princess, animal, bird, Cinderella) they were pretending to be. One believed she was a princess pretending to be an ordinary child doing things ordinary children do, such as going to school; when her schoolmates accused her of lying, she brought them to see her imagined castle (actually her middle-class home) and was shocked when they could not see it – it was totally real to her. One 11-year-old was walking her imaginary pet lamb through an imaginary meadow when the sound of horns honking startled her into discovering she was surrounded by traffic in the middle of a busy city street.

As adults they can still pretend to be someone else, say an Eskimo in Alaska, and feel they really are that character, sometimes telling intrigued strangers about their imagined existence. During a conversation they can see, hear, smell, and feel what is being talked about. Even though they fantasize throughout the day, they may also set aside a special time and place just for fantasizing. They can choose a theme, after which they can sit back and watch their fantasies unfold as if at the cinema. They have difficulty driving a car because they tend to see things on the road that are not there. Fantasized lovers are usually more satisfying than real lovers.

Fantasy is seen as the most wonderful thing in their lives "Fantasy is your own private reality ... Anything you believe, if you believe it, it's true". Many would rather be dead than give up their fantasizing.

Fantasy-proneness correlates positively with paranormal beliefs including astrology, psi, and spiritualism (Irwin, *The Psychology of Paranormal Belief* 2009:89-90). The incidence of fantasy-proneness in the general population (about 4%) is provocatively much higher than the incidence of astrologers (about 0.01%) and witch doctors in Africa (about 0.1%). Fantastic claims in astrology about the existence of gods and spirits now seem even more open to question.

In his autobiography *Memories, Dreams, Reflections* Carl Jung (1983:ch.2) tells how he was often overwhelmed by fantasies that sometimes lasted for days. "I have a secret world all of my own". In this world he met four spirit guides (Elijah, Salome, Philemon, Ka) who became his instructors. They told him "Now you possess a key to mythology and are free to unlock all the gates of the unconscious psyche" (p.194). Later, Jung revealed how "All my works, all my creative activity, have come from those initial fantasies and dreams ... Everything I accomplished later in life was already contained in them" (p.217). Nevertheless, for the sake of his career, he kept his fantasies to himself, and did not allow his autobiography to be part of his voluminous *Collected Works*. Jung's experiences are characteristic of fantasy-proneness.

But how might a fantasy-prone astrologer read a birth chart? This account by UK astrologer Rose Elliot (*Astrological Journal* 16(3), 12-17, 1974) would seem to come close:

First of all, I like to absorb the chart completely; like to look at it, not analysing it but allowing the different factors to sink into my subconscious. When the time comes actually to interpret the chart, I concentrate on the centre of the chart, which appears as a kind of golden orb; concentrating on this point in the chart, I feel as if I am *inside* the chart, standing in the centre, with all the planetary forces around the chart playing on me like the rays of the sun ... At a certain point the golden orb I have described opens out, and I find myself standing in a sort of corridor. This corridor represents time ... I can look back down this corridor into the past, and forward to the future. As I do so, certain 'rooms' which open off the corridor, become lit up and I look into them and see a picture, like a cinema ... These always have a bearing on the chart (pp. 12-13).

The client may well find the reading to be fascinating and meaningful, but if they were hoping for factual truth then fantasy-proneness can only add to the misdirection.

8.9.7 Tests of faith healing and prayer

Faith healing is held to work by divine means. US psychologist Terence Hines (*Pseudoscience and the Paranormal* 2nd edition 2003) summarises scientific studies of faith healing, including his own experience of US faith-healing evangelists, but without finding a single case that stands up to scrutiny. Indeed, the evangelists emerge as ruthless con artists:

One point about faith healers cannot be overemphasized: They kill people (p.346).

He notes how the shrine at Lourdes is lined with walking sticks and crutches discarded by those who apparently didn't need them after their visit, but who in reality were experiencing a temporary flow of pain-reducing endorphins induced by the engulfing mass ceremonies. Even if faith appeared to heal say a severe cancer case, there would normally be no way of telling it from spontaneous remission, which is not as rare as commonly supposed – the 713-page 1993 book *Spontaneous Remission: An Annotated Bibliography* lists no less than 3500 cases, albeit many with ordinary explanations such as wrong diagnosis. The odds of a miraculous cure at Lourdes are about one in a million, all involving things like tumours and paralysis but not the regeneration of a limb or severed spinal cord, whereas the spontaneous remission rate of all cancers is between 1 in ten thousand and 1 in a hundred thousand. So it would be unwise to claim that faith is the only possible explanation for a cure.

The celebration of divine existence is an important part of religious prayers. People pray to relieve stress, and offer praise and thankfulness whenever they feel that prayers have been answered. Indeed, faith (ie positive thinking) must always be better than complaining about misfortune (ie negative thinking), none of which is a challenge to physics. But what about *intercessory* prayer, where one prays to benefit another person who is often unaware of being prayed for? Such prayer is a popular form of alternative medicine in the USA (Barnes et al, *Complementary and alternative medicine use among adults* 2002).

In 1872 Francis Galton, the father of modern psychology and modern statistics and cousin of Charles Darwin, conducted the first empirical study of intercessory prayer (*Fortnightly Review* 68, 125, 1872). He reasoned that kings, clergy, and missionaries should have especially long lives because they were so often prayed for. But on examining the longevity of thousands of people in various occupations, he found no difference. Even lawyers (whose longevity might if anything be prayed *against*) lived as long as clergy. Galton was not surprised – if such a link existed, insurance companies would have already discovered it. It is why disasters never lead to *gods* appearing in legal briefs or on official investigators' check lists.

Since Galton's time many other studies have appeared, many of poor quality. A meta-analysis of 15 good-quality studies found no evidence that intercessory prayer worked (*Annals of Behavioural Medicine* 32, 21-26, 2006). One recent blind study took nearly ten years, cost \$2.4 million, involved 1802 patients undergoing heart bypass surgery in six different US hospitals, and prayers by three different US congregations, and found no significant positive effect (*American Heart Journal* 151, 934-942, 2006). For example 18% of the prayed-for group had major complications such as heart attack or stroke vs 13% of the not-prayed-for group.

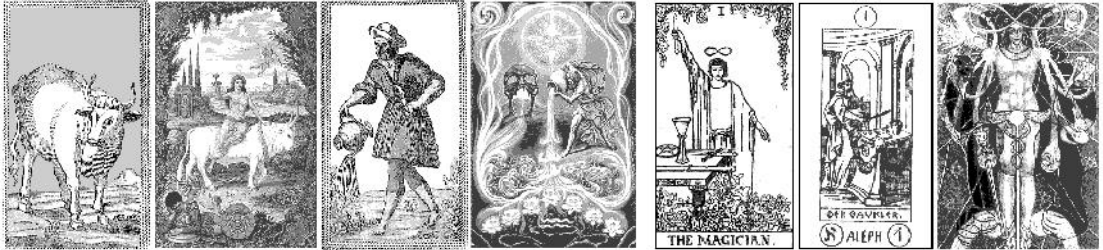
The above findings do not support the idea of divine existence. Of course all claims about faith are nonfalsifiable, since negative outcomes mean only that you have insufficient faith. In the old days having insufficient faith could get you burnt at the stake.

8.9.7.1 Could imagery make a difference?

Astrological imagery (eg *ram, fishes, harmony, energy*) is familiar to most people, at least to believers, but is never featured visually during chart readings in the way that Tarot imagery is during Tarot readings (specific images are printed on every card). Which is why Fred Gettings claims that the Tarot offers many divinatory advantages over astrology, see 7.2.1986.2. Both rely on fantasy, but as noted by Deborah O'Keefe (*Readers in Wonderland* 2003), fantasy is:

not so much an escape *from* something as a liberation *into* something, into openness and possibility and coherence (p.11).

Which is hardly a surprise – anything that explores new areas or prompts new questions is likely to uncover new insights. So yes, imagery could make a difference, but not if you don't accept it (see 8.9.4.15), in which case you pick something you do accept. For example, just as not everyone is suited to, say, meditation, similar effects can be produced by any activity that requires total attention and concentration (Neher, *Psychology of Transcendence* 1990:23-28).



Depictions of symbols are as varied as there are artists. **Left four:** Simplicity (1920s images) vs complexity (1999 Dell *Horoscope* covers) for Taurus and Aquarius. **Right:** Three *Magician* Tarot cards (Waite-Smith 1910, Kurtzahn 1920, Crowley 1940, there are dozens more) from R Decker & M Dummett, *History of the Occult Tarot* 2002:plates). Unlike astrological images, Tarot images are specifically designed for divination, so comparisons should not be taken too far. Nevertheless could immersion in Tarot or astrological images stimulate the imagination and help decision making? Or could this sort of thing be more reliably achieved by talking to wise people? Or by reading classic novels, self-help books, travel books, or books on critical thinking? Would a client really need research to know the answer?

8.9.8 Tests of astrology as a language

"When I use a word", Humpty Dumpty said, in rather a scornful tone, "it means just what I choose it to mean – neither more nor less" (Lewis Carroll, *Through the Looking Glass* 1872).

According to Campion (7.3.2012.1), 87% of 783 astrologers saw astrology as a language. But what does that mean? Is astrology like other languages? The world's 6000 or so languages all have certain things in common. They all have nouns and verbs. Most have words for needed things such as direction (up, down), ways of moving (run, walk), action (arrive, leave), family (mother, son), sensations (hot, cold), life events (birth, sickness), landscape (hilly, level), and of course numbers, animals, clothing, and food (Crystal, *A Little Book of Language* 2010:118).

Most languages (but not astrology) can express *the cat sat on the mat*. Most words have one meaning, thus in Dutch, French, German, Portugese, the words *Maan, Lune, Mond, Lua, Luna* translate 1:1 as Moon. But in astrology the word *Moon* is a symbol that translates as *response, fluctuation* or *feeling*, which according to Bills's *Rulership Book* 1971 can manifest in more than 800 ways from *abscesses* to *yachts*. So astrology is not at all like most languages.

Indeed, astrology is not a *language* of mostly inflexible words but a *literary device* of flexible symbols (ie metaphors, things unlike the original but linked to them by common features) that are not literally true but which participants like Humpty Dumpty can use in whatever way seems meaningful. But as US psychoanalyst RS Wallerstein points out in a study of metaphor in psychoanalysis (*Psychoanalytic Inquiry* 31, 90-106, 2011), in everyday life:

The use of metaphor is so ... commonplace that it is simply not noticed [as in] a local *branch* of this business [or] *sliding* into war (p.91). Metaphor is at the center of the construction of meaning (p.99) [simply because] metaphor makes an *abstraction* more understandable in terms of something more *concrete* (p.100)

But astrological metaphor does the exact opposite, turning something *concrete* (digging your garden) into something *abstract* (Mars). Furthermore seeing digging in terms of Mars invites problems – what we think we know about Mars may not be true, leading to bias and error, as when some astrologers reject factors that others deem essential. The end result is an extravagant mixing of metaphors, of taking the bull by the horns and leaving no stone unturned, never cutting them down before they take root. In other words:

Astrology leads to better Humpty Dumpty effects than ordinary language because it generates better clouds for participants to see faces in. The resulting "surplus of meaning" makes it work (Munk, *Signs of the Times* 2007:295). Thus people deemed by astrology to be Virgos are

actually no more Virgo than non-Virgos, but Virgo is a nice symbol with built-in fuzziness. So astrology is the way to go if you don't know what to say but want your listener to read meaning into it – a point well-illustrated by US horary astrologer RK Alexander in 2.4, and by US astrologer Karen Kissel who explains it in a way most astrologers might identify with:

Astrology is by no means a complete language in the proper sense of the term. What it does offer is an additional vocabulary and partial syntax (ways of combining its terms to form new meanings) which add to our present language. [It serves] as a metaphor (*Astrology as a Holistic Metaphor*, Union Institute, Cincinnati 1976, Introduction pp.3-4).

Note the problem – given the consistent failure of astrology to deliver under controlled conditions, it is evident that "astrology as a language" merely introduces enough fog to conceal astrology's inability to give *factual* perspectives or *factual* knowledge about the "essence of things". Yes, it can stimulate the imagination (and so can fairy stories), but how helpful is the result as opposed to other forms of imaginative fiction? For more on this see 10.2 ff.

In the consulting room, Jacques Halbronn strips the mystique from astrology as a 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. ... it is merely a way of saying things and ceases to be an access to a transcendental knowledge (From the abridged version in English of *L'astrologue face à son client: les ficelles du métier* 1995 at www.astrology-and-science.com).

In other words astrology is completely disconnected from physical reality with rules of interpretation that depend only on each astrologer's preferences. On the other hand this may not be without merit, depending on how you rate this interesting one-liner from France:

Les cadavres exquis boiront le vin nouveau [The exquisite cadavers shall drink the new wine]

It was created c.1920 by French surrealist poets who each contributed an adjective, noun, verb, adjective, or noun, but without knowing what the others had contributed. Nevertheless:

one cannot deny that some of these poems are of ravishing beauty. Who cares about their origin if they manage to please our aesthetic senses? (Nassim Taleb, *Foiled by Randomness* 2007:75).

The same productive ambiguity is true of astrology. Who cares if its language is actually nonsense if it manages to please our demand for meaning (any meaning) in times of need?

8.9.9 Tests of wrong charts

If subjects are not present to confirm their birth data, do astrologers get right answers from wrong charts? This of course would be *totally* against tradition, which holds that right answers can come only from right charts. But if wrong charts work and there is no opportunity for cold reading, their success cannot be due to astrology, daemons, intuition, psychic ability, spirit guides, whatever. The idea might seem difficult to test – what astrologer would willingly read *wrong* charts? – but it happens by accident to most astrologers and is surprisingly common:

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 *Astrological Journal* or *Transit* for a few issues to see them doing it (Terry Dwyer, *Astrological Journal* 28(3), 99,129, 1986).

Techniques that cannot possibly be simultaneously true will do equally good jobs of interpreting the chart (Rob Hand, *Astrological Journal* 30(3), 122, 1988).

Some of the best readings have been with wrong charts (Adam Fronteras). [Astrologers] get *correct* readings from wrong maps on sufficient occasions for it to be, clearly, an astrological phenomenon (Geoffrey Cornelius). Both in Garry Phillipson's *Astrology in the Year Zero*, 2000:118. But when Maggie Hyde asked the horary question "Can we make up charts?" the answer "was a definite no!" (*Jung and Astrology* 1992:158).

Astrology's inherent magic really comes to the fore [when] the wrong chart works; not only works, but works far, far better than the right chart ... I would suggest that all experienced astrologers have examples of this phenomenon (Alie Bird, *Astrology in Education*, PhD thesis 2006:139).

Here are some examples in chronological order that are more specific:

Jerome Cardan (1501-1576) in *100 Genitures*, shows how a chart for 14 December 36 explains why Roman emperor Nero was cruel, lustful, perverse. But the birth date was **18 months** too early. When Cardan discovered that Nero

was actually born on 18 June 38, "He totally expunged his earlier analysis and substituted a totally new figure [birth chart] for the old one" (Grafton, *Cardano's Cosmos* 2001:84).

US researcher Carl Payne Tobey relates "A very prominent woman astrologer told this story about herself. A woman client entered her office. The astrologer took a chart from the files, correctly told the client why she had come, what was occurring in her life, and the ultimate outcome. The client was astonished at how much the astrologer knew about what was going on. After the well-impressed client left, the astrologer discovered that she had withdrawn the **wrong chart** from the files. It was the chart of a different client" (*The New Astrology* 1952:12).

AGS Norris rectified the chart of Winston Churchill (whose birth time was then unknown), saying that if the time "were proved wrong, which is inconceivable, the blow to directional astrology would be a serious one" (*A Very Great Soul: A Biographical Character Study of Winston Churchill* 1957:292). It was subsequently found to be nearly **4 hours** too late. (*Recent Advances* 1977:30 says 2.5 hours too late but this is a mistake.) The recorded time is 1:30 am.

Norris's error was not unique – at least half a dozen other rectifications of Churchill's chart have been published, none of them identical and all of them wrong. For example in February 1965 the Astrological Lodge of London discussed a chart with 23 Leo ascending as determined by the pre-natal epoch, and confirmed by numerous quotes about Churchill's character. Although "the exact time of Sir Winston's birth had never been published, no one present disagreed [with this chart], an event almost without parallel when doubtful times are discussed at the Lodge!" (*Astrology* 39(1), 6-9, 1965:7). But despite the agreement, the time was more than **20 hours** too late.

UK astrologer K Henderson's analysis of Lenin's character and life events used a chart that was **12 days** too early. The angles are roughly correct but the signs, houses and aspects of the inner planets are mostly incorrect. But despite half the significators being wrong they match the character and events perfectly (*Astrology* 45(4), 121-146, 1971).

John Addey comments "After many years as an astrologer I have yet to find a man whose chart was rectified to the same Ascendant by any two good astrologers, whilst I have known some who have had their charts 'rectified' to a **different Ascendant** by each of a dozen leading practitioners" (*Harmonics in Astrology* 1976:164).

The AA's ace rectifier Chester Kemp was able to rectify the chart of a **fictitious person** (CS Forester's Horatio Hornblower) against over 30 *fictitious* major events, all of which fitted with precision and striking symbolism (1976, personal communication for *Recent Advances* p.32).

Ronald Davison in *Astrology* 50(4), 145, 1976 notes that his article on Gurdjieff in *Astrology* 39(3), 83-92, 1965 was based on the wrong birth data. He had used 0h on 13 Jan 1877, concluding "Not only does the horoscope constructed from this data fit the known details of Gurdjieff's life but the alternative dates given by other sources yield unconvincing results" (p.83). Also "A rectification based on events ... puts the local times of birth at 12:39 am (p.84, rectified Ascendant 25 LI 21). But the correct birth data was 0h 13 Jan 1878, a **whole year** different (rectified Asc 17 LI 45).

Christian missionary David Womak studied astrology, and cast hundreds of birth charts. "To my surprise even my earliest charts were fairly accurate. ... And the more charts I did the better I got at it". He also discovered that accurate readings could be made from wrong charts, even when there was no actual chart and he just "**made the whole thing up!**" (*12 Signs 12 Sons: Astrology in the Bible* 1978:16,113,137).

Henri Gouchon counted major aspects orb 2 degrees in the solar returns of 21 fatal aeroplane accidents using 21 **fictitious cases** as controls. The controls had slightly more relevant aspects (86 vs 89). So the value of solar returns is "probably much more feeble than is generally believed" (*Les prévisions a longue échéance* 1980:51-52).

Australian astrologer Doris Greaves gave her chart to six astrologers, giving them a **two-hour** orb either side of her known time. "All gave a different Ascendant and MC, and none rectified to the correct time. Some even gave times before my mother went into labour! ... all using secondary directions to time events" (*CAO Times* 4(4), 7, 1980).

Interpretations in 1981 and 1993 of the birth charts of Prince Charles and Lady Diana **changed** from positive before their wedding to negative after their separation, even though they were the *same charts*, see 8.8.1.

David Hamblin sent a horoscope to a client who reported that "it was absolutely wonderful – all completely true and very helpful" but the birth data was out by **one year** (*Astrological Journal* 24(3), 152-157, 1982).

In *Meridian* 5, 55, 1984, French astrologer Henri Latou notes that the author of a recent article in *Meridian* proves the character of Jean Paul Sartre by analysing his planets in 8th house (which happened to fit Sartre really well). But by Sartre's birth certificate, the time of birth was **wrong**. The correct chart had nothing in 8th house.

German astrologer and psychotherapist Peter Niehenke makes this comment "I saw three different horoscopes for John Lennon (based on three different birth times) all three indicating 'definitely' Lennon's sudden death" (*Astro-Psychological Problems* 1(2), 33-37, 1983). He adds "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 **twenty years** on her birth date" (p.37).

A birth chart carefully matched to events in the life of Pope John Paul II gave a birth date **six days** earlier than the recorded one (HJ Walter, *CAO Times* 6(1), 30, 1984).

Laurie Efrein (*A Magic Moment: Bach and Beyond* 1984) devotes no less than 350 pages to showing how closely Bach's nature and life events fit a chart that is **eight days** earlier than the birth date that is historically recorded (Charles Harvey, *Astrological Journal* 27(3), 189-190, 1985). The difference had nothing to do with the official change in dates

from old style to new style. See also the revealing review in *Astrological Journal* 27(1), 58-59, 1985).

In 1988 readers of Dymock Brose's *Astrologers Forum* were invited to rectify a chart using the dates of 15 major events. Ten responses from rectification experts were received proposing ten different birth times spanning **21 hours**, none of which were within **one hour** of the actual time (which was recorded to the minute).

In 1993 a Dutch booklet *Hoe waar is astrologie?* [How true is astrology?] presented striking matches between the chart of Michael Jackson and his life and character as described in two biographies – except the chart was actually that of the infamous murderer Dr Marcel Petiot born nearly **sixty years** earlier. For details see 7.2.1993.2.

Various astrologers have worked backwards from the life events of Ronald Reagan to produce over 30 different birth times spanning **15 hours**, each one definitive according to the astrologer concerned (a list appears in *Considerations* 9(4), 20, 1994 and is graphed in 8.4.5).

Geoffrey Cornelius shows how the four birth times for Princess Diana (three reported, one rectified) spread over **six hours** show strikingly good (but of course different) symbolism (*The Moment of Astrology* 2003:ch.12).

Previously in 1964 US researcher Garth Allen (Donald Bradley) had made what was possibly the definitive statement about wrong charts, but which evidently had no effect:

How many times have you worked with erroneous birth data and found admirably apt indices for everything that happened in the native's lifetime? We've all had this jarring experience many times in our professional careers, the explanation being that we have so many techniques in modern astrology to draw upon, it is easy to find appropriate planetary 'contacts' for anything and everything, by one method or another. Give me some false data, for instance, telling me that the native was born within 15 minutes of the specified time and, by gum, 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 to what happened – and with multiple confirmation, too, making everybody cluck about how marvelous astrology is. ... Too many times we have found that somebody was really born in 1923 and not 1924; or a rural doctor mistakenly wrote pm instead of am on a birth certificate; or someone who arrived on these shores as a child from eastern Europe was still using the Old Style birthdate written on his original passport; or a birth hour should rightly 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 (*American Astrology* 32(6), 27-28, August 1964).

8.9.9.1 Explaining away wrong chart effects

The ability of astrologers to get right answers from wrong birth charts implies that:

- Astrology doesn't work (at least not factually) otherwise astrologers would get wrong answers from wrong charts.
- If intuition and psychic ability are giving right answers despite wrong charts, who needs astrology?
- Charts are superfluous but are nevertheless necessary if astrologers and clients are to believe in the system.
- Astrology is a useful fiction when the focus is on meaning and not facts, see 10.2.

All of which amounts to astrological heresy. So astrologers usually invoke the usual excuses, namely anomalies in everything including astrologers and clients, see 4.8.2. Or they do a U-turn and dismiss readings as being about visible external events when they should be about invisible inner meaning. Or they argue that chart reading is not a straightforward process (A means B) but is more complex (so A may not mean B after all). When none of these alibis are available they assert that astrology is above empirical tests (no matter that this would deny they could know anything about astrology) or has some mysterious property beyond human understanding that allows it to be right even when it is wrong. Here are some examples:

US astrologer Barbara Koval, in her 1981 book *The Lively Circle* (a response to *Recent Advances*), claims "astrology is a rational discipline" (p.20) and "if it works for enough people it must be true" (p.107). Yet "proof is neither possible or even desirable" (p.4), and "It cannot be stated too often that there is no scientific way to prove astrology" (p.210).

Geoffrey Cornelius agrees that "to a scientific critic of astrology, this [wrong chart effect] appears to push astrology out of the window entirely ... and if natal astrology depended on the physiologically objective time of birth, then wrong maps working would be almost impossible to rationalize and explain". But "this is a poor position for us to take" (*The Mountain Astrologer* 81:1998). He suggests that wrong charts work because daemons help the astrologer to experience the relevant symbolism. Hence the need for an actual birth time "is unnecessary and inhibiting" (*Moment of Astrology* 2003:251). So arguments that rely on their wrongness are meaningless. [In effect the chart is a crystal ball]

Garry Phillipson seems to agree, suggesting that astrology could be based on the untestable assumption of "an animate universe that is capable of furnishing us with signs", and asserting that astrology "hovers on the margins of comprehensibility" (*Correlation* 26(1), 59-64, 2008:61).

But Maggie Hyde notes that a real birth time is "an important ritual ... Without it, we would lack a fundamental rule of the game, like playing soccer without a pitch". She asked the horary question "Can we make up charts?" and the answer "was a definite no!" (*Jung and Astrology* 1992:158). [So give horary another demerit point?]

These arguments might be persuasive if astrology could be shown to work under controlled conditions (which has yet to happen). They are not helped by the typical astrologer's attitude towards factual evidence so well described by former astrologer Joanna Ashmun:

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, [and they] would rather have an iffy quotation from Dane Rudhyar or C.G. Jung to support their opinions than some good research (*Correlation* 15(2), 35-51, 1996:42-43).

A view supported by Austin Prichard-Levy, then owner of Australia's largest computerised chart calculation service:

I often get the feeling, after talking to astrologers, that they live in a mental fantasy world, a kind of astrological universe where no explanations outside of astrological ones are permissible, and that if the events of the real world do not accord with astrological notions or predictions, then yet another astrological technique will have to be invented to explain it (*Australian Astrologers' Journal* 6(3), 19-23, 1982:20).

The above reactions show how completely astrologers are persuaded by their experience and by their ignorance of hidden persuaders. Their experience of astrology is so convincing that they never feel the need for controls. Even *Recent Advances* commented (prematurely) that "charts are often so exactly right in such unlikely ways that coincidence or gullibility would seem to be ruled out" (1977:25). Yet when controls are applied to exclude non-astrological factors, as in Chapters 7 and 8, astrology ceases to deliver results that are literally true. So any claims to factual truth disappear. It is back to the grand delusion of experience:

It is absurd, as well as arrogant, to pretend that [experience] has somehow immunized me from the errors of sampling, perception, recording, retention, retrieval, and inference to which the human mind is subject (US psychologist David Myers, *Intuition: Its Powers and Perils* 1992:175-176).

We end this survey of mind-related factors with a look at where they all come together:

8.9.10 Tests of seeing faces in clouds

When 50 healthy subjects were shown brief pictures of common objects with seven levels of computer-generated distortion, and were asked if they could identify what it was, interesting differences emerged. Believers in the paranormal saw patterns in the pictures more readily than disbelievers, especially in the most distorted pictures, but they were also less accurate.



Three of seven levels of detectability for pictures of a fish and an axe (others were a leaf and a bird). They were presented for 10 milliseconds each starting with the least detectable level, the order of pictures (fish, axe, leaf, bird) being randomised within each level. From Blackmore, *Skeptical Inquirer* 16(4), 367-376, 1992:373.

In other words believers tended to see patterns in ambiguity that did not exist, while disbelievers tended to miss patterns that did exist. Neither can be seen as problematic, since the ability to perceive patterns leads to creativity, and the need for clearer signals leads to proper caution. But the ability to see nonexistent patterns would seem to be especially relevant to the art of astrology. It also explains the widespread belief in the paranormal regardless of whether it actually exists (F Köteles et al, *Scandinavian Journal of Psychology* 57, 313-320, 2016).

8.9.10.1 Test your own seeing ability

Here are five pairs of degree symbols picked at random from Charubel and La Volasfera. The first is followed in *italics* by the second, both condensed as needed to fit one line. At first sight each pair of symbols seem quite different. But can you see any similarities?

Degree	Symbol	Similarity?
11 Aries	A man, fascinated by a telescope, is looking in the wrong end	wrong end
11 Aries	<i>A storm-splintered oak tree on a desolate moorland</i>	<i>splintered</i>

23 Gemini	A man standing on a lonely plain, weeping.	weeping
23 Gemini	A little village lying in a fertile valley	fertility
09 Cancer	A spider intently watching the giddy dance of silly flies	flies
09 Cancer	A series of bubbles floating in the air	in the air
25 Capricorn	A field of ripe corn; the reapers are at work	field
25 Capricorn	A sceptre surrounded by a crown	surrounded
30 Aquarius	A man beneath a shady tree impaled by a shaft of sunlight	sunlight
30 Aquarius	A kind and beautiful woman is standing half clothed	beautiful

You probably found various similarities such as those in the right hand column – and on inspection they do seem rather persuasive. So, despite what astrologer Adriana Carelli says in 8.9.3.1 about Charubel and La Volasfera having nothing in common, the symbols do seem to show some agreement. Is this proof of your ability to see faces in clouds?

Actually yes, because (just for the exercise) the La Volasfera symbols have been shifted one place downwards, so the La Volasfera symbol labelled *30 Aquarius* is actually the symbol for *11 Aries*, and so on. The similarities exist only because we are good at seeing faces in clouds.

And in terms of providing clouds for us to see faces in, degree symbols have much merit. Look at these ones specially designed "to inject value and vitality into your chart readings":

01 Aries	Fire takes the path of cats whiskers
06 Taurus	The accountant's figures lead to cream cakes
23 Gemini	Astrologer with a phone glued to each ear
15 Cancer	A nest of decaying moss falls in rain
11 Leo	Exhausted comedians play to an empty hall
24 Virgo	Mop and bucket sing to an empty freezer
13 Libra	A twisted fence lies rotting in quicksand
09 Scorpio	A leather whip talks softly in a crowd
14 Sagittarius	A flying carpet dances with clouds
17 Capricorn	Banana skins in the corridors of power
12 Aquarius	Man eats chicken bone watched by a dog
05 Pisces	A drunken man remembers yesterday

The above degree symbols are actually examples of satirical humour by UK astrologers from *The Impractical Astrologer II* 1996:16 (ed. Kim Farnell). But they make the point. As does this test by Lore Wallace, book reviewer for *Astrology Now*, of the degree meanings that were the subject of David and Gina Cochrane's 1979 book *New Foundations for Astrology*:

I tested [the] degree meanings (not stated in the book title) with a friend. He gave me, one-by-one, the planetary positions in his horoscope; I read him degree meanings from this book. He was delighted and ready to buy the book, because he felt so accurately described by what I had read. But wait! I had read him *degrees at random* rather than the ones for his particular positions! He was stunned. ... the short sentences for each degree of the zodiac are written in such a way that they resemble the daily horoscopes in newspapers: they are so general that most readers can identify with some or all of the statements. Degree meanings are tricky business. The obvious good intentions of this book are not enough to reach the goal of reliable illumination (*Astrology Now* 24, 11, Jan-Feb 1979).

The Cochranes' degree meanings were based on combining the Hindu system of divisional charts (ie harmonics) with modern harmonic degree analysis based on number symbolism. That is, they analysed each degree by its "harmonic energy and function" to give a guide to its meaning. The results fill 96 pages, but evidently the new foundations thereby attained were no better than the old. But they still work because of our ability to see faces in clouds. And not because there is any real truth in degree areas. Consider this:

Degree areas favoured in small samples are invariably not confirmed in large samples. For example in 1923 Charles Carter (then the UK's most eminent astrologer) found that the charts of a dozen leading astrologers had an emphasis "beyond question" around 27° on the Leo-Aquarius axis (*Encyclopaedia of Psychological Astrology* 1963:38), which was quoted in many astrology textbooks as indicative of astrological ability. But they were not among the most-occupied degrees of the 385 astrologers analysed by PJ Carruthers, *Astrology* 45(1), 3-8, 1971. Here the top degree in his sample was 9° on the Cancer-Capricorn axis.

Similarly Carter's degree areas for medical ability, religion and scientific interests were not significantly more occupied than others in the charts of 6877 US doctors, 7302 UK doctors, 7012 clergymen, 4693 chemists and 14781 engineers (*Recent Advances* 1977:451). Nor did they agree with the degree areas derived in a similar way by avid data collector and degree-area enthusiast Maurice Wemyss (*The Wheel of Life* Volume 3, c1930). For example for religion Carter's 21° LE-AQ and 13° GE-SG did not agree with Wemyss's 18° CN-CP and 25° GE-SG.

Finally, if degree areas have any influence, they must by definition enhance the similarity between time twins. But no such similarity has been found in large samples, see 8.7.

8.9.10.2 Challenging the faces-in-clouds idea

In 1983 the idea that astrology boils down to seeing faces in clouds was directly challenged by the \$US5000 superprize competition sponsored by Astrosearch Computer Services, Recent Advances (both in Australia), Phenomena Publications (Canada), the AA (UK), ACS, AGS, ISAR, Matrix Software, Polakoff Foundation, M dar Boggia, M March, and Lcdr D Williams (all USA):

"The superprize will be awarded for convincing [ie convincing to the judges] evidence that the accuracy of chart interpretations cannot be explained by non-astrological factors [ie artifacts]". The interpretation could be of any kind but subjects had to be typical of those who visit astrologers so the results would be of maximum relevance to everyday practice (Dean and Mather, *Astrological Journal* 25(3), 203-210, 1983:209, with results in issues through 1987).

Regardless of how astrology worked, to win \$US5000 – then the world's biggest astrology prize – entrants had to show it worked when artifacts were controlled as in a matching test. If it succeeded then the idea of faces in clouds would be discredited. What could be easier?

Comparable prizes had also been offered by US astronomers Culver and Ianna in *The Gemini Syndrome* 1979/1984 (all fees and expenses would be paid for each success in mutually-agreed tests of astrological claims, but no takers in over thirty years other than a few enquiries and a few attempts to alter the rules in ways that were unacceptable).

In 1982 the *Centre Belge pour l'Etude Scientifique des Influences Astrales* offered 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, a topic that makes the superprize look like child's play. Not surprisingly the response was too poor to justify awarding the prize. However 25,000 Belgian francs was offered to assist research by entrant Nick Kollerstrom on planet-metal relations provided it followed the judges' recommendations (he thought about it but eventually decided against it). It was hoped to re-run the prize in due course, but no re-run has been announced.

Prizes offered for proof of paranormal claims including astrology include *Quebec Skeptics* (\$Can100,000), *Australian Skeptics* (\$A100,000), *Indian Skeptics* (Rs100,000), and *James Randi Educational Foundation* (originally \$10,000, now \$1,100,000). No entries have been successful in validating astrological claims.

News of the superprize appeared in astrology journals in Australia, Canada, France, Germany, The Netherlands, New Zealand, the UK and USA, 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 the breakdown of topics was roughly one third personality, one third events,

and one third other areas such as synastry and horary. Many supportive 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 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).

The superprize via pro formas with carbonless copies required the judges to indicate yes/no to the five main aims. By 1984 it had required three months of full-time admin work and \$350 for postage, stationary and photocopying.

In due course 34 entries from seven countries were received totalling over 1500 A4 pages plus several in book form, which was an encouraging response. But only one entry was successful. This was a 17-page control entry disguised as a genuine entry and sent to all judges. It was designed to address hostile views from astrologers about the superprize such as views like these:

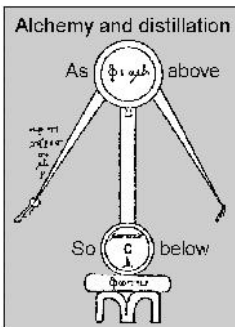
Astrology Superprize	
<p>To Entrants: please send me three copies and one copy in plain text to the judges below. The results will be sent to you as soon as possible.</p> <p style="text-align: right;">Judge</p>	
<p>To Judges: please read the accompanying entry and round your judgement below. Three sets for me, one each for Geoffrey Dean, Box 586, Station #508, Windsor, Australia. Please enter on full.</p> <p>Date entry sent: The list called in by judge: by the judge on: Date judged:</p>	
Aim of Entry	Your judgement
1. To used acceptable standards of continued accuracy.	Is it clear what was done? <input type="radio"/> Yes <input type="radio"/> No
2. To show that the accuracy of chart interpretation.	Does entry address clear astrological issues? <input type="radio"/> Yes <input type="radio"/> No
3. To present the evidence by the astrological method.	Does entry address non-astrological factors? <input type="radio"/> Yes <input type="radio"/> No
4. To use astrology to help control in their own event interpretation.	Do the entries need this encouragement? <input type="radio"/> Yes <input type="radio"/> No
5. To provide something new for charts 2 and 3 above.	Is this evidence convincing? <input type="radio"/> Yes <input type="radio"/> No
Comments to superprize host from judge entry via (20)	

- Who are these men to set themselves up as arbiters of truth? (Koval, *American Astrology* September 1983:18-19).
- The superprize is a "stacked deck" because some judges are not impartial (Jawer, *Fraternity News* 5(4), 51, 1983).
- The superprize is rigged and unwinnable (Melton, *Mercury Hour* April 1984:17-18 and April 1985:1-2).
- The idea is ridiculous and has been boycotted (Al Morrison see 7.7.1985.1).

and especially to test Dennis Elwell's claim that the prize was unwinnable (and therefore of potential harm to astrology) because appropriate tests could not be designed and the panel of eight judges was not impartial (the judges were Professors Roger Culver, Hans Eysenck, Ivan Kelly, Ulrich Mees, Marcello Truzzi; Dr David Nias, Michel Gauquelin, and Charles Harvey):

The control entry was a study of transits that supposedly showed a strong positive correlation ($r = 0.5$) with life events. It included everything that a good entry should have such as a literature review, adequate sample size, controls, statistical analysis, and a replication. It was not flawless (too good a result might have aroused suspicion) but it was certainly good enough to merit approval from an impartial judge. According to Elwell the judges should have found any excuse to reject it. In fact they said: "Satisfies the requirements" (Culver). "Would certainly qualify for the superprize" (Eysenck). "A promising study" (Kelly). "Fully convincing, I hope it succeeds in the astrology superprize" (Mees). "An impressive quality study demanding independent replication" (Truzzi). "The best study so far" (Nias). "Interesting, the best I have read" (Gauquelin). There was no comment from Harvey despite a 6-month wait.

Consolation prizes of \$200 each were awarded to six entries that failed to meet the requirements but showed good design or sheer hard work that, in the opinion of the judges, deserved recognition. The sponsors agreed to make the remaining money (nearly \$3000) available for a prize to be devised and administered by critics of the superprize, so they now had a chance to put their ideas into action. The only provisos were: (1) the new prize be addressed to validating everyday practice, (2) it has the approval of the sponsors, and (3) details be available for publication before the end of 1986 (then two years away). In two years there was no response, so the offer lapsed. (Ibid)



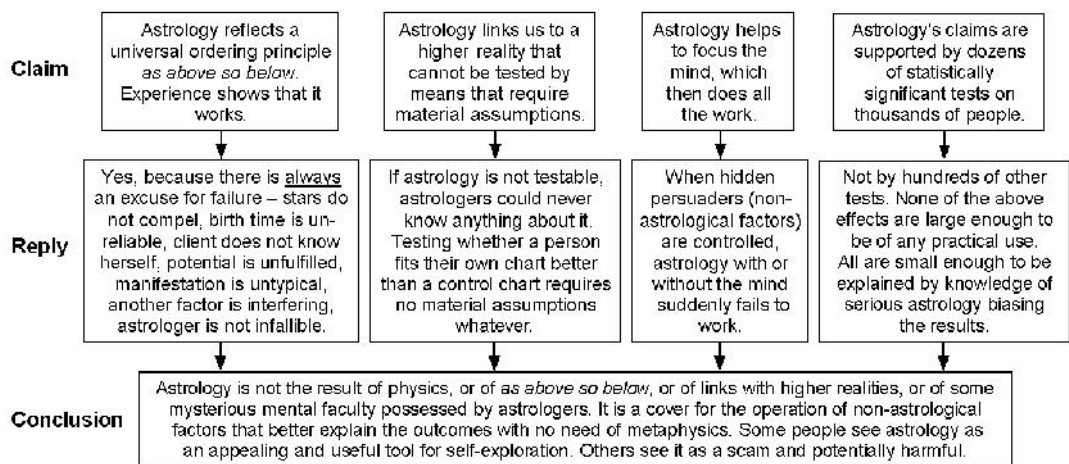
In other words this international response to the world's then biggest astrology prize failed to disconfirm a very simple hypothesis – that astrology is the result of artifacts, not the result of *as above so below* or whatever. It explains very convincingly two key observations:

- The universal experience of astrologers that astrology works.
- The failure of astrology to work when artifacts are controlled.

Instead astrology is simply a time-honoured cover for the operation of artifacts that better explain the outcomes. So the claim that astrology involves *as above so below* (or special mental faculties or links with the divine or other mysteries) achieves only smokescreen status.

8.9.10.3 Verdict of Chapters 7 and 8

Here is the verdict of Chapters 7 and 8 and the main arguments on which it depends. Claims by astrologers (top) are followed by replies (middle) and conclusion (bottom):



Some astrologers will no doubt see this conclusion as confirming the inability of critics to open their closed mind. The next chapter looks in detail at the role of artifacts.

8.10 RESULTS AND REFERENCES FOR EFFECT SIZES

8.10.1 Can astrologers match birth charts to owners? Results of 70 studies

Effect sizes are calculated as k if Exp (expected frequency) = $N/2$, or as $r = \sqrt{(\chi^2/N)}$, see 8.2.1, where N = number of charts, with correction of $|Obs-Exp|$ for continuity if >0.5 . *Correl* indicates r is by direct correlation. $10 \times n$ indicates 10 sets of n charts, the astrologer picks the best match out of n . Studies not blind or without controls are not included. *indicates that N is now the number of astrologers because the number of charts is too small for this particular test. For more information see references in 8.10.2 especially those for Gauquelin and Timm & Köberl in the first part.

ID	Year	Source	Agreement between astrologers	N=no of charts	No of astrol	Hits Obs/Exp	Effect size	Criteria involved in matching birth charts
01	2003	Astrology-and-science website		24	1	11/12	-.083	Extremes on 15 traits
02	1976	Astrology Now <5yr experience		10 x 2	23	5.70/5	.139	Repeat of Clark 1
03	1976	Astrology Now >5yr experience		10 x 2	26	5.62/5	.123	Repeat of Clark 1
04	1981	BBC Behind the Horoscope		10	4	1.25/1	.028	Case histories
05	1992	Berzins		39 x 2	1	28/19.5	.436	2 charts vs 1 owner in person
06	1985	Carlson		114 x 3	28	40/38	.028	3 sets of CPI scores
07	1961	Clark 1		10	20	6.4/5	.280	Occupation (2 x 5 charts)
08	1961	Clark 2	.127	10 x 2	30	7.2/5	.440	Case histories
09	1961	Clark 3	.124	10 x 2	20	5.9/5	.180	High IQ vs cerebral palsy
10	1961	Colombet		5	6	2.2/2.5	-.120	Repeat of Clark 1 first 5
11	1976	Dean & Edwards		12	3	7.70/6	.282	29 traits via inventory
12	1976	Dean & Edwards		4	8	2.28/2	.138	15 traits via inventory
13	1979	Dean & Spencer		10 x 2	1	5.5/5	.100	Schizophrenia double blind
14	1986	Dean E	.160	120	45	60.3/60	.004	Extreme EPI E scores
15	1986	Dean N	.046	120	45	60.6/60	.010	Extreme EPI N scores
16	1982	Dean on tour in USA	.186	18	12	9.29/9	.032	Extreme EPI and EPQ E,N,P
17	1984	Dean on tour in Aus	.181	17	6	8.06/8.5	-.052	Extreme EPI and EPQ E,N,P
18	1995	Dudley		20 x 2	1	11/10	.100	Accidental death (Vedic)
19	2004	Ertel		66	1	31/33	-.061	Paint,polit,writ,ordin people
20	1998	Ertel Astro-Quiz	.056	40	11	21.4/20	.068	Eminent painters vs politicians
21	1980	Fourie et al	.099	48	2	correl	.077	16PF all scales
22	1950	Gauquelin		40	1	18/20	-.100	Murderers vs ordinary
23	1966	Gauquelin		3 x 2	14*	0/2.33	-.200	Celebrities vs ordinary
24	1981	Gaynor	.297	54	3	19.7/17.1	.086	Five E inventories
25	1984	Ianna & Tolbert		28	1	7/7	.000	Repeat of Randi 1983
26	1975	Joseph	.091	10 x 2	23	5.26/5	.052	High IQ vs severely retarded
27	1980	Kranz	.087	60	6	31.3/30	.044	Personality & interest scores
28	1983	Lilley-Harvey	.195	3	17*	6/2.83	.422	3 charts vs 3 case histories
29	1984	Lilley-Harvey		3	13*	2/2.17	-.035	3 charts vs 3 case histories
30	1985	Lilley-Harvey		3	7*	2/1.17	.126	3 charts vs 3 case histories
31	1975	Macharg	.167	30	10	15/15	.000	Alcoholism (MMPI = 87% hits)
32	1990	McGrew & McFall 1	.030	23	6	11.7/11.5	.015	) Whatever was requested
33	1990	McGrew & McFall 2		25	6	10.6/12.5	-.150	) + photos and test scores
34	1988	Müller 1 = Boer		6x2.4av	team	5/3.67	.284	Accident proneness
35	1988	Müller 2		7 x 3	team	1/2.33	-.252	Accident proneness
36	1992	Müller & Ertel 1		21 x 2	7	9/10.5	-.143	) Notable physicians with
37	1992	Müller & Ertel 2		15 x 2	7	6/7.5	-.200	) precise times vs controls
38	1996	Nanninga	.010	7	44	0.75/1	-.042	Whatever was requested
39	2009	Narlikar 1		200	team	102/100	.020	Bright students vs retarded
40	2009	Narlikar 2		40	27	17.2/20	-.115	Bright students vs retarded
41	1985	Neher 1		6	1	1/1	.000	) Case histories via
42	1985	Neher 2		5	1	2/1	.250	) custom questionnaire
43	1987	Penguern		51	1	14/16.1	-.067	Death by cancer 2x2 phi
44	1977	Press 1a	.028	10 x 2	16	5.44/5	.089	Suicide vs non-suicide
45	1977	Press 1b	.225	10 x 2	6	6.29/5	.257	Same with death data
46	1977	Press 2a	.064	10 x 2	13	4.54/5	-.092	Suicide vs non-suicide
47	1977	Press 2b	.087	10 x 2	13	4.62/5	-.077	Same with death data
48	1977	Press 3a	-.001	10 x 2	9	5.50/5	.111	Suicide vs non-suicide
49	1977	Press 3b	.029	10 x 2	7	5.00/5	.000	Same with death data
50	1977	Press 4a	-.071	10 x 2	6	5.33/5	.067	Suicide vs non-suicide
51	1977	Press 4b	-.047	10 x 2	5	5.40/5	.080	Same with death data
52	1992	Quebec Skeptics		7	1	5/3	.433	Pick 1 of 7 chart readings
53	1983	Randi		5	1	1/1.25	-.067	Appearance vs 4 birth times
54	1983	Roslund	.200	30	2	9/7.5	.077	Murderers vs secretaries
55	1975	Ross	.253	102	2	correl	.084	Psych Screening scores
56	1999	Smit/Knegt 1	-.002	5	21*	5.8/4.2	.131	) Case histories & specific
57	2000	Smit/Knegt 2		5	8*	0.6/1.6	-.156	) items that Knegt had hit
58	1983	Steffert hobbyists	.031	20	17	10.4/10	.041	Marital happiness
59	1983	Steffert professionals	.018	20	10	11.6/10	.160	Marital happiness
60	1986	Timm & Köberl 1	.113	2	61*	28/12.3	.621	Pick 1 of 5 case histories
61	1986	Timm & Köberl 2	.106	6	69*	14.8/13.8	.038	Pick 1 of 5 chart readings
62	1986	Timm & Köberl 3	.048	7	48*	12.6/8	.229	Match 3x3 case histories
63	1986	Timm & Köberl 4	.113	1	46*	12/9.2	.125	Pick 1 of 5 personal events
64	1983	Tyson		15	1	correl	-.198	5 SAPQ scales (easy to grasp)
65	1996	Van de moortel 1		5	14	1.21/1	.105	) Attractiveness by chart vs
66	1996	Van de moortel 2		4	14	0.73/1	-.156	) later actuality in person
67	1979	Vidmar	.101	5 x 2	28	3.4/2.5	.160	Case histories
68	1972	Werthmann		29	1	18.3/14.5	.241	Case histories
69	2004	Wunder 1		40 x 2	14	21/20	.050	Case histories
70	2004	Wunder 2		25 x 3	1	7/8.3	-.079	Which birth time is correct?

Can subjects pick own chart reading?

Tests where cues were unlikely or were controlled

Year	Author	*	Subjects		Hits (1st choice)		Effect size	
			x	Charts	Obs	Exp		
1974	Best	a	24	x 8	1	3	-.252	
1985	Carlson	a	83	x 3	28	27.7	.008	
1978	Cummings	a	12	x 3	4	4	.000	
1986	Dwyer	c	30	x 2	15	15	.000	
1983	Dwyer & Grange	c	34	x 3	10	11.3	-.081	
1987	Kohler & Leopold	b	26	x 4	8	6.5	.133	
1981	Lackey	b	38	x 2	19.5	19	.026	
1980	Neher	a	18	x 6	3	3	.000	
1973	Tomalin	a	7	x 7	1	1	.000	
1984	Tyson Subjects	a	15	x 5	2	3	-.167	
	Peers	a	14	x 5	3	2.8	.036	
2002	Wunder	c	146	x 2	77	73	.055	
2008	Wyman & Vyse	c	52	x 2	24	26	-.077	

			Mean unweighted by sample size (sd 0.100 N 13)					-.025

Tests where result was likely inflated by cues

Year	Author	*	Subjects		Hits (1st choice)		Effect size	
			x	Charts	Obs	Exp		
1983	Dean	-	12	x 1	8	1	**	
1988	Klein Females	a	64	x 5	24	12.8	.437	
	Males	a	58	x 5	17	11.6	.233	
1979	Krippner Knew Sun	a	8	x 8	2.5	1	**	
	Knew SMA	a	8	x 8	2	1	**	
1986	Marbell Test 1	a	5	x 3	5	1.7	**	
	Test 2	a	9	x 3	4	3	.236	
	Test 3	a	9	x 3	4	3	.236	
2002	Wunder	c	76	x 2	46	23	.659	

			Mean unweighted by sample size (sd 0.187 N 5)					.358

* Readings were prepared by: a astrologer, b from books, c computer.

Likely cues in the above studies

In Dean Three astrologers interviewed 12 subjects (one per Sun sign, most knew its meaning). The astrologers then tried to guess the subject's Sun sign. Dean was an observer
 In Klein Prior knowledge and collusion was not controlled.
 In Krippner Subjects knew their Sun sign or their Sun, Moon and Ascending signs.
 In Marbell Sun sign statements were included in the interpretation.
 In Wunder At least some subjects knew their birth charts.

8.10.2 References for the above effect sizes

Can astrologers match birth charts to their owners?


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9. ARTIFACTS IN ASTROLOGY

The secret life of artifacts that mimic astrology. Or why astrology cannot fail to work

<p>ASTROLOGY AS USUAL</p> <p>Believe me – everything that happens in the heavens above is a sign of changes on the Earth below. The reading was a hit, so we <u>know</u> that astrology must be true!</p>	<p>Astrologer Client</p> 	<p>ARTIFACTS AS USUAL</p> <p>Except that as a control I deliberately gave you someone else's birth data. The reading cannot be a genuine hit, so why should I believe what you say?</p>
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An artifact is something artificial that, until recognised, is mistaken for something natural.

- In *archaeology* it is usually spelt *artefact* and is something made by a person such as pottery.
- In *biology* it is something not present in live tissue, such as marks due to staining.
- In *psychology* it is an artificial result of the procedure. Thus the average height of men after excluding tall men would be an artifact of the exclusion.
- In *astrology* it is a non-astrological factor (such as one not involving *as above so below*) that gives an astrology-like outcome. Artifacts can persuade us that astrology is working when it is not working.

9.1 Artifacts can take a long time to be recognised

The Cottingley fairies took more than 60 years. Fox sisters and the spirit world took 40 years, as did Piltdown Man and SG Soal's supposed evidence for psi. It took 60 years for Dr d'Aute Hooper's 1919 spirit photograph and the 1934 Loch Ness monster photograph to be seen as fakes. The sheep-goat and decline effects held to support ESP in card guessing lasted for more than 60 years before being recognised as the result of personality variables that either tended to match or not match the limited chance variations possible in 25 Zener cards. Most of the artifacts in the nine promising areas of astrology in 5.22 averaged 40 years before discovery.

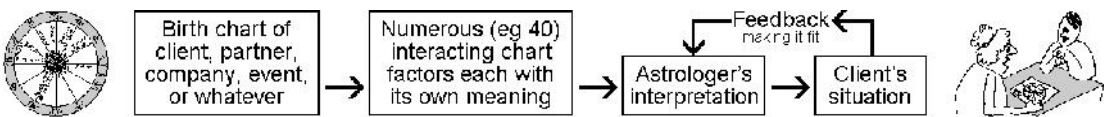
In each case personal experience was fooled by the artifact. So how robust is experience?

9.2 The grand delusion of personal experience

In the 1987 reprint of Ronald Davison's 1963 paperback *Astrology* (100,000+ copies sold), US astrologer Stephen Arroyo tells how it persuaded him and his friends to believe in astrology:

We would look up, for example, the person's Mercury sign, and then go through the columns of keywords, constructing phrases and discussing whether these phrases indeed described the person's nature, character, motivations, needs, and so on. 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 (p.x).

That is how people experience astrology when reading astrology books. Their experience of astrology when consulting an astrologer in their consulting rooms looks something like this:



and it feels like this (from Dr Bernard Rosenblum (*The Astrologer's Guide to Counseling* 1983), a US psychiatrist who visited an astrologer and was so impressed that he later used astrology in his practice for "the excellent contributions astrology can make to human understanding"):

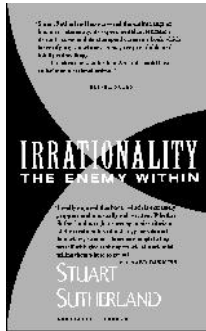
It was all pointedly meaningful to me -- and surprisingly specific. The usual criticism of astrology, that it produces a variety of generalities that can refer to almost anyone, was suddenly, in my mind, relevant only to newspaper and magazine types of astrology and no longer to the experience of going to a competent astrologer (p.4).

In both cases the experience of astrology is utterly convincing. How could there be problems?

9.3 Blame it on evolution

We humans are designed for a world that no longer exists, a world where survival depended less on reason and more on blind reaction. Shapes in the tall grass might be rocks or lions, but running was safer than reasoning. A man seeking to escape by reason alone did not live long.

It was better to see a few non-existent patterns than miss a real one. If shouting or praying during an eclipse was followed by the sun's reappearance, then people learned to shout or pray whenever there was an eclipse. Obviously it worked! But was it rational?



One of the few valid generalisations in social psychology is the "principle of certainty", which says that when evidence exists both for and against a belief, most people show not low levels of certainty, which would be appropriate, but high levels of certainty either for or against, which is not appropriate. For such people it is better to be wrong than uncertain.

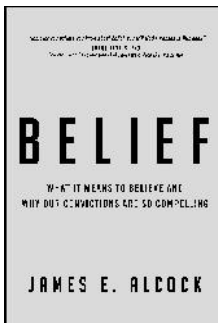
This extremely readable 1992 survey of human irrationality by the British psychologist Stuart Sutherland is packed with examples every inch of the way. You see immediately how easy it is to deceive yourself. In the cover blurb at top the neurologist Oliver Sacks says "It makes one wonder how Aristotle could have called man a rational animal".

Today we have to cope with modern living using a brain designed for a quite different world. We still see non-existent patterns in noise but now it is more important. Among other things it means we can see astrology where it does not exist.

If this seems preposterous, listen to Gergen et al (*Journal of Personality and Social Psychology*, 1986, 50, 1261-1270). They asked university students to explain how certain character traits could explain certain behaviours, all of which (unknown to the students) had been picked at random. The results showed that any trait could plausibly explain any behaviour including opposite behaviours. For example, the *hostile* person (read Mercury square Mars) *avoids social groups* because he hates people, and *seeks social groups* because he needs people to attack. The students could readily find up to six plausible explanations for any random combination of trait and behaviour. No wonder the experience of astrology can turn us into believers.

9.3.1 The nature of belief

Our thoughts, feelings and actions respond not to the world as it *actually* is (for we are unable to know reality directly) but to the world we *believe* it to be. Whether or not they are based on reality, beliefs are all we have. True or false, beliefs explain our world, and when the explained world seems to make sense we generally feel comfortable and at ease.



False beliefs can serve us well at times, as when a magical amulet makes us calm in a crisis, or they can lead us seriously astray as in propaganda.

For successful [political] propaganda: Avoid abstract ideas and appeal instead to the emotions; use stereotyped phrases and avoid objectivity; put forth only one side of the argument; constantly criticize enemies of the state; focus on a particular enemy for special vilification (JE Alcock, *Belief* 2018:205). [Most astrologers follow this pattern quite well]

Beliefs provide a comforting structure to our lives that is easy to defend against challenges that see them as ill-founded (people that hold them will not see them as ill-founded – think of your own beliefs). Indeed, beliefs can survive even when the original supporting evidence has been demolished, see 9.9.8. If you must battle entrenched beliefs the best approach is to teach people, especially young people, not *what* to think but *how to think critically*. Alcock (2018:531-532) lists useful strategies against being fooled that should help anyone become a better critical thinker:

Recognise that everyone can be fooled. • Be wary of your inner voice . • Beware testimonials, single sources of information, coincidences, premature judgement. • Ask "compared to what?" • Insist on controls and the whole picture.

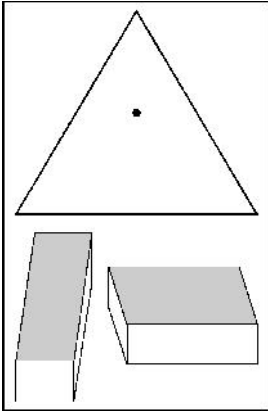
Do they work? Test them against these claims. A critical response is in italics:

- In my experience astrology works so I reject contrary views. *Even when wrong charts still work?*
- Astrology is clearly beyond human understanding. *Not if you are familiar with tests and artifacts.*
- Skepticism is based on a permanent agenda of denial. *Skeptics evaluate claims to avoid being fooled.*

9.3.2 Belief vs understanding

Astrology since ancient Greece has remained conceptually stagnant, tied to the unchanging idea of *as above so below*, whereas psychology since 1950 has seen a revolution in the study of

our beliefs. Thus we do not simply receive experience, we use it to selectively test models to eliminate those that are inconsistent with the incoming information – a view quite different from classical perception. Suppose we see a slippery wet road ahead. The image on our retina is neither slippery nor three-dimensional, so we perceive by selecting the model that best fits the cues. Perception is not simply a matter of seeing but of believing, followed by adjustments if experience shows the wrong model was chosen. The problem is that believing from inadequate data can go seriously wrong when the belief is not easily dispelled by knowledge of the truth. That is, *we can know when our perception is wrong but this does not correct the perception*. Sounds crazy? Test it for yourself:



Look at these three shapes and give your perception a chance. Be alert for its quiet message, and let it tell you: (1) How far the dot is up the triangle. (2) Which box has the longest grey top. (3) Which box has the widest grey top.

Notice how easily the answers came. Probably something like 60%, left box, right box. Your perception was instant, effortless – and wrong. The dot is exactly half way up the triangle. The grey tops have exactly the same length and width. Even when you confirm this with a ruler, most likely your perception refuses to agree. Will you distrust it from now on? From Myers, *Intuition: Its Powers and Perils* 2002:6.

Despite psychology's history of mistakes, careful scrutiny by critical researchers has replaced ignorance with understanding – an understanding that astrology now receives in the present book. Artifacts in astrology exist in three main areas – perception, data, and reasoning.

9.4 Artifacts in perception: Seeing patterns in noise

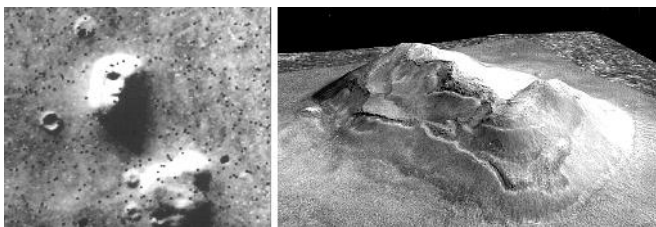
Otherwise known as *apophenia*, the brain's tendency to see meaningful things in meaningless noise. If it involves *perception* as in seeing faces in random patterns, it is called *pareidolia*. We fill in missing details and connect the dots, often to fit our expectations:

So Chinese, under the old emperors, used to dream dreams of dragons and Confucian officials; but not of Red Guards, chanting doubleplus good Chairman Mao-think. So too Bernadette Soubirous in her nineteenth-century French village had a vision of the Blessed Virgin, as represented in pictures and images in her local church; but not of Shiva the Destroyer, as represented in Indian temple sculptures (Flew, *Readings in the Philosophical Problems of Parapsychology* 1987:20).

It helps us find meaning in meaningless statements such as "imagination is exponential self-awareness" (for comparison try "Neptune rules Pisces"), an ability linked to paranormal beliefs (Pennycook et al, *Judgement and Decision Making* 10(6), 549-563, 2015), and to hearing voices in radio static and speech played backwards (called electronic voice phenomena). The Latvian psychologist Konstantin Raudive 1905-1974 attributed them to spirits. However:

Where Raudive heard "Lenin", others heard "glubboo", "buduloo", "vum vum", a bullfrog, a sudden change in tape tension, and "a low elephant call" (Mary Roach, *Spook: Science tackles the afterlife* 2005:187).

Most people cannot hear anything unless told in advance what they are supposed to hear. They then hear nothing else, just as we can see faces in haystacks once they are pointed out.



Think of the supposed canals on Mars, a good example of what the brain can see when straining at the limits of resolution. Think of the face on Mars, which a long article in *Journal for Scientific Exploration* 5(1), 1-25, 1991 called an image of "an extinct humanoid race indigenous to Mars" (left), but which was disconfirmed 25 years later by high resolution images (right).

In the 1950s an entire release of a newly designed Canadian dollar bill had to be recalled because the engraved swirls in Queen Elizabeth's hair reminded a few panicked citizens of the face of the devil (Canadian neuropsychologist Barry Beyerstein in *Tall Tales about the Mind and Brain* 2007:250).

For more than a century our pattern-finding skills have been exploited by psychologists in what are known as *projective tests*. All make use of ambiguous images (words or pictures), and are called *projective* because subjects supposedly project views of themselves into the image. In

effect they are required to see faces in clouds. Hundreds of orthodox projective tests have been proposed, of which the most famous are the Thematic Apperception Test (you invent a story to fit ambiguous pictures) and the Rorschach Test (say what you see in ten inkblots).



An inkblot like those used in the Rorschach test (the actual inkblots were posted on Wikipedia in 2009). The inkblots are formed by putting ink into a folded piece of paper and pressing together, so one half is always a mirror image of the other. If here you see a poodle admiring itself in a mirror, you are narcissistic. If you notice specks of dust, you are obsessive. If only white spaces, you are rebellious towards authority. It may seem plausible but hundreds of controlled tests have found no useful support for it. So an inkblot is actually meaningless, although bizarre responses ("it looks like a giraffe's head exploding inside a flying saucer") can indicate disordered thinking. Adding Rorschach results to case histories *reduces* their predictive accuracy, as does adding birth charts see 7.2.2011.2. (Lilienfeld et al, *50 Great Myths of Popular Psychology* 2010:172-173.)

Nobody claims that a person's identity is actually contained in inkblots, only that by looking at them we can learn something about ourselves (which lacks convincing support, see above). The same could be said for birth charts. Except we are too clever by far at finding meaning where none exists, convincing ourselves that we have experienced a miracle. For example:

You might find some striking relationships between a palmist's meaningless statements and your past, and conclude that fortune-telling is genuine. Or you may see correspondences between a random dream and subsequent events in your life, and decide that you have the gift of prophecy. Or you might look at an unremarkable photograph of rocks reflected in a lake and manage to find a ghostly face in the water. Or you might watch a psychic focus their attention on a spoon, see the spoon bend, and conclude that the bending was the result of the psychic's amazing paranormal abilities. Or you might place a lucky charm in your pocket before an important job interview, be offered the job, and conclude that the charm somehow caused your good fortune (Wiseman, *Paranormality* 2011:306-307).

Wiseman wondered whether people who are good at finding patterns are also likely to experience what they feel are supernatural phenomena. So he presented subjects with variations on the inkblot test and asked them if they had experienced any supernatural events. The results showed that those who have especially high scores on pattern-finding tests also experience a lot more weird stuff (p.307). Can we see a description of astrologers here?

In his 1993 book *Faces in the Clouds: A new theory of religion*, US professor of anthropology SE Guthrie points out that our search for meaning is compelling and never ending. If we can hear voices in the wind and see faces in clouds, so much the better. Among his examples are:



From left: Can you see an eagle carrying its prey towards its nest? Inverted, it is actually that famous image of a dog sniffing at shadows (RC James *Dalmation* 1966). In 1931, while leafing through a pile of photos, Salvador Dali found what he thought was an unknown Picasso, but it was actually an African village (rotate it 90° anticlockwise). Many people saw the face of Jesus in this forkful of Pizza Hut spaghetti on a 1991 billboard in Atlanta GA. Similarly in a chart reading we look at noise and pick whatever makes sense to us. We never worry about its factual reality.

9.5 Seeing patterns in birth charts

Patterns in a birth chart are made easier to see because they are made not by planets as understood by astronomers but by planetary gods as imagined by ancient Greeks. Thus Venus is not the real Venus of 500°C and 90 atmospheres of carbon dioxide (equivalent on Earth to being 900 metres underwater and so dense that landing parachutes are not needed), thick sulphuric acid fogs, and ever-changing appearance; nor the malevolent Venus of some ancient traditions (Babylonians lived in fear of her wrath); but the imaginary Greek Venus of unchanging harmony, aesthetics, and love. Temperatures on hot fiery Mars average -30°C by day and -100°C by night. Although named after the god of war it is actually the most hospitable planet after Earth. The planets Jupiter through Neptune are gas giants of mostly hydrogen but with very

different god attributes. The supposed lover-of-change Uranus is a monotonous and tranquil planet, while sensitive and spiritual Neptune is the stormiest planet of all with winds routinely raging up to 2000 km per hour. Would a reversed symbolism be more appropriate here?

Calling something a planet explains nothing. When Jupiter's four moon's were first discovered (three are larger than the Moon), Galileo called them "planets", as were Ceres (which was then as famous as Pluto is today), Pallas, Juno, Vesta and Hygiea. Which celestial bodies are actually used depends on the individual astrologer and is largely arbitrary.

But how to interpret imaginary gods? For example Moon-Saturn reduces to a basic principle that depends on which book we read, but say *fluctuation* and *limitation*. It seems simple enough, but problems arise when we try to interpret this basic principle. Thus Rex Bills's *Rulership Book* 1971 lists interpretations "taken from the writings of many [over 80] of the world's greatest astrologers" such as Alan Leo and Charles Carter, which links the Moon to 800 things from abscesses and adaptability to women and yachts, and Saturn to 1700 things from abandoned places and abbeys to yew trees, yokels and yokes. So for Moon-Saturn we have in principle $800 \times 1700 = 1.4$ million possibilities to choose from, all from top astrologers.

Rex Bills is not alone in such numbers. In 1929, after twenty years of research, the US radio engineer and astrologer L Edward Johndro proposed over 10,000 keywords for each aspect (*Astrological Dictionary and Self-Reading Horoscope*) and the use of 6000 fixed stars (*The Stars How and Why they Influence*). More recently US astrologer Michael Munkasey started collecting astrological keywords and after six years he had 2000 pages of keywords (*Correlation* 7(2), 6, 1987). Similarly the US philosopher and astrologer Richard Tarnas (see 7.2.2006.2) gives what he calls a brief summary of the Jupiter *expansion* principle that requires more than 80 trait words, ironically half the number required for Saturn *limitation*:

In other words imaginary gods deliver a huge fog of nonfalsifiable symbolism in which the client cannot fail to find personal meaning somewhere. Astrologers attribute this to some miraculous property of astrology. Critics attribute it more credibly to artifacts of perception.

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.



Astrologers can even see faces in aerial photographs, in this case the face of Taurus the Bull in the English countryside near Glastonbury in Somerset. **Right:** the outline on a paler image to make it easier to see. The "Glastonbury zodiac" was first seen in 1929 in a vision by a visiting Canadian artist who saw connections with the quest for the Holy Grail. She saw ten signs in the right order in a circle 15 km in diameter (*Astrological Journal* 9(1), 5-13, 19, 1967 and www.ancient-wisdom.co.uk/zodiacaandscape.htm). The bull's eye is marked by cross roads. Cover it up and the image is less convincing. Rotate the image 90° clockwise and it looks more like Cancer the Crab. Many zodiacs in country UK have been identified. Isn't pareidolia wonderful?

9.6 Artifacts in data

Artifacts in data are common in astrology. The earth's elliptical orbit makes the Sun spend two days longer in tropical Cancer than in tropical Capricorn, so if we find more Cancers than Capricorns in our sample it may have nothing to do with astrology. The same if we find more MA-0-SO's than MA-180-SO's because the former is astronomically five times more frequent than the latter. Some artifacts may be broadly known but not their fine detail, which makes it difficult to derive adequate controls and interpret results that appear to support astrology.

Even worse are the artifacts due to small sample sizes that almost always give wrong answers (see 8.2.2) and probably cause more false leads in astrology than other data artifacts. Indeed, artifacts now seen as obvious were once confidently dismissed, as in 1979 (before most of the artifacts in 5.2.2 were discovered) when US astrologer Dr Zipporah Dobyns asserted:

The people who are attacking astrology today are going to look very foolish in a matter of a few years, when it is finally accepted (interview with Malcolm Dean on Canadian radio as reported in his *The Astrology Game* 1980:45).

9.7 Artifacts in reasoning (hidden persuaders)

Artifacts in reasoning rage out of control in astrology and paranormal systems generally. We act as if they didn't exist, but they can make the vaguest of chart readings seem amazingly accurate. The sincere belief of experiencing something does not guarantee that one is actually experiencing something, so a better name is *hidden persuaders*. Most were unknown before the rise of experimental psychology. Today they are described in dozens of books and thousands of research studies but not in astrology books including astrological research books such as ISAR's *Astrological Research Methods* 1995, and *Comment démontrer astrologie* 1999 [How to demonstrate astrology] by French researchers Suzel Fuzeau-Braesch and Hervé Delboy.

Their omission from astrology books is fatal. Psychologist AK Sharan stresses how there is:

Little or no understanding by astrologers of the kinds of biases in judgement that plague clinical observations in all areas of inquiry, including psychology and medicine. The reason controlled studies and experiments are used in psychology and disciplines such as biology in the first place was to rule out as much as possible memory, perceptual and reasoning biases as well as alternative explanations. While case studies [the favourite ploy of astrologers] may play a role in generating hypotheses, they are too fraught with error to be convincingly used as methods of confirmatory research. If the claims of astrologers were based on observation then they would have been confirmed long ago by statistical tests, which basically do what any astrologer does only with much greater sensitivity. But they have not. (*Encyclopedia of Abnormal Psychology*, New Delhi 2000:496).

In effect astrologers should consider hidden persuaders before they consider hidden realities, because the latter may be merely a result of the former. In what follows we look at hidden persuaders that apply in general reasoning, then at those that apply during a chart reading.

9.8 Hidden persuaders in general reasoning

People are quite good at things that require only counting. As marbles are drawn at random in real time we can estimate their average size or the proportion of red quite well. But once we use data *drawn from memory* our judgements become biased in ways we never expect. Eleven are listed below with examples of how the more relevant ones (marked *) relate to astrology.

Judgement bias	How it works
Operant conditioning	*Heads you win, tails is irrelevant.
Vividness heuristic	*Focus on vivid things, ignore dull things.
Representativeness	*Focus on similarity, ignore actual occurrence.
Principle of certainty	*My mind is made up, don't confuse me with facts.
Overconfidence	*We tend to be overconfident in our judgements.
Anchoring	*Our starting guess anchors what follows.
Sample size	Ignore the huge sampling error of tiny samples.
Conjunction fallacy	Events seem more likely when in pairs.
Overrate coincidences	Coincidences are more likely than we think.
Impose order	Chance events are wrongly seen to follow rules.
Insensitivity to weight	Effectively summarises most of the above.

Operant conditioning, or how we learn what isn't so. Suppose we try our luck at astrology and our first reading is successful. Since the outcome is good, we try more readings. Even if we are mostly unsuccessful, the occasional success is enough to keep us trying. This process is called *operant conditioning*, where a behaviour (astrology) is followed by something good (success), thus reinforcing the behaviour. The crucial points are: (1) The outcome must follow the behaviour but need not be related to it. (2) The behaviour becomes resistant to change if reinforced *intermittently* rather than all the time. Thus intermittent winning on a slot machine encourages further play (the winning streak effect) because we see that frequent non-success does not deny occasional success, whereas ten wins followed by ten losses encourages us to

stop because the machine appears to be broken. Intermittent hits in astrology will happen by chance anyway, which then encourages belief regardless of the underlying reality.

Operant conditioning is a powerful process and probably plays a major role in the development of magical beliefs and superstition generally. No reasoning ability is required (even birds and animals learn in this way, think of Skinner's pigeons). Related effects are the *gambler's fallacy*, the mistaken belief that a run of heads or tails influences the next coin toss, *regression to the mean*, where events above the mean are balanced by events below the mean (if today we feel sick we are likely to feel less sick tomorrow), and *defensive attribution*, where blame decreases with severity for us but increases for others (as when our chart has many squares).

Vividness. We attend more to things that are striking and vivid. Tornadoes make the headlines whereas asthma does not, so you guess that tornado deaths are more common than asthma deaths. In fact asthma deaths are more common. Our situation is more vivid to us than our personality, whereas the personality of others is more vivid than their situation. So we attribute our behaviour to *situation* and their behaviour to *personality*. This is the *fundamental attribution error*. If we claim to see personality in birth charts, what might we be really seeing?

Representativeness. This underlies the ancient idea of magical correspondences and the doctrine of signatures in early medicine. It has two components: **(1)** Like goes with like. So we believe that Cancers are crabby, big events must have big causes, and *as above so below*. **(2)** We go by appearance and ignore base rate, the rate of occurrence in the base population. At the Massachusetts Institute of Technology you meet Tom, who looks like a poet. Is he a poet or a physicist? To answer poet is to ignore base rate – at MIT physicists are more common than poets. More on this under Magical Thinking 9.9.5, and Bayes Theorem 7.2.2011.2.

Principle of certainty. As mentioned in 9.3, this is one of the few valid generalisations in social psychology. When there is evidence for and against a belief, most people show high levels of conviction either for or against, which is illogical. Also known as the *excluded middle*. It means that open minds are not easy to achieve. Or as Bertrand Russell (1872-1970) said:

A man, offered a fact which goes against his instincts, will scrutinise it closely, and unless the evidence is overwhelming, he will refuse to believe it. If, on the other hand, he is offered something which affords a reason for acting on his instincts, he will accept it even on the slightest evidence (*Proposed Roads to Freedom* 1919:147).

Overconfidence is common, often massive, and difficult to eliminate. As seen in 7.6.1985.2, astrologers were generally confident of success in tests that subsequently showed only failure. Their predictions were wrong, yet they were just as confident the next time (and just as wrong), repeating indefinitely. In the Monty Hall puzzle in the US game show *Let's Make a Deal* you have to guess which of three doors hides a prize, so your chance of winning is 1 in 3. The host knows which door hides the prize and opens a door (not your one). It always shows no prize. So the prize is behind one of the two remaining doors including yours. Should you change your guess? If you see your chance of winning as fixed at 1 in 3, you are overconfident and also wrong. The key point is that *the host knows which door hides the prize, and keeps it shut*, which changes the odds. Suppose the prize is behind door A. **(1)** If you chose A, then B or C is shown empty (two possibilities); to change is to lose. **(2)** If you chose B or C, then C or B is shown empty (two possibilities); to change is to win. **(3)** The chance of winning plus the chance of losing must equal 1 (ie certainty) because no other outcome is possible. Therefore changing your guess must change your chance of winning from its original 1/3 to its complement, ie to $1 - 1/3 = 2/3$. So you should change your guess. Disbelievers who test this by computer are amazed to find their disbelief was mistaken. They were overconfident.

Anchoring, or how our estimates of unknown factors are anchored by the first factor we happen to meet. It means we never *completely* undo first impressions or first opinions. If this seems unlikely, here are two examples. Estimate $2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$ and write it down. Then estimate $8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2$ and compare it with your previous estimate. The means

of the many people who have done this are 512 and 2250, showing anchoring by 2 and 8, whereas the correct answer is 40320 (Piattelli-Palmarini, *Inevitable Illusions* 1994:202).

Alan is intelligent, industrious, stubborn, envious. Ben is envious, stubborn, industrious, intelligent. Most people rate Alan more favourably than Ben even though the descriptors are identical (abridged from Asch, *Journal of abnormal and social psychology* 41, 258-290, 1946). In each case the first item (intelligent vs envious, as in 2 vs 8) has anchored our judgement.

Anchoring is a large effect and makes us see differences in otherwise identical factors. It is undetectable because we simply don't know the situation if the anchor had been different or absent. The first familiar factor we see in a chart or handwriting or restaurant menu will generally bias our interpretation of the rest of it, even when it is not valid to do so.

9.9 Hidden persuaders in chart reading

Think of how we first became interested in astrology. If a chart reading seemed accurate we concluded that astrology works. What could be more reasonable? But a normal chart reading is *always* subject to many hidden persuaders, so our conclusion is *always* premature.

More than forty hidden persuaders relevant to chart reading are listed below. (Many more are more distantly relevant. Thus a fairly complete list has more than 100 entries, for details see skepdic.com/hiddenpersuaders.html. None require astrology to be factually true. All are in routine use in astrology books and consulting rooms. Each reflects a systematic bias in human reasoning, for which we have used the accepted name if there is one or a provisional name if not. For clarity we have grouped them under seven principles. Each is followed in 9.9.1 through 9.9.9 by examples of how the more important ones (marked *) relate to chart readings. The * ones are listed first, otherwise the hidden persuaders are in no special order.

40+ ways to convince clients that astrology works

Principle	Hidden persuader	How it works
Avoid disbelief from the start	*Placebo effect	It does us good if we think it does
	*Ignorance is bliss	Exclude other explanations
	*Communal reinforcement	Choose only confirming social groups
	Client predisposition	Preach to the converted
	Rumpelstiltskin effect	Just naming the unknown is enough
Make astrology look good	Charging a fee	The best things in life are not free
	*Face validity	If it looks right then it is right
	*Dr Fox effect	Style is more important than content
	*Halo effect	The importance of first impressions
	*Priming	Unnoticed hints from our environment
	Defensive attribution 1	Any explanation is good
	Aunt Fanny effect	More is better
Make clients feel good	Chance baseline shift	Make even chance look good
	Framing	Values depend on how presented
	*Tea and sympathy	Use a kind heart to entice belief
	*Rapport	Closeness is its own reward
	Misattribution	Having control makes us feel better
Use cues	Pollyanna principle	The power of positive thinking
	Continued influence effect	A rung bell cannot be unrung
	*Body language	Watch the eyes and hands for cues
Make the chart fit	*Cold reading	Client guides but you disguise it
	Vital statistics	Let context be your guide
	*Faces in clouds	Find meaning where none exists
	*Magical thinking	Be seduced by resemblance
	*Social desirability	Accentuate the positive
	*Hindsight bias	Afterwards I knew it all along
	*Barnum effect	Read specifics into generalities
*Illusory correlation	See only what you want to see	
*Stereotypes	General acceptance yes, evidence no	

Make the client fit	*Cognitive dissonance *Role playing *Repertoire Procrustean effect Defensive attribution 2	Avoid conflict see what you believe Self-fulfilling prophecy Find something to match statement Force client to match chart Blame decreases with severity
Prevent dis-confirmation	*Stacking the deck *Confirmation bias *Selective memory *Safety in complexity Illusory truth effect Unavailable data Testability veto	Ask only confirming questions Ignore disconfirming evidence Remember hits, forget misses Make everything nonfalsifiable Prefer familiar information Believe what you cannot prove Deny that astrology can be tested
Exploit mutual interests	Depending on client, stress that astrology is a science, an art, a philosophy, a language, Christian, or whatever	

9.9.1 Avoid disbelief from the start

Placebo effect. Where faith, not reality, is the effective agent. When a witch doctor asks the spirits for help, his client gets hope and support even though the whole thing may be bogus. This is the placebo effect. When an astrologer reads a chart the trappings are different but the effect on the client is the same. What matters is not validity but belief in the system, the whole experience of talking to an astrologer, and your expectations beforehand. If you believe that astrology will describe your relationships then most likely it will. For more see 10.3.2.

Ignorance is bliss. The absence of alternative explanations. To the extent that astrologers and clients are unaware of the many ways that astrology can seem to work even if it doesn't, so will success be accepted as proof of astrology. After all, what else could it be due to?

Communal reinforcement. Our beliefs are reinforced by the company we keep. People can maintain an unshakable faith in any proposition, however absurd (*the moon landing was a hoax*), when they are sustained by like-minded others. If we mix with astrologers and never with informed critics, we will hear only the same old claims promoting astrology regardless of whether the claims have empirical support. It explains how testimonials within the astrological community can become more powerful than actual evidence.

9.9.2 Make astrology look good

Face validity. If it looks good then it is good. Astrology has face validity – complexity, history, jargon, national organisations, conferences, media exposure, a huge literature including glossy coffee-table books, and thousands of websites. Indeed astrology on the web is like asking for a glass of water and being handed the Pacific Ocean. To the unwary the effect is dazzling. As the tailor said to his customer, never mind the width, feel the quality.

Dr Fox effect. How style can be more important than content. Dr Fox was an actor who was coached to give a highly entertaining but otherwise meaningless one-hour lecture on games theory to various professionals such as psychiatrists. They found his talk to be clear and stimulating, and nobody realised it was nonsense (DH Naftulin et al, *Journal of Medical Education*, 48, 630-635, 1973). The Dr Fox effect also extends to writing, where the perceived prestige increases with increasing impenetrability, as for Dane Rudhyar who "set the standard for ... impenetrability years ago" (Cunningham, *The Consulting Astrologer's Guidebook* 1994:29).

Halo effect. How one favourable trait causes us to infer the presence of others. Yes, packaging can work wonders for astrologers and their claims. Are your charts in full colour?

Priming. How we are influenced by unnoticed factors in our surroundings. Our vote should not be affected by polling station location but it is. An honesty box by the coffee machine gets more money when it displays accusing eyes instead of flowers (*Biology Letters* 2, 412-414, 2006). The effect occurs without you being aware of it, which does not necessarily make it trustworthy. So think twice before deciding how to decorate your office. For more see 8.9.2.1.

9.9.3 Make clients feel good

Tea and sympathy. How a kind heart can entice our beliefs. Clients may attribute their beliefs to astrology when the real cause is their nice astrologer and wise counsel. Success has less to do with being a good astrologer than with being a good person. Cicero got there first when he denounced soothsaying but saw the soothsayer as a wise counsellor. What mattered was the wisdom not the soothsaying.

Rapport. The better the rapport the better the results. If rapport is poor, "all of one's abilities can be quite effectively blocked" (Arroyo, *Relationships and Life Cycles: Modern Dimensions of Astrology* 1979:220). When rapport is good it is hard to go wrong, thus persuading astrologer and client that astrology is more effective than it is. Be careful whom you accept as clients.

9.9.4 Use cues

Body language. Cues leaked by the client. US counselling astrologer Noel Tyl tells astrologers to list key topics (parents, relationships, health, employment) so they "can learn from the client's slightest reaction (eyes, posture, mouth, words) where the strongest place to begin is". They "can become extremely sure of a deduction ... even though the client is extremely defensive" (*Astrological Counsel* 1975:44). Tracy Marks notes that without a client reaction "we may be inaccurate in our interpretation" (*The Art of Chart Interpretation* 1986:164). Anyone can try it but some will have more success than others, see 8.6.8.

In his classic work on mentalism, Corinda says: **(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 (*Thirteen Steps to Mentalism* 1958).

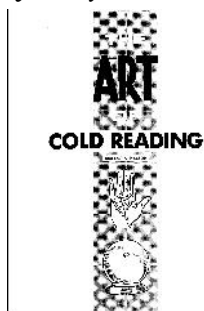
Such processes can be totally unnoticed yet the results can be totally compelling. Israeli psychologists Aphek and Tobin found a lady PhD in psychology (and therefore presumably aware of artifacts) who was amazed when she had her chart read and was told things the astrologer "could not possibly have known". But on analysing the tape recording she realised that "in every case she had herself supplied the cues that enabled the seer to proceed" (*The Semiotics of Fortune-Telling* 1989:180). Here the reading may have verged on cold reading, see next.

Cold reading is a clever deception where the reader lets the client supply all the information but takes care to disguise it, so the client sees the result as due to mysterious powers:

All that is necessary is that the reader make out a plausible case for why the reading ought to fit. The client will do the rest (Ray Hyman, How to convince strangers that you know all about them. *Skeptical Inquirer* 1(2), 18-37, 1977:22).

Astrological readings, in particular, lend themselves to [deception]. This may be because its followers are, by definition, capable of perceiving significance where none exists (Ian Rowland, *The Full Facts Book of Cold Reading* 2008:92)

Rowland points out that astrological jargon is helpful because it **(1)** allows fuzzy statements (*your life will enter a new phase of progress*) that have a high probability of being accepted, and **(2)** allows a prompt for feedback (*does this make sense to you?*). So be careful before you embrace clarity and plain English. He adds that:



In my experience, sound knowledge of the divinatory system used [ie the jargon] makes little difference to the effectiveness of the reading. Whether the jargon is used in an informed way or not [it] remains a highly useful element in readings. It allows the reader to vary the way she prompts for information. It reinforces the belief system in use. It imposes the authority of the reader, and helps to promote the sense of ritual which ... inhibits awkward responses and promotes the desired co-operation (p.75).

Robert Nelson (*The Art of Cold Reading* 1971) defines a cold reader as:

a person who poses as a character reader, fortune teller, advisor, soothsayer, or [anyone supposedly] divining thoughts in a troubled mind and presenting a solution to present and future situations (p.4). ... as the reading progresses and the guard is lowered, the client will become talkative and confide much to the reader (p.5). Seated across a desk from the client, the reader is able to supplement his general information by the many, many TELL-TALE SIGNS and REACTIONS of their client (p.20, Nelson's capitals).

As in a chart reading, there is an exploratory opening followed by:

a thumb-nail character analysis. Then the reading swings into high speed, as it passes to the main subject of interest. Briefly, love and friendships (and enemies); money and gain; obstacles in the path. Health and loss, travel, news, dangers and desires. A dash of mystery dealing with future events, a solemn warning and some good advice [eg worry and anxiety are destructive factors and contribute to ill-health] (p.23).

The reader asks innocent questions (do you believe in luck?) to encourage disclosure:

The reading is closed with the client still in awe and suspense, which may result in another visit ... the cold reading can be summarized as an ANALYSIS and PATTERN STORY of the client's DESIRES, POSSESSIONS and FEARS ... [Much of the reading will apply to anyone, but with the help of the client] it is personalized and made to FIT (pp.23-24).

So it cannot be claimed that astrology is a necessary part of a successful chart reading. For telling examples see Chapter 2 (personal stories). For Tarot readings see 7.2.1986.2.

9.9.5 Make the chart fit

Faces in clouds. Finding meaning where none exists. Capitalise on what evolution has made people naturally good at. Or as US science teacher Richard Furnald Smith puts it:

Given the extraordinary ability of the human mind to make sense out of things, it is natural occasionally to make sense out of things that have no sense at all (*Prelude to Science* 1975:24).

Ironically, our vulnerability to being led astray increases with our ability to comprehend, because being clever helps us rationalise judgements that are otherwise wrong. As noted throughout this chapter, the evidence from psychology, sociology and hundreds of tests of astrology indicates that probably everything in astrology reduces to seeing faces in clouds.

Magical thinking. How we are universally seduced by correspondences, which of course is especially relevant to astrology. It is how young children think, and has to be unlearned as part of growing up, which is why correspondences are so seductive – it encourages us to do what, in childhood, came naturally. Which of these two statements is the more sound:

- (1) Sensitive people tend to have Sun in Cancer.
- (2) Sensitive people do not tend to have Sun in Cancer.

If we reasonably assume that most people are fairly sensitive but only 1 in 12 have Sun in Cancer (said to signify sensitivity), then only a minority of sensitive people can have Sun in Cancer, so you should have picked (2). To pick (1) is to be swayed by correspondences.

Can't decide how opposing chart factors can be resolved? Easy – just ask the client!

Thus Geoffrey Cornelius et al say "Use whatever you know about the person as the context to flesh out the symbolism" (*Astrology for Beginners* 1995:93). Noel Tyl says forget about technique because "a question to the client [about what the chart factor means] will provide the answer. Time and again, individuals ... will reach beyond even the wildest established orb to create a supportive aspect" (*Astrological Counsel* 1975:132-133). Jacques Halbronn puts it even more directly: "You must understand that astrology is a means of communication, not a source of knowledge [so] choose whatever best fits the client" (From the abridged English version of *L'astrologue face à son client: les ficelles du métier* 1995 at www.astrology-and-science.com). Or to paraphrase Voltaire (1694-1778), "the art of astrology consists in amusing clients while they answer the questions".

Social desirability. Also known as the *Polyanna Principle* where we are accepting of praise but rejecting of criticism. Or the nicer the statement the more we accept it. People agree very closely on what they see as socially desirable or undesirable, and this agreement is maintained across age groups, class and culture. To make people believe what you say, tell them they are cautious, self-controlled and thrifty; never tell them they are timid, inhibited and stingy. Since a golden rule in astrology readings is *be positive*, this can be an unexpectedly potent influence. However, if we want to appear clever rather than helpful, it is better to be negative (Amabile, *Journal of Experimental Social Psychology* 19, 146-156, 1983).

An example of the power of social desirability is Linda Goodman's *Sun Signs* the first astrology book to reach *The New York Times* best-seller list. It consists essentially of non-stop socially desirable statements, hence its popularity. Another example occurred in the UK *Daily Mail* of 3 February 1998 in which 1092 adults had to say which of 12 personality profiles (unlabelled

but actually those of the 12 sun signs) applied to them, see 7.1.1997.1.

Hindsight bias. The I-knew-it-all-along effect. Once a match has been found between chart and person, it will be hard to see how it could be any other way. So the astrologer believes the match was inevitable, thus gaining unwarranted confidence in astrology. Once our choice of models (see 9.3.1) has been biased by our experience, it reintroduces itself into the original perception. Hindsight bias is important because we are unaware of it, it affects everybody, and it limits our ability to learn from experience (we learn best from mistakes). Everything makes sense in hindsight, thus creating the illusion that we can do just as well next time.

Stereotypes. Preconceptions of what to expect. Here the most deceptive stereotypes are sun signs because they lead to unwarranted belief in astrology. We learn what our sun sign is supposed to mean, which from Aries through Pisces boils down to *assertive, possessive, changeable, sensitive, creative, critical, harmonious, secretive, adventurous, cautious, detached, intuitive*. We are of course interested only in our own sign, so we fail to notice the meanings are universal. Everyone behaves in these ways at various times. So, regardless of your sign, it will agree with what you see in yourself. Voila! Astrology works – and you have started on the road to belief.

But stereotypes can be harmful by giving us false labels. If we are Cancer we are forever seen by believers as overly sensitive, or if Scorpio as overly secretive, or if (as in 7.2.1988.5) our ruling planet matches a Deadly Sin. All too easily are we like the psychoanalyst who accused clients who came late of hostility, those who came early of defensiveness, and those who came on time of compulsiveness. Or like organisers of astrology groups who insist on name tags showing Sun-Moon-Rising signs despite signs being the most disconfirmed factor in astrology.

9.9.6 Barnum effect and making the chart fit

The Barnum effect is how we accept general statements as specific for us when in fact they apply to nearly everyone. With illusory correlation it is one of the more important artifacts listed here for persuading people that astrology works, so we look at both in some detail.

The Barnum effect was named in 1956 by the US psychologist Paul Meehl after PT Barnum's circuses that, like any general statement, "had a little something for everyone". It has nothing to do with gullibility. Instead it arises from one of our most useful cognitive skills – the ability to make sense out of data. Specifically our ability to read personal meaning (*you tend to be critical of yourself*) into general statements that apply to most people but without our realising what is happening. Ironically for astrology the 13 statements that led to recognition of the Barnum effect (they are listed in 7.6.1980.4) were taken from an undisclosed newsstand astrology book (Forer, *Journal of abnormal and social psychology* 44, 118-123, 1949).

But the same effect had been observed twenty years earlier in 1929 by Meili, supervisor of the Rousseau Institute in France. He set out on 50 sheets of paper 68 wildly diverse items such as will power, sense of colour, aptitude for teaching, response to weather, and respect for the opinions of others, giving each item a score (1–5) picked at random but making sure middle scores occurred more frequently than the extremes. Without looking at the results, he wrote on the back of each sheet the name of a psychology student at the Institute. He then handed the sheets to the students saying: "A sample of your handwriting was sent to a graphologist. Here are the results. Please give your opinion, and your own rating for each of the items".

More than half of the students rated most of the items as very accurate. Of 2516 responses, 53% agreed perfectly on the rating, while a further 25% were only 1 point apart, the mean difference being 0.73 points. Only 6% were 3 or more points apart. Meili concluded:

Fictitious diagnoses, determined by chance, will satisfy subjects to a large extent if one follows the following rules: give the interpretation in the vaguest possible terms, always prefer poorly-defined and difficult-to-check qualities, choose the most uniform qualities possible, ie where differences between people are the least marked. ... One will thus find a certain number of qualities which would be of no risk in an interpretation (quoted by Ferrière, *L'Influence des Astres* Volume 1, 1946:66-67 from an original report in the newspaper *Journal de Genève* 10 February 1929.)

In other words, in modern terms, they would be good Barnum statements.

The Barnum effect exists across cultures and has attracted over 100 studies. Chinese nationals were just as accepting of fake astrological (ie Barnum) profiles as were Westerners, and both cultures saw the fit as support for astrology (Rogers and Soule, *Journal of Cross-Cultural Psychology* 40(3), 381-399, 2009). In Israel, where every year more than 5% of the population visit fortune-tellers, Aphek and Tobin recorded more than 50 sessions with various fortune-tellers including astrologers. They observed that the main feature of fortune-telling was the "non-specific, non-precise, multi-purposeful" language used (*Semiotics of Fortune-Telling* 1989: 46), which included open-ended possibilities (eg usually, often, maybe), umbrella terms (eg something, someone), open-ended relativity (eg happier, more careful), and general truths (eg haste makes waste). They concluded that the process allows "the subject (or the client) to project their own specific personal interpretations within the larger generalized framework". The client has only to select whatever is applicable and it cannot fail to fit.

Former US astrologer Charles Strohmer agrees (*What Your Horoscope Doesn't Tell You* 1988: 39-40). Most chart interpretations start with speculation and generalisation – the only feasible way to start – then letting the client decide what it means. Again, it cannot fail.

Unsurprisingly, the result of accepting Barnum statements is an *increase in belief*. McKelvie (*Journal of social behaviour and personality* 5, 91-95, 1990) gave Forer's original ex-astrology statements to 108 students as a supposed interpretation of their handwriting. After reading meaning into the deliberate vagueness, their belief in graphology rose from 3.6 to 4.7 (mean sd 1.5) on a 7-point scale from 1 (none at all) to 7 (completely). See how easy it is!

Sundberg (*Journal of abnormal and social psychology* 50, 145-147, 1955) used Barnum statements to become a successful character reader. The most readily-accepted types were:

- Favourable You are forceful and well-liked by others.
- Vague You enjoy a certain amount of change and variety.
- Two-headed You are generally cheerful but get depressed at times.

Other researchers have found that the acceptance of Barnum statements is strongly increased if the reading is **(1)** general and favourable, **(2)** said to be specific for the client, and **(3)** suited to the client's personality (so don't tell introverts they are outgoing). The occasional unfavourable item adds plausibility but only if very general. It helps if **(4)** the client is naive and believes in the paranormal, **(5)** the situation is intimidating, as for students in class or when the reading is expensive, **(6)** the method is mysterious, and **(7)** the required data are as exact as possible. Acceptance is little affected by the sex of the participants, and by whether the reading is oral or written or computerised. Most of these features fit astrology exactly.

UK psychologist Adrian Furnham adds a further view starting with sun sign descriptions:

If the general description seems true (and it probably does), people frequently conclude that it must be even more accurate when more specific information is used. ... Also, unlike other forms of therapy that require effort (and often pain) ... to obtain benefit one merely has to supply ... the astrologist with the time and place of birth. There is much to gain and little to lose. ... [Thus] a comfortable collaborative illusion of scientific validity emerges from the buyer and seller of the astrological reading (*New Scientist* 26 January 1981:35-36).

Marks and Kammann (*Psychology of the Psychic* 1980:191-192) tried to lower the hit rate using *reversed* Barnums (every sentence was the opposite of the original) and even *wrong-as-possible* Barnums (every item had been independently rated as very unlikely), but with little success, for details see 7.6.1980.4. After further tests they concluded:

While some statements are indeed more effective than others, more important is whether or not some person takes the role of personality-teller and declares that certain statements are true. The effect relies heavily on the power of suggestion. ... it doesn't seem to matter much if the reader has high status or not (except for very negative reports) or what pretense he uses for "diagnosis". ... The validity of fortune telling, horoscopes, biorhythms, palm reading, psychological tests, and other diagnoses is in no way supported by the fact that people feel the readings are true (p.193).

That said, the birth chart – unlike personality test scores – does not indicate how you compare

with people in general. You get wonderful vagueness but no utility. How can this be helpful?

Allison Davis extended Forer's original study by extracting 377 statements general enough to apply to most people and neutral-to-favourable in social desirability, from (again ironically for astrology) *Linda Goodman's Sun Signs* 1968, *The Secret Language of Birthdays* 1994, and *Tarot for Beginners* 1995 (in *A New Look at an Old Phenomenon: The Characteristics of Barnum Statements*, MA Thesis, University of Texas at El Paso, 2005). 417 introductory psychology students (mostly Hispanic, mean age 21, two-thirds were female) rated each statement for accuracy on a scale of 1 (definitely false) to 5 (definitely true). Analysis then gave five sets of 23 Barnum statements equated for endorsement rate, generality, social desirability, and minimum gender differences, grouped to provide acceptable flow. The mean endorsement rate for 417 subjects was 84%, much the same as for Forer's original 13 Barnum statements in these studies:

84% for 39 subjects (Forer, *Journal of abnormal and social psychology* 44, 118-123, 1949).

82.4% for 120 subjects (Merrens and Richardson, *Psychological Reports* 27, 691-694, 1970).

89% for 40 subjects (Greene, Baucom and Macon, *Journal of Clinical Psychology* 36, 166-170, 1980).

Here are four typical paragraphs:

● You are open to new ideas. Being able to exchange ideas with people is important. In a serious discussion, you stick to what you know best. You're not afraid to make a commitment to what you believe is worth doing. You respect the rights of others to disagree. You believe that violence leads to more violence. ● Financial security and a happy home life are important goals for you. You value money, but know there is more to life than material wealth. You place a great deal of value on honesty. ● You are a devoted friend. In relationships, you are supportive and encouraging. You want a mate who accepts you completely. You are a very trusting person. You believe that everyone has at least a little good within. ● Sometimes you crave junk food or sweets. You enjoy mysteries and suspense. Although you are a bit of a dreamer, you also possess strong common sense. You believe that there are no guarantees in life.

Two outcomes were notable: (1) Factor analysis of the ratings revealed a six-factor structure close to that of the Big Five plus a sixth "concern with romantic relationships". The statements with the highest loadings on each factor were:

Agreeableness. Helping others gives you a deep sense of satisfaction. Kindness is important to you.

Openness to Experience. You are not afraid to swim against the current of popular opinion.

Neuroticism. You have been impatient at times. You have a tendency to be critical of yourself.

Extraversion. Excitement attracts you. You are sociable and easy to get along with.

Conscientiousness. You tend to work hard to reach cherished goals.

Concern with Romantic Relationships. You get upset if things don't go well in romantic relationships.

(2) Multiple regression analysis showed that endorsement rates could be accurately predicted by the extent to which statements were generally true of people and were socially desirable.

In summary, Barnum statements are accepted because they fit the person – any person – and they fit because the person makes them fit. So they tend to win when pitted against interviews and personality tests, in the same way that saying an apple is apple-coloured wins over saying it contains five fat maggots. But despite winning, they don't say anything useful. Nevertheless Barnum statements have their place. If quick summaries like "you have problems with money" were forbidden, thus forcing us to describe everything in detail, normal communication would grind to a halt. It is the price we have to pay for practical and social convenience.

9.9.6.1 Examples of Barnum in action

Barnum statements have been prominent in human history right from the start, as shown by this average omen report from around 1000 BC taken from RC Thompson, *The Reports of the Magicians and Astrologers of Nineveh and Babylon* 1900:206 as analysed in italics by Stewart, *Astrology: What's Really in the Stars* 1996:130. The report is from Asharidu to the king:

When the Moon occults Jupiter, that year a king will die (*many kings ruled in 1000 BC and every year some died*).

When Jupiter enters the midst of the moon, there will be want in Aharru (*want is universal*).

When Jupiter goes out from behind the Moon, there will be hostility on the land (*another safe occurrence*).

Stewart comments "If you were the king to whom Asharidu wrote his clay message, you might be impressed" (p.130).

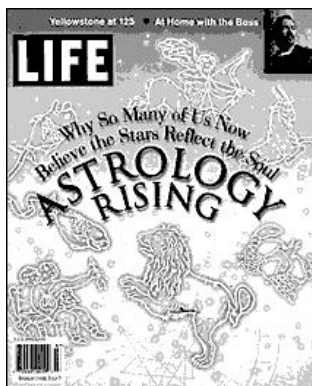
Today the most obvious Barnum statements in astrology occur in sun sign columns, where for

example the words in italics have many possible meanings: Aries – you have *nothing to lose* by making a *request*. Scorpio – *creative endeavours* get a boost from a *distant source*. Capricorn – future *success* depends on *sacrifices* made now. In each case it is up to us to decide what they mean – and making sense of nonsense is something we are good at. So we are led to believe sun sign columns. But Barnum statements occur everywhere in astrology. Noel Tyl unwittingly gives examples during an actual consultation. To Eric, a new client aged 24, 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?" (From Tyl, *Astrological Counsel*, 1975:25-27).

Similarly, in his popular 1987 textbook *The Practical Astrologer* Nicholas Campion shows via a detailed 6-page example how the interpretation of a birth chart proceeds in three stages (1) Summary of the meaning of each major significator. (2) Integration under suitable headings such as *relationships* and *career*. (3) Synthesis into a single report, which in this case was for a 36-year-old female writer-dancer and was as follows:

According to your horoscope you are sensitive, compassionate, imaginative and highly emotional. [These were favourable Barnums. Now the vague Barnum] Yet you are exceptionally strong-willed and have a powerful need to achieve something unique in your life. ... [Now the double-headed Barnum] Although very sensitive and easily hurt, you often hide inside your shell and put a brave face on an insult or slight. [Now more vague Barnums] As a result other people may misunderstand you, so you should bring your feelings into the open more often. Much of your energy may be put into artistic pursuits, especially as you have a vivid imagination. There are signs that your work may be in an artistic field, and you may have writing ability [dear reader, how much of this might fit you?] (p.92).



In his article in *LIFE* magazine for July 1997:38-53, US journalist Kenneth Miller notes that interest in astrology is high. "Yet dozens of scientific studies say it *doesn't* work" (p.42). So he talked to top US astrologers including Noel Tyl, Doris Chase Doane, Greg Bogart, Joyce Jillson, and Chakrapani Ullal (then the USA's best-known Vedic astrologer). Karen Heouin, a gifted amateur astrologer aged 53, looked at his chart and told him:

You have a pretty good hold on reality except that you have a tendency to feel really martyred and abused. You don't get angry very often, but when you do you're mad enough to kill. And that scares you. ... You tend to idealize women, to project things onto them that they're incapable of doing. It's tough for a guy with a moon in Aries to get the kind of nurturing he needs (p.50).

All are Barnum statements applicable to most people, which explains why "Remarkably, most of the other astrologers analysed me along almost identical lines" (p.48). And why he:

arrived home giddy, overwhelmed by the readings' torrent of insights. Although astrology might be fallible, and its predictions were clearly colored by the astrologer's predilections, I was amazed at the way it shed light on the soul. ... Then I talked to Ray Hyman, a professor at the University of Oregon. Hyman specializes in the psychology of self-deception [which explained my experiences]. Hyman infuriated me. I couldn't be such a dupe! But when I looked back over the transcripts of my chart readings, I found that much of what he said applied. ... All the tests debunking astrology ... suddenly seemed hideously conclusive [despite its] ... flowing metaphors and profound myths (p.52).

More recently cold reader Ian Rowland demonstrated the acceptance of Barnum statements when he was asked to pose as an astrologer on BBC TV and give the *same* chart reading to two different women, one a gently-spoken Virgo aged 40-50, the other a confident but skeptical Taurus in her early twenties. Each reading lasted about 20 minutes. The first referred throughout to Virgo. The second was identical except every *Virgo* had been changed to *Taurus*:

"To the best of my knowledge, not a single word of the reading bore any relation to genuine astrological theory or

practice. I made up phrases like 'sign of Virgo with Saturn rising' without the faintest idea what this is supposed to mean, or whether it actually applied to either horoscope". Each subject was then interviewed. Virgo rated it 99.9% right; Taurus 95% right, adding "I was very impressed". Had Rowland proved that astrology worked? "Yes, definitely" said Taurus despite being initially skeptical. Later they were asked if there was any chance he was not a genuine astrologer, and both thought this was not possible (*The Full Facts Book of Cold Reading* 2008:156).

An example of how test results are made useless by failure to control for Barnum effects occurred during a segment from the US 1999 TV series *Exploring the Unknown*, in which each of a dozen hourly episodes has 4-5 segments on things like UFOs and ghosts. In this particular segment US Vedic astrologer Jeffrey Armstrong delivered readings (prepared blind) to ten subjects, each averaging 13 statements that the subject had to rate as accurate or inaccurate. Average accuracy for all ten readings was 77%, which Armstrong then claimed confirmed the superiority of Vedic astrology over Western astrology.

But the test was meaningless due to the failure to control for Barnum effects (mean accuracy 84%, see above). In fact controls had been planned in which (1) Armstrong had to match his readings with the profiles of new subjects, and (2) subjects had to pick their own readings. But the budget required work to stop by 5 pm otherwise the crew would be on double time – and time had run out. There was nothing the presenter Michael Shermer could do about it. Nor could he do anything when the editing failed to explain this.

9.9.7 Illusory correlation and making the chart fit

Seeing correlation where none exists. Or seeing only what we want to see because we know the answer in advance. The only requirement is that our belief is established in advance, eg by myths, superstition, rumours, friends, or something we read in an astrology book, regardless of whether true or not. The implications are bad news. If we believe that extraversion is indicated by a preponderance of planets in positive signs, or that sensitivity is indicated by Cancer rising, or that a difficult relationship is indicated by her Saturn on his Mars, then our observations will probably confirm it even if our belief is false.

If that seems preposterous, consider the Draw-A-Person test (Machover, in Anderson and Anderson (eds). *An Introduction to Projective Techniques* 1951). 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. It is an example of 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. These correspondences are widely accepted. Nearly everyone believes these particular ones. But dozens of studies have found them to be invalid – people with such features do not draw such pictures (LR Aiken, *Assessment of Personality* 1989). Despite which such stereotypes remain pervasive and almost impossible to eradicate. 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 birth 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 stereotypes 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 stereotypes, so that "worried about being clever" appeared only for small heads and never for big heads, the students still saw them as linked to big heads, albeit to a lesser extent.

In other words the students saw only what they expected to see. They reasoned by stereotype. The actual data (the only thing that mattered) had almost no effect. The important point is that these studies could not have made it easier to avoid seeing non-existent correspondences, yet the students failed miserably. So there is no reason to suppose that astrologers do any better once they have learned the symbolism on which astrology depends. In other words, once learned it will be immune to contrary observations, as when the clinical psychologist despite his training said "I'll trust my own senses before I trust some journal article" (quoted by Chapman and Chapman, *Psychology Today* pp.18-22, 106-110, November 1971).

Being fooled by illusory correlation is a fundamental human quality that has perpetrated all kinds of false beliefs such as bloodletting, phrenology, and N-rays. (N-rays were first seen by French physicist Professor Blondlot in 1903. They were supposedly emitted by many metals and allowed the eye to see objects not otherwise discernible, but were disproven in 1904 when Blondlot saw N-rays under conditions he claimed would prevent their occurrence.)

Mullen and Johnson (*British Journal of Social Psychology* 29, 11-28, 1990) meta-analysed available studies and found that illusory correlation increases with the demand on memory (eg with the number of examples we are exposed to), and is stronger if the trait is undesirable eg *aloof* rather than desirable eg *quiet* (r 's typically 0.4 vs 0.2). Both points are relevant to chart interpretation, where we tend to be overloaded not only with examples but also with the chart factors needing to be juggled. The situation is made even worse by our ability to link any trait with any behaviour including the opposite behaviour (Gergen et al 1986, see 9.3), and by our ability to use any real disposition or event to explain almost any happening even when the happening is invented (Nisbett and Ross, *Human Inference: Strategies and Shortcomings of Social Judgment* 1980:183-186). So nowhere is safe.

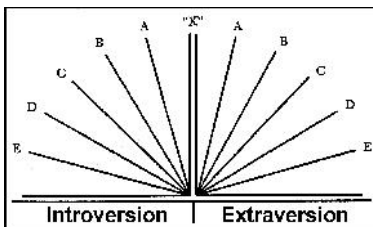
9.9.7.1 Examples of illusory correlation in graphology

The eminent graphologist Nadya Olyanova was consultant to many American psychiatrists and businesses. One such psychiatrist says her reports have:

"invariably tallied" with those of "top-ranking psychologists", and that "it is quite evident that her own considerable skill is the result of persistent study, great gifts of understanding, unusual talent, and tireless devotion to her profession" (Olyanova *The Psychology of Handwriting* 1960:8),

a statement that any top astrologer might identify with. Two former pupils comment:

"Perhaps the most important characteristic of Miss Olyanova's techniques in general is that they are so largely a product of her long experience analyzing not hundreds, but thousands of handwritings" (p.220). Elsewhere they describe her as having "a highly developed ability to sift the wealth of data, and to co-ordinate and summarize it. In finding common denominators and arranging them by order of importance, she demonstrates the remarkable capacity of the human mind at the height of alertness" (Olyanova *Handwriting Tells* 1969:x).



Her pupils imply that an alert mind and huge experience are sufficient to guarantee accuracy. But is it true? Astrologers might say yes. But Olyanova (1969:20) gives this diagram showing the relation of handwriting slant to extraversion. Extraverts are "social, gregarious, impulsive, and demonstrative", whereas introverts are "undemonstrative, reticent, and withdrawn ... they ... usually reflect before taking action".

The above descriptions are a close match to the extraversion measured by personality tests, so we expect a sizable correlation between forward slant and test scores. But there is none:

OL Harvey, *Character and Personality* 2, 310-321, 1933, N=20 students age 21, $r=0.02$ vs AAS, $p=0.93$.

D Lester et al, *Perceptual and Motor Skills* 44, 137-138, 1977. N=111 students age 22, $r=0.08$ vs EPI, $p=0.41$.

Rosenthal & Lines, *Journal of Personality Assessment* 42, 45-48, 1978. N=58 students age 19, $r=-0.13$ vs EPI, $p=0.33$.

Furnham & Gunter, *Personality and Individual Differences* 8, 433-435, 1987. N=64 adults, 30s, $r=0.10$ vs EPQ, $p=0.44$.

If you judge extraversion by slant, your accuracy will be close to that of tossing a coin ($r=0.0$). It gets worse. Olyanova asserts that two people are compatible only if their slants are alike:

there can seldom be compatibility when one person writes leftward and the other rightward. ... they would have too little in common emotionally, temperamentally, and in interests to ensure a lasting relationship in marriage. ... Attractions between extroverts and introverts rarely jell (Olyanova 1969:92).

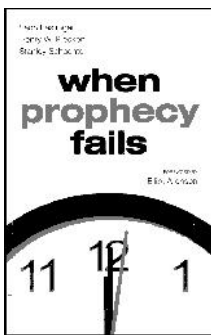
No hedging here with the errors of looking at isolated features! But compatibility is unrelated to extraversion: For 566 married couples the correlation was around 0.50 for intelligence and 0.30 for height, but only 0.10 at most for extraversion (Eysenck and Wakefield, *Advances in Behaviour Research and Therapy* 3, 151-192, 1981). So even if slant did indicate extraversion it would be irrelevant to compatibility. In other words the above assertions, delivered with all the authority of an alert mind and huge experience, are wrong twice over. Yet Olyanova had many thousands of clients. How many relationships suffered needlessly from her illusory correlations and neglect (common to most graphologists) of the scientific approach?

The *nonscientific* approach is the way graphologists have almost always done it, namely: **(1)** Examine handwritings. **(2)** Find interesting features like slant. **(3)** Apply magical thinking. **(4)** Conclude it means something such as extraversion. **(5)** Confirm it by experience (as Olyanova did) taking care to remain ignorant of hidden persuaders.

By contrast the *scientific* approach is the way graphologists have almost never done it. The steps are: **(1)** State hypothesis: Forward slant = extraverted. **(2)** Collect data, say at least 200 handwritings and personality test scores. **(3)** Analyse results statistically: To what extent is the hypothesis supported? **(4)** Inform others of the outcome in a refereed journal. Scientific and nonscientific approaches tend to differ not in their ideas but in the methods used to test them.

9.9.8 Make the client fit

Cognitive dissonance. The unpleasant feeling when our cherished belief is contradicted by reality. The key point is that when people receive evidence that they are wrong, and thus suffer cognitive dissonance, most do not change their belief. Instead they justify it even more tenaciously, which is the exact opposite of the idea that we learn from our mistakes. Indeed, they justify it *even when the disconfirmation could not be more obvious*. Here are two examples:



In their classic 1956 investigation of cognitive dissonance *When Prophecy Fails*, Festinger et al begin by describing the Millerites, a US 1800s religious group that predicted the end of the world on 3 April 1843 based on a 15-year study of the scriptures. Their media campaign attracted more believers than halls could hold (one meeting attracted 3500). When the world failed to end on the appointed day a new date of 7 July 1843 was announced, and public fanaticism increased. When the new date failed, another (21 March 1844) was announced with the same result, and then another (22 October 1844). The last caused Millerism to collapse, showing there was a finite limit to which belief can withstand disconfirmation.

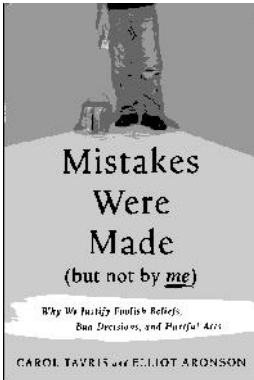
Festinger et al concluded that belief would continue despite clear disconfirmation if believers were *committed* and had *social support* from others, in which case they would increase their efforts to attract more believers. To test this prediction they and various helpers were able to infiltrate a cult who believed the end of the world was only months away, but thanks to interplanetary messages received by their leader they would be saved by a UFO at a certain time and place. As with the Millerites, the date was progressively changed and each time nothing happened except the predicted increase in attempts to attract more believers. Eventually the cult leaders disappeared with their beliefs intact and could not be followed up.

Beliefs can of course be preserved by discounting or ignoring the disconfirmation, especially if you are skilled at rationalisation or belong to a group that maintains belief despite opposing evidence because it provides certainty in areas where none exists. It explains why religious beliefs (virgin birth), conspiracy theories (moon landing was faked), and paranormal ideas (*as above so below*) can be held with a relentless tenacity that resists any attempt to introduce contrary evidence. Of course the same applies to skeptic views, where astrologers complain:

of ennui, with a weary shrug of the shoulders as the only sane response (Cornelius, *Moment of Astrology* 2003:65). There's no point in trying to convince skeptics (Liz Greene, *The Mountain Astrologer* 101 Feb/Mar 2002).

Which seems fair enough. Except that, when believers and skeptics are tested with opposing evidence to see if it affects their beliefs, the skeptics change but believers typically do not:

For example Glick et al (*Personality and Social Psychology Bulletin*, 15, 572-583, 1989) gave 216 students aged 15-18 a personality description. Half were told it might not apply to them, but check it anyway, and half were told it had been prepared for them by an astrologer. In fact all descriptions were the same two, either *favourable* (eg sympathetic, dependable) or *unfavourable* (eg unsympathetic, undependable). The results showed that the skeptics were willing to change their views on astrology according to the supplied evidence, whereas the believers were not willing.



If we believe in astrology then we adjust any discrepancies between our belief and reality, especially if we have vested interests. If our experience seems to show that astrology works, then obviously (1) astrology must be true, (2) arguments against it must be wrong, and (3) we must out-argue the critics (so if a chart reading seems wrong, we explain it away see 4.8.2 so the technique remains valid even if it isn't). Cognitive dissonance (or "motivated reasoning") is a potent persuader that has led to more than 3000 experimental studies and books such as Tavris and Aronson, *Mistakes were made (but not by me): Why we justify foolish beliefs, bad decisions, and hurtful acts* 2007. Here the reason for justifying foolish beliefs is the need to reduce cognitive dissonance. The greater our dissonance the greater our need to justify.

For example US astrologer Marion March tells how, in 1973, an old-time astrologer discovered she charged \$75 for a reading and said she should charge \$500, because clients would multiply. So she charged more and they did multiply. "They thought,



if she charges that much she must be fantastic" (*Kosmos* 24(1), 14-19, 1995). SP Lerner (*Astrological Assistance* 1974:15-18) classifies US astrologers by consultation cost: *Gypsy* \$2-10, *Hobbyist* \$10-25 (best buy), *Professional* \$25-100, *Flamboyant* \$250-1000. In 1985 the US rate for a reading was \$75-\$100 astrologers and \$80-\$100 psychics (*New York Times* 3 November 1985:15). In 2005 the UK hourly rate was £50-£90 astrologers and £95-£105 licensed psychotherapists.

None of us escape. We all see being wrong as a threat to our identity. Indeed the more clever we are, the less likely we are to admit mistakes because our cleverness makes us better at inventing excuses. In his 2005 book *Expert Political Judgement: How good is it?* US psychologist Philip Tetlock showed how 284 experts on political and economic trends resisted having to admit being wrong, and even when they did, they had many excuses, see 8.9.6. But not all examples of tenaciously holding biased beliefs are what they seem:

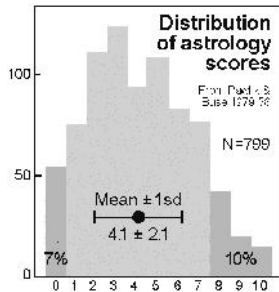
Goodstein and Brazis (*Psychological Reports* 27, 835-838, 1970) asked two groups of 500 psychologists to rate the abstract of an astrological study. For one group the abstract reported significant positive results, for the other group the near-identical abstract reported no significant results. Those receiving the negative abstract (147 responses) rated the study as better designed and more valid ($p < 0.01$) than those receiving the positive abstract (135 responses). It seems like bias against astrology. But the abstracts (not given in the paper but in a thesis by KL Brazis, Kent State University 1964:35-38) described the (bogus) Sun and Moon sign distributions of 2568 US clergymen, but without replication or controls, so the supposed unjustified bias was justified on technical grounds. The devil is in the detail.

The same bias-due-to-dissonance among astrologers appears every time a study with negative results is published, and disappears if the results are positive. The same was true of responses to *Recent Advances* 1977 see 4.8.3 where almost every negative finding was furiously attacked. When *Recent Advances* described the contributions from its 52 collaborators, and how it was the first time the results of such co-ordinated expertise had appeared in one place, it added:

It should be noted that very few of the collaborators make a living from astrology: vested interests are hardly compatible with the requirements of a critical and unbiased review (p.10).

Indeed, had your four present compilers been fervent believers or disbelievers in astrology, you would not be reading this review of evidence regardless of outcome, but only those bits that supported our belief or disbelief – just like astrological or skeptic websites do. The point is, what is to come first, understanding astrology or supporting cherished beliefs?

You can test your level of belief in astrology with this quiz from Pawlik and Buse 7.1.1979,2. Score 1 for yes, 0 for no, and evaluate your total from the plotted distribution, which is for 799 Germans aged 16-75 (68% female). 7% had no belief (0), 10% had a strong belief (8+), mean belief was 4.1. By factor analysis the questions clustered as shown by the line breaks:



01. Have you ever sought advice from an astrologer?
02. Have you ever been to an astrologer to learn more about yourself?
03. Have you ever been to an astrologer for advice on a personal problem?
04. Do you believe character is related to zodiac sign?
05. Have you ever read an astrology book?
06. Do you know the meaning of your zodiac sign?
07. Do you look at a person's zodiac sign to understand them correctly?
08. Should you attend to zodiac compatibility when choosing a partner?
09. Do you read horoscopes regularly?
10. Are you reading horoscopes to help improve your life?

Role playing. Also known as self-attribution or self-fulfilling prophecy. The do-it-yourself version of forcing clients to fit their charts. If astrology says we are extraverted we tend to see ourselves as more extraverted than would otherwise be the case. The effect explains the correlation averaging 0.062 between extraversion test scores and astrological signs, see 8.3.7, and in principle all non-zero effect sizes in tests of astrology, see last page of 7.7.2020.6.

Repertoire. How the astrologer can usually find a behaviour to match any statement, thus reducing the chance of a miss. Here is an example that anyone could try to replicate:

John Addey ... on his daily walk around a block of 12 houses was struck by the correspondence to the Zodiac signs (eg the first house had a ram's-head knocker). [But] in the reverse direction ... the former Aries house could now be seen as Pisces because of the fishpond in the front garden! (Dwyer, *Astrological Journal* 28(3), 99,129, 1986).

9.9.9 Prevent disconfirmation

Stacking the deck. Asking only confirming questions because it is easier to think of features that are present rather than absent. If astrology says a person is extraverted, we tend to test it with extraverted questions (do you go to parties?) rather than introverted questions (do you dislike parties?). Since introverts occasionally do extraverted things, the answer (yes I go to parties) will necessarily confirm astrology.

Confirmation bias. Look for hits and ignore misses. An early obligation to ignore misses can be found among *The Choicest Aphorisms of Jerom Cardan* edited by William Lilly 1675:

Aphorism #18: When true genitures exactly taken in accidents prove false or absurd, and not agreeable to the things signified, they are to be accounted monstrous and are to be avoided as anatomists do monstrous bodies in their dissections; for they overthrow Art (Serjeant, *The Astrologer's Guide* 1886/1970:60).

This despite aphorism #1 where Cardan urges students "above all to be a passionate lover of truth". So on balance he is urging students to be a passionate lover of hits – and only hits. Which is not difficult since charts contain so many factors that hits can always be found even when it is the wrong chart, see 8.9.9. Thus astrologers will accept without question anything that happens to support their ideas, while simultaneously dismissing in their favourite way ("ignorant skeptics") every contrary study no matter how carefully conducted. Indeed, confirmation bias keeps every pseudoscience alive and well. If evidence fits our cherished idea, we accept it. If not, we reject it, end of story – and it takes a huge effort not to do otherwise.

Contrary to what we might expect, knowledge is no defence against confirmation bias. Indeed, the more we know, the more we are able to support our beliefs. Back at astrology, best-selling mathematician John Allen Paulos gives this telling example in his 1988 book *Innumeracy*:

Few experiences are more dispiriting to me than meeting someone who seems intelligent and open to the world but who immediately enquires about my zodiac sign, and then begins to note characteristics of my personality consistent with that sign (whatever sign I give them) (p.26).

Another example is UK astrologer Robin Heath's test of Dennis Elwell's claim that *as above so below* can be confirmed by looking at newspapers. That is, if charts contain X-type indications then newspapers for the same period will report X-type events. Heath chose 7-15 August 2000 because two malefic aspects (SO-180-UR and MA-180-NE) were then exact within 5°. He searched four UK daily newspapers for this period and found two dozen malefic events, which persuaded Heath that Elwell's claim was valid. But malefic events (disruption, scandal, death) sell newspapers. A national daily will seldom be without them. So Heath could hardly fail to find matches, just as people in a rainstorm can hardly fail to get wet. This was confirmation bias at work. Heath had fatally ignored the real issue, which is whether 7-15 August 2000 had better matches than other periods (*Astrological Journal* 42(6), 12-15, 2000).

Former UK astrologer David Hamblin gives this now-famous example:

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 (*Astrological Journal*, 24(3), 152-157, 1982:153-154).

Selective memory. Remember hits and not misses. Here confirmation bias is applied to our memory to ensure that experience (any experience) will be remembered as evidence for astrology. Of course for hostile critics the effect will apply in reverse.

Safety in complexity. Why astrology is nonfalsifiable due to a built-in repertoire of ten sure-fire excuses such as *birth time is unreliable* or *another factor is interfering*, see 4.8.2. This artifact is crucial for everyday practice because it provides an escape from every possible error. Yet astrologers and clients seem unaware of this nonfalsifiability. So it leads them to believe that astrology is never wrong. For example hard aspects are bad because their obstacles lead to failure, and good because their challenges lead to success (Carter, *The Astrological Aspects* 1972:12). US counselling astrologer Bernard Rosenblum says Venus square Saturn can be "basically shy and isolated in love relationships", or can "overcompensate for the self-doubt by excessive sexual openness" (*The Astrologer's Guide to Counseling* 1983:39). Notice how no observation could prove these statements wrong. In other words complexity that leads to non-falsifiability makes it impossible for astrologers to know if astrology could be wrong.

9.10 How hidden persuaders reinforce belief

The above hidden persuaders vary in effectiveness. Some may overlap, and in a given situation some may be irrelevant. But each creates the illusion that astrology works, thus reinforcing the *experience* that it works. All are raging out of control in consulting rooms, all lead to client satisfaction, and none require astrology to be true. There are no opposing hidden persuaders to challenge the experience that astrology works other than the informed critical mind, which of course is not a hidden persuader as such but rather a defence against hidden persuaders. It generally relies on scientific evidence, otherwise the pressure to believe can be overwhelming.

But what about gullibility? Gullibility is not on the list because it implies we are stupid and willing to believe anything, whereas most hidden persuaders reflect fundamental human qualities. They evolved at a time when the world was simple. They are deep within human nature. None of us are immune. Being stupid has nothing to do with it:

[Non-astrological factors] 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 (Graham Tyson, *Bulletin of the British Psychological Society* 35, 186-188, 1982).

Nevertheless when hidden persuaders produce satisfied clients, even if only in the short term, or at least long enough for the astrologer to receive payment, astrologers can hardly fail to believe in astrology. They will rely on their experience as if experience could not possibly be wrong. In this way a vicious circle of reinforcement is established whereby astrologers and clients become more and more persuaded that astrology works. Astrologers typically spend years learning to read charts and thus have ample chance to respond to such reinforcement, and of course to build up a huge vested interest in their beliefs. What the distinguished UK doctor Richard Asher said of medical doctors is equally applicable to astrologers:

If you can believe fervently in your treatment, even though controlled tests show that it is quite useless, then your results are much better, your patients are much better, and your income is much better too. I believe this accounts ... for the violent dislike of statistics and controlled tests which fashionable and successful doctors are accustomed to display (*Richard Asher Talking Sense* 1972). [ie my mind is made up, don't confuse me with facts]

Peter Roberts (1928-2014), pictured in 2004, was professor of systems science at London's City University. He was a colleague of John Addey and one of the first to obtain a DFAstrolS from the UK Faculty for Astrological Studies. He had noticed the failure of empirical tests to confirm astrological claims, and in 1990 he suggested an explanation that foreshadowed the role of hidden persuaders:

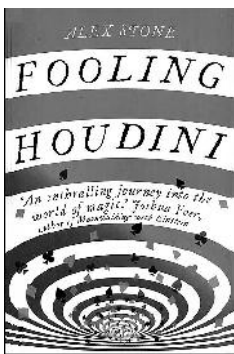


[When] people are aiming for qualities which are more than just the enhancement of those they already possessed [ie inner qualities], the outward manifestation of their aspirations is usually far from obvious. On receiving suggestions that their inner aspirations are those indicated in the chart, people will often agree enthusiastically even though there is nothing in their overt behaviour to indicate the existence of such desires. ... there appears to be a pervasive latent desire to confirm the truth of astrology and many people abandon their normal critical faculties when assessing the accuracy of an interpretation (*The Message of Astrology* 1990:115).

9.11 Do hidden persuaders really matter?

Astrologers will no doubt claim the above arguments miss the point. All that matters are the benefits delivered to clients. So all this sciency stuff about hidden persuaders is irrelevant and merely confirms our bias and ignorance of real astrology. But recall the image promoted by astrologers in 4.1.3 – astrology was not just about benefits to clients, it was also all-revealing, factual, proven, inarguably true, and applicable to everything. If we want to understand how astrology really works, then hidden persuaders are where we should start.

Some astrologers will no doubt dismiss this conclusion out of hand, trusting their personal experience before anything else, which of course is precisely why astrology has stagnated for 20 centuries. But in a free country astrologers can believe anything they like no matter how unrealistic or disconfirmed by evidence. Except there is this impartial insider viewpoint:



9.12 A magician looks at astrology

Magic, like astrology, relies on hidden persuaders. Alex Rose (*Fooling Houdini: Adventures in the World of Magic* 2013) used his knowledge of physics (he was a former undergraduate) plus many years of practice to become a world-class magician capable of fooling other top magicians. Of mentalism (magic that simulates psychic acts), he comments:

The perceived accuracy of the astrological reading was a function not of what the astrologer told them, but of what they told the astrologer. ... Does this mumbo-jumbo [of cold reading] really fool anyone? ... Being of a scientific disposition, I decided to test it ... It was scary, because people actually believed it was real. You could start a religion with this stuff. ... Mentalism, like the ability to cheat at poker, is an ethical minefield (pp.209-212).

And even if you understand how it works, it still feels believable, which is even more scary:

A magic store clerk from LA, [in] a lengthy conversation about the lure of mentalism, summed up the temptation succinctly: "Why bother doing magic shows when I can make three times that much doing readings for old retired ladies?" he asked. The only answer I could come up with was that I'm the wrong kind of liar [ie honest] (p.225).

So what might the future hold for astrology?

10. FUTURE OF ASTROLOGY

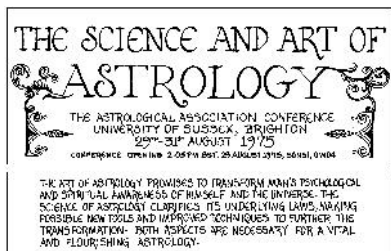
What really matters in astrology? Could it be harmful?

DOUBT	?	From Martin Gardner. <i>Did Adam and Eve have navels?</i> 2000:1-2		NO DOUBT	
Preposterous ideas	↙	Slightly less weird	Some evidence but much doubt	Reputable conjectures	Undisputed facts
Earth is hollow		Homeopathy	Conjectures of Freud	Superstrings	Galaxies contain billions of stars
Positions of stars correlate with character & events		Phrenology Velikovsky Reich's orgone	Quasars are nearby objects	Multiverses Life came from outer space	Water boils and freezes

10.1 VARIOUS VIEWS

In the 19th century the future of astrology seemed assured for the best of reasons:

[Against its detractors] astrology will obtain an easy victory, a glorious triumph, by the force of its most powerful weapons – facts (Alfred John Pearce, *A Defence and Exposition of the Principles of Astrology* 1863:62).



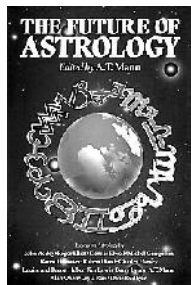
It didn't happen. No facts emerged to force an easy victory or glorious triumph. But hopes were high that they would be discovered by research re-kindled by enthusiasts in the USA and Europe, and by the AA's formation in 1958.

In 1975 the programme for the AA conference said the art of astrology would transform man's spiritual existence while the science of astrology would clarify laws and improve techniques to further the transformation, Both would be necessary "for a vital and flourishing astrology".

A year later the 1976 AA conference programme was even more definite: *Today astrology's unitive vision of the cosmos is re-emerging with a new vitality. It offers a language and techniques which can re-unite the worlds of science and art in a new and higher synthesis.*

In 1982, to conclude his pioneering history of astrology, astro-historian Nick Campion wrote:

There is a distinct possibility, due to changes within both disciplines, of a reconciliation between astronomy and astrology. The next few decades will show the possibilities of this [it didn't happen], and astrology may once more be recognised as the key to all human understanding [it wasn't] (*An Introduction to the History of Astrology* p.74).



The 1987 book *The Future of Astrology* edited by US astrologer AT Mann contained essays by fourteen of the world's leading astrologers. As expected, all are enthusiastic about astrology, but curiously half of them say nothing about how it might evolve in future (an evasion that might suggest a sense of disquiet beneath the enthusiasm).

At least six followed the AA and predicted the return of astrology to its former glory. But none predicted the decline in useful empirical support for astrology that has occurred since 1987. Here is a summary of their views:

Author

- John Addey
- Roger Elliot
- Dennis Elwell
- Michel Gauquelin
- Karen Hamaker-Zondag
- Rob Hand
- Charles Harvey
- Bruno & Louise Huber
- Jim Lewis
- Barry Lynes
- Tad Mann
- Alan Oken
- Leyla Rael
- Dane Rudhyar

View

- Astrology will become central to scientific thought.
- No future unless astrology can be shown to work.
- Every individual is a cosmic deed directed to some end.
- During 40 years I got positive and negative results.
- Astrology will regain its accepted place in science.
- We must see the universe as a living conscious entity.
- Astrology will be woven into the fabric of our lives.
- We must create new methods for spiritual delineation.
- Growth to late 1988, then consolidation, then flowering.
- Unless mundane astrology is recognised, tragedy looms.
- Astrology will be part of medicine, education, religion.
- Astrology is the purest form of occult truth.
- Rudhyar was a true seed man.
- Astrology will bring order to the chaos of human life.

Only Charles Harvey (who wrote both quoted programme claims) delivers what *The Future of Astrology* promises. He predicts that full-time astrology courses will appear in universities "in the fairly near future", and that banks of computer-analysed charts with portraits and case histories will lead to a better understanding of astrology. But before any of this can happen "we cannot evade the need for demonstrable, quantifiable evidence for astrological effects" (p.74), a point echoed by Roger Elliot, who sees a future "Only if astrology delivers" (p.198).

Harvey's bright future didn't happen but in technological terms it was well justified. Computers, word processors, fax machines, and the internet had eliminated all problems of chart calculation, chart analysis, writing up, and the communication of results. Technology had also revolutionised time keeping (see 8.4.5) so the exact timing of events was no longer difficult.



Today the precision of public digital clocks makes it hard to imagine the confusion that could exist as here in the 1982 departure lounge at Heathrow Airport (so the clear moral in those days was to avoid being born in a departure lounge).

But the need for good evidence still existed, and in *Astro*Talk* for May-June 1986, under the heading "The State of Astrology: Where Are We Headed?" 19 well-known US astrologers gave their views. Most felt that astrology was in a sorry state, plagued by bickering and ignorance of relevant disciplines. It needed more ideas, more facts, better theories, and rigorous testing by qualified persons. John Townley, a respected veteran astrologer, gave this view:

I would say that most of the accusers of astrology are probably correct. They think that astrologers are 100% charlatans, but I would bring it down to 90%. Not necessarily even intentional charlatans. But ... they are suffering from the same failing. Maybe 50% of the people out there are deliberately selling hokum [nonsense] straight ahead (p.7).



But UK astrologer Melanie Reinhart welcomed hokum as diverting scrutiny from the real work of astrology where "there is nothing to prove" at least not for astrologers (*Astrological Journal* 56(5), 56-58, 2014:57).

Other visions were just as unspecific. This ISAR 2000 conference was supposedly on the future of astrology but the actual lectures contained very little on the future of astrology

Today, after hundreds of tests by both astrologers and scientists around the world, it is clear that "more ideas, more facts, better theories, and rigorous testing by qualified persons" will achieve nothing because astrology is not able to deliver. Its days as a claimed source of factual knowledge are over.

10.2 LEGITIMATE USES

So a legitimate use for astrology will seem to lie in areas where it need not be true and is known not to be true. That is, in areas such as entertainment, the creative arts, human history, and perhaps in counselling as a focus for conversation. It is only in such areas that engaging

with astrology today can be justified – a view that is rarely discussed, so we now explore it in some detail:



10.2.1 Use of astrology in entertainment

The use of astrology in entertainment and creative arts needs no justification. You do not have to be a believer in astrology to be entertained by this astrological re-naming of road signs. Nor by this "mix of ancient wisdom and modern nonsense" in Steven Harrison's satirical column from Sydney, Australia:

Aries: Plant a tree. Reafforestation is a growth industry. **Cancer:** Get out more at night. Nocturnal bird spotting is a real hoot. **Leo:** Forget keeping up with the Joneses. Bring them down to your level instead. **Scorpio:** A suntan is terrific if you get a kick from third degree burns. **Sagittarius:** If you feel listless, make a list. **Pisces:** Avoid bathrooms at full moons. Werewolves are a shaving nightmare.

ASTRO ANSWERS

I am a Capricorn. According to the books I should be thin and bony. But I am 22 stone and increasing. What should I do? Mrs AA, Wilson.

Try palmistry. Like both hands over your mouth at mealtimes.

I am a Taurus. What is my character and what sort of man should I look for? Miss APB, Forrestfield.

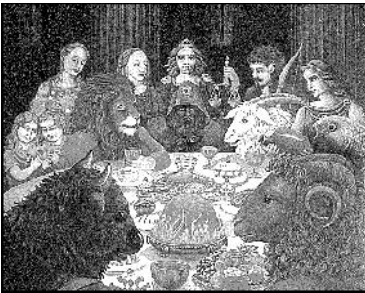
According to tradition you are indulgent and possessive. You demand security and love luxury. Look for a man with his wallet in Sagittarius.

In last month's issue you said that newspaper horoscopes are rubbish. But recently I have been reading my daily horoscope in the (name withheld) newspaper, and quite often it is amazingly accurate. How do you explain this? Miss FGH, Rockingham.

The newspaper you mention runs a syndicated horoscope column originating in England. Because of a strike some time ago the paper ceased production for a day or two. On resumption the horoscopes were simply run on. In other words the horoscope you find so amazingly accurate is for the wrong day. Back to you.

What can I do to stop my Aries male shouting at me? Ms BBG, Dalkeith.

Try turning the telly down a bit.



Even astrologers can entertain with astrological satire, as in the following examples abridged from *The Impractical Astrologer* 1995 and *The Impractical Astrologer II* 1996 (editor Kim Farnell, all authors were anonymous):

Astronomy explained in clear and simple terms. The Moon is big and white. It is confusing to observe because it keeps changing shape and moving about in the sky. The Sun is round and orange. It is sometimes difficult to observe in Britain and is seldom visible in the Manchester area. The trick is to look for it in the daytime because it is hard to find at night, even with a telescope. The Earth is easier to observe. It is nearer to us than the Sun and the Moon. It can be seen day or night by finding one of these two luminaries and then looking in the opposite direction.

The aphorisms of Jeremy Cardigan. (1) He that asserteth things that can never be proven by experience is among the majority. (2) Always deliver judgements from the Starres in general terms, but if thou dost otherwise, let it be known that thou hast notice of large payments. (3) We ought not to use arguments or tedious discourse in giving Judgement, much less flatteries, but on the other hand we have to earn a living. (4) When Moone is in sixth beholding Iupiter and Sagittarius ascends, the native shall keep a pet frog.

Pluto Planting: The timeless one. Worn out by the frantic pace of Gardening by the Moon? Try Pluto Planting, a product of proven technology and available only since 1930. Pluto Planting provides an entire lifetime (and more!) in which to plant that radish seed. Pluto Planting is ideal when perceived action is more important than results. It comes with its own self-adhesive planning guide to fit your trowel handle, and a 99-year guarantee of success – your money will be cheerfully refunded if any Pluto planting fails within the guarantee period. Only \$99.95, or two for \$299.95, all on our revolutionary easy-credit plan (100% down, no payments).

The Lodge Point. The Lodge Point is a sensitive degree that Bessie Leo received from a Mahatma at the turn of the century along with a copy of the Bombay train timetable. It is a subtle point but very easy to find, being exactly on, or near, or adjacent to, or equidistant from, or at right angles to, the point that can be deemed as holding any of these positions in relation to any of the Seven Traditional Planets, their rulers, the dispositors of their rulers or the rulers of their dispositors. For pm charts these positions are of course reversed after first adding or subtracting 24 hours and then adjusting for latitude in the usual way. The Lodge Point is symbolic and also very symbolic. A transit to a Lodge Point will manifest at the level where the owner is expressing their purpose. If they are sitting down it will depend on where they are sitting. If up a ladder it may indicate they are painting a window or committing a burglary. If they don't know their location it will probably be on a committee. Lodge Points in square mean that one owner will die first.

Nor do you have to believe in astrology to appreciate this zodiacal re-enactment of the Mad Hatter's tea party in *Alice in Wonderland*.

10.2.2 Use of astrology in the creative arts

In her 2013 book *Astrology for Writers: Spark your Creativity*, Corrine Kenner comments that:

Writers and artists who can tap into the cycles of astrology have a magic window into the world of human experience. (p.3). ... your creativity will be unleashed (p.4) ... Think of it as a tool kit to help you create characters, develop dialogue, and plot scenes and stories from beginning to end (p.5).

But (1) much the same could be said of anything else claiming an angle on human experience from palmistry to UFOs. (2) Serious astrology has too many complications for popular appeal, which is why films such as the 1979 *Fish That Saved Pittsburgh* had to stay with sun signs (the fish is the Pisces player who saved the losing NBA Pittsburgh basketball team), the 1973 James Bond film *Live and Let Die* had the seer Solitaire read Tarot cards rather than birth charts, and why there are very many more UFO-themed films than even simplistic sun-sign-themed ones.



But even simplistic sun signs can be a source of ideas for artists to create soaring images of classic inspiration for everyone, not just those whose sign is depicted, nor even those who might wonder what is being aimed at. For other examples see 8.9.7.1.

10.2.3 Role of astrology in human history

Astrology used to be dismissed in academia as mere superstition but not any more. It has been involved in human society for too long to justify ongoing dismissal. Its historical importance is now widely recognised and has led to its history being accepted for study in university courses and as a topic for higher degrees, in the same way that Gall's phrenology and Freud's psychoanalysis are accepted for their own historical interest. In the mid-17th century many saw astrology as respectable:

It was rooted in the conditions of social life. Ordinary people were much more aware of the heavenly bodies than they are today [blame it on our artificial lighting] (Keith Thomas, *Religion and the Decline of Magic* 1971/1991:394).

Astrology's value to academia is shown by the success of *Culture & Cosmos: A Journal for the History of Astrology and Cultural Astronomy* founded in 1997 by Nick Campion (all issues online since 2017), and the distance-learning MA in Cultural Astronomy and Astrology at the Sophia Centre, University of Wales Trinity Saint David, both subsidised by the Sophia Project launched in 1998 via an anonymous bequest of a million pounds to help establish a centre for astrological studies at a British university. Several unrelated Sophia Projects exist in the world.

Our final legitimate use is more controversial so our coverage occupies nearly eight pages. For more details visit www.astrology-and-science.com/A-cns11.htm (115 references).

10.2.4 Use of astrology in counselling



Critics see such use as unacceptable. US Bible scholars John Ankerberg and John Weldon put it like this:

astrology often leads the client to accept myths and falsehoods as truths ... how can counseling based upon such things ... ever be "helpful"? ... Living a lie is unhealthy (*Astrology: Do the heavens rule our destiny?* 1989:258-259).

Indeed, leading astrologers Liz Greene and Howard Sasportas readily acknowledge that many clients want:

predictions and a pat on the back about one's apparently fixed and unalterable behaviours – and there are still many astrologers who will happily oblige such clients (*Development of the Personality* Vol 1, 1988:xi).

US astrologer and teacher Joan McEvers agrees, pointing out that astrology:

can be used detrimentally – to coerce as well as to misguide others, to worship as some kind of an occult power. [So it] has gained a rather tarnished reputation (ed, *Spiritual, Metaphysical & New Trends in Modern Astrology* 1988:1)

UK psychiatrist Dr Anthony Stevens assessed chart readings for Derek Parker's investigation of astrology. He concluded that astrology is a delusional system similar to organised religion:

Astrology ... 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 psychoanalysis ends: if my own fate should bring me to the crossroads, I know to which discipline I should turn for help (in Derek Parker, *The Question of Astrology* 1970:218-219).

All are referring to the problem of astrology being used as a source of factual truth. But once we abandon this idea the views become more positive:

10.2.4.1 Positive views of astro counselling

In 1969 Dianne Skafte, 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 might 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 (*Voices* 5(4):38-41, 1969).

In 1975 A Laster, an educational psychologist and astrologer, made 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. (*On the psychology of astrology: the use of genehtliacal astrology in psychological counseling*. PhD thesis, Pittsburgh 1975. University Microfilms 7620183).

In 1980 EL Askren, a US psychiatrist, came to use astrology in his practice because "it 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" (*Journal of Geocosmic Research Monograph* No 1, 10-15, 1980).

In 1982 D Lester, 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 psychotherapists. **(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 (*American Journal of Psychotherapy* 36, 56-66, 1982).



In 1994 C Valentine, in an anthology of innovative methods in psychotherapy, noted 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 (in Jones ed, *Innovative Therapy: A Handbook* 1994:204-216).

Also in 1994 Dianne Cunningham, a certified psychotherapist and astrologer, noted that "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. ... The astrologer who has a working knowledge of good sources of healing can have a profound impact" (*The Consulting Astrologer's Guidebook* 1994:88).

In 2001 V Noble, a therapist for women, noted that tapping into unseen, energetic, and magical realms (as in astrology, shamanism, oracles, and collective ritual) can be a source of deep healing and illumination. It eases the pressures on the therapist and relieves the client of helplessness and despair (*Women & Therapy* 24, 193-208, 2001).

In 2002 DV Weil interviewed four licensed psychotherapists who used astrology in their practice. All were passionate about astrology but apprehensive of criticism. The chart introduced a spiritual third party and a new worldview. It was not just a tool but had a meaning that deepened the relationship with their clients (*The lived experience of psychotherapists who integrate astrology into their depth psychology practice*. PhD thesis, Pacifica Graduate Institute 2002).

10.2.4.2 Two approaches

In recent years the use of astrology in counselling has divided into two approaches: **(1) Chart reading.** Astrologer talks, client listens. It is what people expect. **(2) Chart exploration.** Astrologer and client explore the chart together. It is where counselling enters the picture.

UK astrologer Roy Alexander (*The Astrology of Choice: A Counseling Approach* 1983:83) suggests as a rule of thumb that *chart reading* becomes *chart exploration* when the client does more than half the talking. But it will still depend on the client. With inhibited clients the astrologer may have to do most of the talking just to draw them out.

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. For example in his 1973 booklet *An attempt at formulating minimal requirements for the practice of astrology*, he 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).

In other words a successful reading requires empathy (a point developed further in 10.2.4.6), which many people are good at. For the astrologer the trick is to pick whatever chart factors happen to fit and thus encourage conversation regardless of what the other potentially countless (see 5.18) – and thus beyond interpretation – chart factors are saying.

But many astrologers outside the USA would have denied that their astrology was other than person-centred. In her 1982 book *Astrological Counselling* UK astrologer and qualified counsellor Christina Rose was able to report "immense changes" in the practice of astrology away from chart reading to chart exploration (p.15). In 1988 the UK Faculty of Astrological Studies

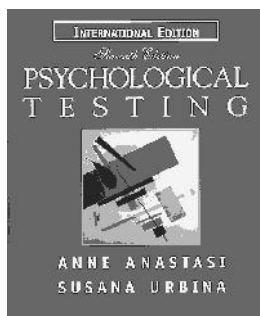
began two-year post-diploma counselling courses to blend astrology and counselling. Two years later the UK Association of Professional Astrologers International (APAI) was formed. Safeguards included the mandatory referral of potential clients "whose needs are beyond the competence of an individual astrologer", 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". Membership was limited to astrologers with a diploma from an approved body such as the Faculty of Astrological Studies. Later similar bodies were formed in Australia (2000), Belgium, France, Germany, Netherlands, and the USA (2001).

Today all established schools of astrology hold examinations, award diplomas, and have codes of ethics. The codes vary in detail but all require: **(1)** No astrological opinion be given unless based on the whole chart cast for the exact date, time and place of birth. **(2)** Opinions not based on astrology be identified, **(3)** Client confidences be observed. However it is a common experience of astrologers that clients tend to be uncritical and not bothered about credentials.

10.2.4.3 Projective tests and the need for caution

Yes, the use of astrology in counselling has been described in articles, theses and books, all based on people's ability to see faces in cherry-picked clouds, but we have found no controlled studies that evaluate astrology's performance vs orthodox approaches. A claimed legitimate use in people's lives that is without objective support (as opposed to gushing testimonials) is by definition dishonest, or at least a violation of ethical requirements.

But all is not lost. The process that underlies astrology (seeing meaning in ambiguous stimuli) also underlies projective tests, where subjects describe what they see in inkblots, incomplete sentences, or vague pictures – a process essentially no different from seeing meaning in birth charts or hand prints, see 9.4 and 9.5. Projective tests have been explored during 80 years of development resulting in a vast literature that can exceed 6000 references for a single test.



This may sound impressive, but as usual the devil is in the detail:

Many types of research have tended to cast doubt about various aspects of the projective hypothesis. There is ample evidence that a variety of alternative explanations may account for the individual's responses to unstructured or ambiguous test stimuli. ... The accumulation of studies that have failed to demonstrate any validity for such techniques as the TAT (ambiguous pictures) or the D-A-P (Draw-A-Person) tests is truly impressive, even after discounting the methodological inadequacies of many of the studies. ... most of these instruments are not ready for routine operational use in helping to make decisions and predictions about people (A Anastasi and S Urbina, *Psychological Testing*, 7th edition, 1997:440).

Furthermore, the value of projective tests depends on the subject and on the skill of the therapist, so it cannot be evaluated independently of the therapist. The same applies to astrology and to things like palmistry, the Tarot, and the views of turf accountants. It means that a second opinion on your birth chart or hand is likely to differ substantially from the first, a point confirmed in 4.6.4. But nearly all have one important advantage:

Most projective techniques represent an effective means for "breaking the ice" during the initial contacts between clinician [i.e., therapist] and client. The task is usually intrinsically interesting and often entertaining. It tends to divert the individual's attention away from herself or himself and this reduces embarrassment and defensiveness. And it offers little or no threat to the respondent's prestige, since any response one gives is "right" (p.433).

This certainly applies to astrology, for examples see 10.2.4.1. As does the next point:

By creating new constructs to fit the individual, the clinician can predict from combinations of events he or she has never encountered before ... provided they are not accepted as final but are constantly tested against information elicited through subsequent inquiry, test responses, reaction to therapy, or other behaviours on the part of the client. ... decisions should not be based on any single datum or score obtained from such sources (p.442).

10.2.4.4 Is astrology really like a psychotherapy?

According to Frank and Frank, *Persuasion and healing: A comparative study of psychotherapy* 1991:40-51, all psychotherapies, orthodox and non-orthodox, share the following features:

- 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. [More on the last bit in 10.3.4]

The procedures for providing relief are of two broad types:

Person-centred therapy aimed at general problems such as internal conflicts or emotional blocks. Each therapist follows their own model eg Freudian but does not intervene and leaves any action to the client. It is therapy by conversation.

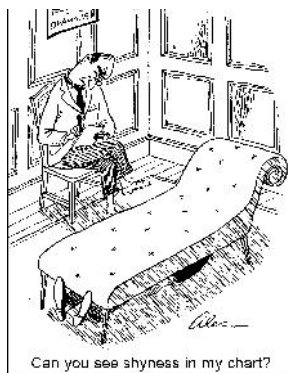
Symptom-centred therapy aimed at a specific problem such as bed-wetting or fear of spiders. The therapist follows a definite model eg behavioural therapy, intervenes more or less scientifically, and remains in charge. It is therapy by action.

Astrology emerges as person-centred therapy, not symptom-centred therapy, but only in an astrology that is modern Western. 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 (EH Hare, *Proceedings of the Royal Society of Medicine* 70, 105-110, 1977). In India today astrologers routinely give instructions, predictions and remedies for every human problem and concern including marriage and career choices (JF Pugh, *Culture, Medicine and Psychiatry* 7, 279-299, 1983). No modern ethical Western counselling astrologer would go this far.

10.2.4.5 Are some person-centred therapies better than others?

Despite decades of research and a huge literature, no orthodox person-centred therapy has been found to be generally more effective than any other (this is not true of symptom-centred therapy), which indicates that they all work for the same reasons. The reasons are:

- Client and therapist should like each other.
- Client and therapist should share the same values.
- Therapist should be warm, understanding, and confident of success.
- Surroundings should be comfortable and appropriate.



Indeed, no *non-orthodox* person-centred therapy has been found to be generally more effective than any other. Here is a remarkable investigation of this point:

In her 1945 book *Where do People take their Troubles?* LR Steiner, a medical and psychiatric social worker, made a 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. She also visited consultants (they included 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)** Consultants were generally untrained for professional practice. Many were unscrupulous and dishonest. **(3)** No technique (astrology, palmistry, Tarot etc) was better or worse than the others. Yet all consultants claimed success for their particular system.

That was in 1945 and ethical standards today are somewhat improved. But Steiner's point about emotional turmoil still applies. It means that affected clients will be motivated to seek:

the experience of an intense concentration by another human being on concerns of importance to him [the client]. For most people this is an extremely rare, and therefore precious, opportunity. ... It is precisely to this that the psychotherapist commits herself (from C Lister-Ford and M Pokorny in P Clarkson and M Pokorny (eds) *The Handbook of Psychotherapy* 1994:136).

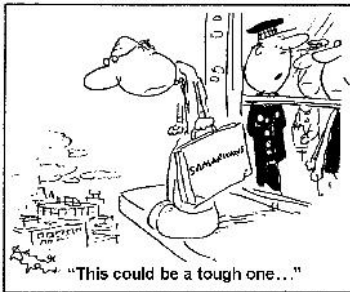
If the client ends up feeling better (they invariably do, see next), the astrologer concludes that astrology works. What could be more obvious? Experience rules! But again caution is needed:

10.2.4.6 Is it astrology working or something else?

Chapter 9 (artifacts) tells us it isn't astrology. One might also suppose that training and experience in therapy are important. But untrained nontherapists (eg friends) who are warm and sympathetic generally perform as well as, or even better than, trained experienced therapists with years of study. And both are better than nothing, at least for nonpathological problems (A Christensen and NS Jacobson *Psychological Science* 5, 8-14, 1994). WR Miller et al

(*Journal of Consulting and Clinical Psychology* 48, 590-601, 1980) found empathy accounted for 67% of the variability in 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 have been there, but you can empathise regardless.)

The power of empathy is dramatically revealed by the experiences that led to The Samaritans. In 1953 the Reverend 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, so they had to wait in long queues. But the queues also attracted helpers who:



engaged the clients in conversation, plied them with coffee and cigarettes, and generally made them feel at home (C Varah (ed) *The Samaritans*.1985:23).

Many waiting clients left before seeing him because the talk with a willing listener had done the trick. They didn't need to see him any more. This led 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 without giving advice while people talk themselves out of trouble. A good model for chart exploration.

Success is increased if the therapist shows interest and empathy 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. Don't despair if the client does all the talking. Varah (p.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 "Mmmm".

10.2.4.7 Astrology is not counselling

Calling something a psychotherapy does not automatically make it good for us. The need to do something is not a license to do anything. Astrology by itself is not counselling. People with problems need to learn coping skills, but this will not happen unless the astrologer is properly qualified. According to Scott Lilienfeld et al, in RH Wright and NA Cummings (eds) *Destructive Trends in Mental Health: The Well-Intentioned Path to Harm* 2005:187-218, the worst dangers lie in pseudoscientific and unscientific psychotherapies, which necessarily includes astrology if we see it as a source of truth rather than as a focus for conversation.

10.2.4.8 Pernicious psychotherapies

In her 2003 book *Mind Games: Psychological Warfare Between Therapists and Scientists*, most of what US social psychologist Carol Tavris says of psychotherapists 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 findings of psychological researchers tend to be invisible outside universities. Many therapist claims 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.

She notes that two core elements are central to the scientific method but tend to be absent in the training of psychotherapists [they are always absent in the training of astrologers]: (1) A willingness to question received wisdom. (2) A reliance on tests to decide issues. So they consider only confirming cases (the people they see in therapy), and not the disconfirming cases (the people they don't see). If independent observations confirm X, great, tell the world. If not, then the observers are incompetent, denounce them from the rooftops. [A situation exactly true of astrology.]

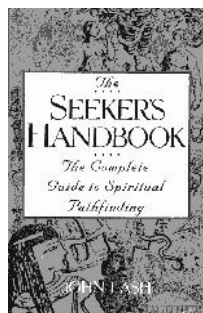
But not so fast. What if you don't need therapy because your interests are purely spiritual?

10.2.4.9 New viewpoints on demand

Some people claim that the value of chart exploration is not its supposed ability to tell you

what you want to hear but the expansion it can bring to your awareness and understanding by giving you new viewpoints and perspectives. But the same can be said of talking to close friends or reading self-help books or discussing classic novels or travelling in strange countries or subscribing to a course in critical thinking, so unless the claimants have tried everything why should anyone believe that astrology is somehow special? No doubt different people will prefer different approaches, but until controlled tests are made we have no objective grounds for choosing one rather than another. After all, just because astrology has helped spiritually-challenged Tom does not mean it will help Dick, Harry, and Lee Chin Chin.

According to US sociologist of religion WC Roof (*Archives de sciences sociales des religions* 109, 49-66, 2000) 9.3% of Americans aged 34-50 are seekers "exploring one spirituality after another", from ancient wisdom, angels, and astrology to reincarnation, Sufism, the supernatural, and Wicca, "the permutations seem endless", all promoted by marketing. He doesn't indicate their relative popularity, but in 10.3.14 roughly 0.4% of the US population were consulting an astrologer every year, which vs 9.3% is hardly a large proportion.



For a spiritual viewpoint, listen to historian and esotericist John Lash and his 30-years-in-the-making *The Seekers Handbook*, a 1990 A-Z guide detailing hundreds of paths from Abba (the Aramaic name for God) to Zoroaster (Greek form of the Persian Zarathustra) distilled from a vast literature of thousands of titles since the 1960s alone. Seekers seek the meaning of life, not just how to find yourself, and – this is the important bit – every seeker is different:

The best way I know to find the meaning of life is to seek the life of meaning. This is a very individual affair ... as different for each of us as are our fingerprints (pp.xiv,8). Although often viewed as the most prominent aspect of the metaphysical revival since the 1960s, astrology remains both the most conventional and the least credible of New Age belief systems (p.106).

At which point critics might well lose all interest in spiritual arguments for astrology – indeed any arguments – simply because people can believe anything they like. So why bother? The answer is that ignorance is not a realistic option. If we are informed about how astrology works, we are better able to capitalise on its benefits and avoid its liabilities, which is something not to be sneezed at. In any case, what about the competition?

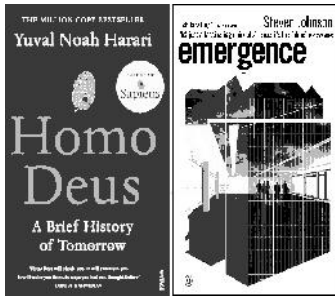
10.2.4.10 Competition from self-help books

In a survey of self-help therapy in the USA, GM Rosen et al (in SO Lilienfield et al (eds) *Science and Pseudoscience in Clinical Psychology* 2003:399-424) note that self-help books have always been popular. Today astrology (with about 1000 in-print titles in English) faces strong competition from self-help books (several thousand in-print titles in English) that typically describe a problem and how to solve it, always supported by examples and all without the huge amount of time required to learn astrology. Even though less than 1 in 100 self-help books quote controlled studies to support their claims, research-based discussions of the most effective treatments do exist (eg Nathan and Gorman, *A Guide to Treatments That Work* 1998). Similar discussions in astrology do not exist. But not all self-help books are safe to use. GM Rosen et al (2003) stress that most self-help books have not been independently assessed:

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).

But a good self-help book can help as much as counselling can, especially if it is based on sound scientific principles (RA Gould and GA Clum *Clinical Psychology Review* 13, 169-186, 1993). Moreover, treatments in psychology do not require the problematic assumptions that underlie astrology, ie assumptions that provide no genuine understanding although they may provide a convenient alternative to the traditional support from religion, drugs and alcohol.

To help authors address key issues before writing self-help books, Rosen et al list 14 questions that boil down to "does it work better than a placebo?" – a question astrologers rarely answer. (For more on placebo effects see 10.3.2). No wonder that since 2000 books on astrological counselling have been slowly disappearing from most Western bookshops, see 10.2.4.12.



10.2.4.11 Competition from the future

In his 2016 best-seller *Homo Deus*, history professor YN Harari looks at the sources of meaning since antiquity. In Babylon people "believed that the stars controlled their fate and predicted their future". Today algorithms [ie computer programs] with increasing power and giant databases "know exactly how you feel [and other things] you hardly suspect". In his groundbreaking 2001 book *Emergence* the award-winning journalist Steven Johnson shows how huge groups of individual entities such as ants organise themselves even though no one is in charge. Algorithms that combine Web outreach with the tools of emergence are likely to give personalised results "beyond our wildest dreams" (p.207). In such a world how would astrology fare? See also 8.9.2.4.

Don't complain that algorithms have no depth and no soul. Already they can compose classical music and poetry to match any made by humans and they are fast getting better (2016 Ch 9). M Kosinski et al (Private traits and attributes are predictable from digital records of human behaviour, *Proceedings of the National Academy of Sciences* 110(15), 5802-5805, 2013) found that analysis of the *Likes* of Facebook users (median 68 *Likes* per subject) gave remarkably accurate predictions of the user's Big Five scores on a 20-item questionnaire, the best accuracy ($r = 0.43$ for Openness) being close to the questionnaire's test-retest reliability (0.55):

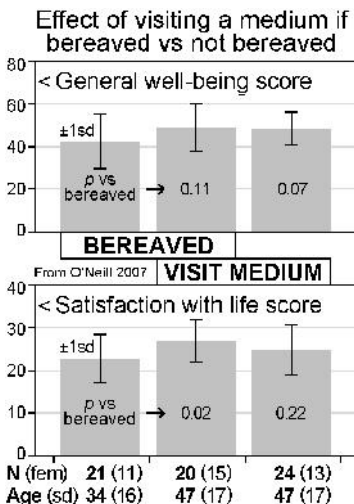
Trait	Correlation r	N	Test-retest	Trait	Correlation r	N	Test-retest
Intelligence	0.39	1360	0.78	Emotional Stability	0.30	54373	0.68
Openness	0.43	54373	0.55	Agreeableness	0.30	54373	0.62
Extraversion	0.40	54373	0.75	Conscientiousness	0.29	54373	0.70

A *Like* is a click on an upturned thumb used by Facebook users to express their positive association or "like" with online content such as photos, friends updates, Facebook pages of products, sports, musicians, books, restaurants, or popular websites. They are a very general class of digital records similar to a record of web search enquiries (p.5802).

Similar tests of dichotomous yes/no variables beyond the claimed reach of astrology (such as drinks alcohol, smokes cigarettes, liberal vs conservative, Christian vs Moslem, male vs female, N between 1200 and 57500) achieved typically 75% accuracy. Indeed, algorithms promise to rival orthodox tests in providing the one thing that astrology can never hope to provide, and never has done – an evidence-based description of how you stand with respect to others. (Yes, this sees only the good side of algorithms and ignores their role in spreading disinformation.)

Suppose you have to decide on the path your future career will take. Who will you prefer – the university's careers counsellor and your answers to the Strong Vocational Interest Blank, or an astrologer with your birth chart? How likely is it that astrology as a useful fiction could compete in a world where convenient objective alternatives to knowing ourselves and our abilities were suddenly a reality? No doubt we will find out soon enough.

In the meantime the assessment of astrology vs competing algorithms is unexplored except via computerised chart interpretations, see 8.6.11, but one study did provide a few clues:



Mari O'Neill. *The Therapeutic Consequences of Visiting a Medium*. Unpublished undergraduate thesis, Department of Psychology, Edinburgh University 2007, made available by her supervisor Professor Caroline Watt. Questionnaires were completed by people (bereaved or not) who had visited a medium and by bereaved people who had not visited a medium. Mediums were interviewed about their experiences and approach. The results revealed no significant effects due to bereavement yes/no, its proximity, the frequency of visits, or Spiritualism. The diagram shows how the well-being and satisfaction scores of bereaved people changed after visiting a medium, but only to levels no different from those who were not bereaved. In short, visiting a medium had a small beneficial effect but a control effect of talking to friends was not tested.

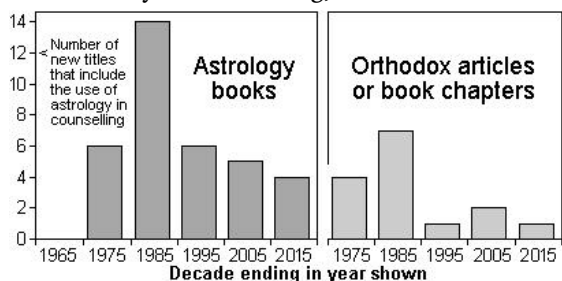
O'Neill's results are consistent with those of UK psychologist Tony Walter (*Bereavement Care* 27(3), 47-50, 2008) who observed mourners and mediums in Spiritualist churches in the UK (where Spiritualism is an accepted religion) and interviewed bereavement counsellors. He concluded:

The messages received are typically benign and innocuous, assuring the mourner that the deceased is all right and sends love; occasionally the messages help the mourner; reports of negative consequences are rare. (p.47)

If, as seems likely, the reasons for engaging Astrology World are generally less traumatic than bereavement, the therapeutic consequences seem likely to be similar, ie small, potentially helpful, but untested against the potential insights of Psychology/Algorithm World.

10.2.4.12 The move away from counselling

The move towards legitimising astrology in the 1990s was accompanied by an interest in 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), Vedic astrology (Indian), financial astrology (money markets), and horary astrology (answering questions), which led to an increasing split between a psychological astrology applied in counselling and the rest. Indeed, judged by the number of new astrology books devoted substantially to counselling, the interest of the 1980s has declined:



Left: The number of new astrology books with a substantial focus on counselling rose from essentially none in the 1960s to a massive peak in the 1980s, then falling until it was about 1 in 200 of all new astrology titles in the 2000s. Of the 1500+ articles published in *The Mountain Astrologer* during 1991-2005, the proportion with some focus on counselling is also about 1 in 200. **Right:** Much the same pattern is shown by orthodox publications that address the use of astrology in counselling. ($r = 0.90$, $N = 5$).

Much the same decline of interest is reflected in the membership of professional associations. After 15 years the APAI (see 10.2.4.20) had grown to only 110 members. The Faculty had to discontinue its counselling course due to poor demand. 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 6000 approved psychotherapists. Question: If clients are uncritical and not bothered by credentials (again see 10.2.4.2), do they get the astrology they deserve?

10.2.4.13 Use of astrology in counselling: Conclusion

If all you need is a quiet chat with a good listener but have nobody to turn to, critics might suggest that an astrologer or tea-leaf reader or even a bartender might be acceptable. But if you need a serious consultation with a qualified professional about serious problems, they would suggest you think again. Bad things can and do happen with astrologers, see 10.4. But being traditional is of course not identical with being honest, a topic we now explore:

10.3 AN HONEST FUTURE FOR ASTROLOGY

10.3.1 Recipe for honesty: Tricks of the trade

In his pithy 1995 *L'astrologue face a son client: les ficelles du metier* [Astrologer meets client: Tricks of the trade] 2nd edition, French astrologer Jacques Halbronn presents various tricks that require no belief in astrology by the astrologer. Here is a digest:

The chart tells you only that your client has an interest in astrology and is open to any speech that pretends to be based on astrology. The important thing is not your ability to read it but your ability to exploit it. The chart provides a focus to distract the client from more serious deficiencies so she can build confidence in your abilities. The more books you can consult to find the true hour amid time zones and other complexities, the better for your image.

Of course there are many chart factors to choose from but you have the privilege of forgetting to interpret many of them. This trick is especially valuable. It is normal to use it constantly.

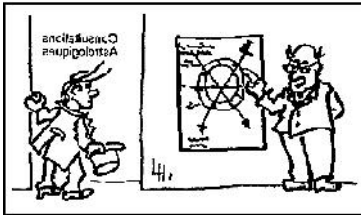
Stress that the chart is a model to be followed rather than a reality to be adhered to, but never explain your working methods because your model may then seem too credulous and too simple. You must scramble the tracks, note the contradictions, play the subtle planetary mixtures, and choose whatever best fits the client. In this way your claim to extraordinary knowledge will be preserved. Of course you have to learn a certain astrological language but only as a foreign language is learned. It is not itself a source of truth or transcendental knowledge, only a means of saying ordinary things differently for better or worse.

You have to speak astrology but not think astrology. You must manipulate the astrological language and make it serve your client, because the only thing that matters is her satisfaction. So be surrounded by astrological symbols and complicated documents. Just receiving the birth chart can be more decisive than its interpretation, even though it merely provides a focus that allows therapy by conversation to proceed, in the same way as the idea of previous lives might do. Remember also that you are there to reconcile her with the real world, not to reconcile her with the stars. In fact from now on you should ignore astrology altogether.

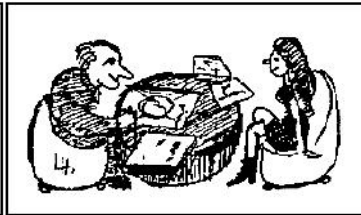
So start by talking about the problems of living, its loneliness, its uncertainty, and anything else that you have found to apply generally to clients. Stress that, thanks to astrology, such problems are well understood and solvable. Start a conversation and keep it going until feedback is occurring. 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 dependent on astrology.

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. The unknowing client will see this as exorcising her past, leaving her free at last and very satisfied with the consultation.

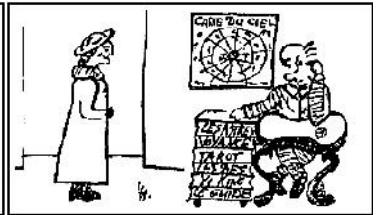
Halbronn illustrates key issues by nine cartoons drawn by Larissa Halbronn to his captions:



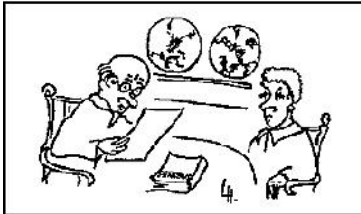
Client: I have a life without meaning. I need a model I can identify with.
Astrologer: I have a model that does not correspond to anything. I need the experience of life to give it meaning.



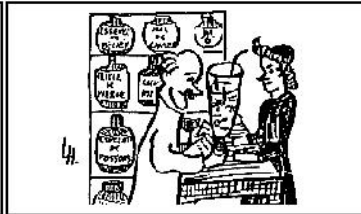
A: I spent 3 hours on this chart and know this person as if I had known her forever.
C: Who cares if what he says is true or not - I just love the way he talks about me. Such intimacy! I could almost believe it!



C: Please sir, just tell me, which astrologer is suitable for me?
A: Her question is OK. But which method should I use to answer it? (He can use stars, tarot, hands...)



A: With your Mars retrograde in Gemini it is normal for you to have many problems in communication.
C: I don't understand a word but it seems very exact.



A: Please drink this cocktail of planets and zodiac made specially for you, which nobody has tasted before.
C: This is a very nice change. But if it has not been tested how can it be trusted?



A: I am using this lady to test my new theory of Jupiter transits.
C: What I like about astrology is that it never changes over the centuries.



A: Madam, everything I will tell you is in your chart. I invent nothing.
C: I love people who do not blurt out their minds (she does not realise she is now a prisoner of her chart.)



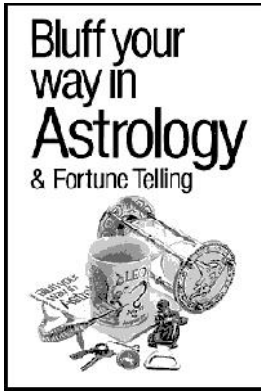
A: So madam, this is your portrait when you were born, your life story, before society puts its imprint on you.
C: Alas, I have changed quite a lot. I am not Dorian Gray.



C: My astrologer will tell me who I am and what is going to happen, which are things I have no idea about.
A: I hope she understands what I am saying because I certainly don't

Halbronn is stressing that astrology is a pseudo-competence resting on tricks of the trade. Astrological consultation is more a massage of the client's ego by a caring astrologer than an all-knowing message from the stars. What matters is the astrologer not the astrology. The problem, says Halbronn, is that the majority of astrologers are unable to hold such views.

But why should they? They have been there. For them astrology works. End of story.



But not for Alexander C Rae, author of *Bluff Your Way in Astrology & Fortune Telling*, revised edition 1992. A wonderfully cynical guide to success without having to know or study anything, with "enough details to pass yourself off as an expert and to allow you to charge extortionate fees for your readings". *Bluffer's Guides* offer apparent erudition without needing expertise and are available for 50+ topics like antiques, philosophy, and wine. This one covers ten predictive practices including astrology, Tarot, I Ching, and palmistry. In each case bluffing "is a way of life. In fact there are those who would suggest (rather unkindly) that [these practices] are nothing but a stylised, ritualised form of bluffing from beginning to end. ... There are many built-in advantages for the bluffer in this activity. Even the most sensible people seem quite prepared to believe in the most unlikely methods" (p.5). "The trick is to tell people what they want to hear, without seeming to do so" (p.6), which is "very helpful in complicated 'sciences' like Astrology, where you have to go through hours of tortuous mathematics before you start making it up as you go along" (p.8). Rae (who is surprisingly well informed) rates each out of ten for obscurity, ease of bluffing, technical complexity: astrology scores (1,7,10), the rest respectively (4,9,9), (8,8,10), (2,7,4). Chinese astrology (8,5,2).

10.3.2 Placebo effects

Placebo (pla-see-bo, Latin, "I shall please", the opening word of the Roman Catholic service *Placebo Domino*, I shall please the Lord). It contains no active ingredients but is found to work.

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 and Wall, *The Challenge of Pain*, 1983). They apply not only to psychological symptoms such as anxiety but also to physical symptoms such as post-operative pain. 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 the special strategies needed to recognise it (eg H Spiro, *Doctors, Patients and Placebos* 1986). By 1980 it was the subject of nearly 1000 articles and books (AH Roberts et al, *Clinical Psychology Review* 13, 375-391, 1993:376).

There is little evidence that some people are more prone to placebo effects than others. The 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 just one. Nevertheless faith plays a crucial role – the more the faith in the therapy (any therapy) the better the chance it will work (JM Fish *Placebo Therapy* 1973).

The placebo effect is now held to be the reason why any successful form of psychotherapy works including a large number of historical treatments that were actually invalid such as:

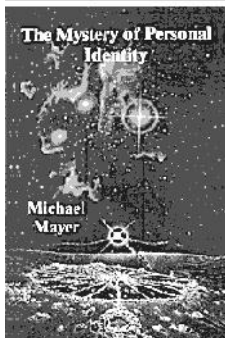
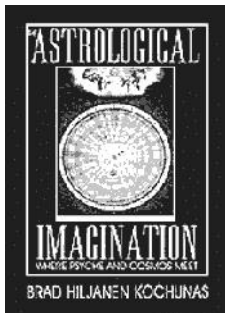
Blistering, bloodletting*, cupping, cutting, freezing, heating, leeching, poisoning, puking, purging, shocking and sweating (AK Shapiro and E Shapiro, *The Powerful Placebo: From Ancient Priest to Modern Physician* 1997:15).

*Bloodletting is a very telling example because it is as old as astrology and was considered by early 19th century physicians to be effective for almost everything: Angina, apoplexy, asthma, bruises, chest pains, coughs, deafness, delirium, diseases of the hip and knee joints, dizziness, dropsy, drunkenness, epilepsy, excessive sweating, gout, headaches, inflammation of the eyes and lungs, insomnia, lethargy, lumbago, lunacy, measles, numbness of the limbs, palsy, pleurisy, rheumatism, sciatica, shortness of breath, sore throat, tuberculosis, vomiting blood, and whooping cough (MJ Kluger, "The history of bloodletting", *Natural History* 87(9), 78-83, 1978). For more see 7.2.2010.1.

When something as invasive and invalid as bloodletting can be accepted for so long, we should not be surprised at the acceptance of a non-invasive and invalid astrology. Clarifying placebo effects in astrology would be an important step on the road to an honest future.

10.3.3 Astro-poetics: Using astrology's true nature

Astrology's true nature is clear. It is based on supposed *as above so below* correspondences that do not usefully predict anything factual, so it is effectively a divinatory technique. This does not devalue its use by people who see it as meaningful, even though it will mean nothing to people who see it as absurd. Provided believers recognise (unlikely, see 10.3.6) that nothing is literally true, the result is an *honest* tool for use in self-examination. As German psychologist Christopher Weidner puts it, astrology would be "a useful kind of fiction", a tool that people might legitimately use to organise their lives (*Zeitschrift für Anomalistik* 2, 197-204, 2002).



This fiction has been put into practice by US astrologer and licensed mental health professional Bradley Kochunas. He puts it this way:

Astrology is a fiction. That is, I think it is fair to say that the claims of astrology have little reliable basis in scientific fact. We will proceed by engaging astrology as fantasy, "as if" it were true. ... The astrological imagination embodies life as purposive and potentially understandable, rather than the result of random and chaotic processes. Astrology works because it gives us a satisfying aesthetic, not because it gives us the facts. It suggests an elegant arabesque of meaning, beauty, and the sublime. At its worst, it is trivial and superstitious. At its best, astrology engenders wonder, inspires reverie, and restores some of the deeply needed mystery to our lives (*The Astrological Imagination* 2008: xiv, xxiii).

The link with actual *as above so below* correspondences was broken in the 1980s by US astro-psychotherapist Dr Michael Mayer, who pioneered a type of astrology he called *astro-poetics* made palatable to critics because no claims of actual correspondences are made.

The Mystery of Personal Identity 1984, based on Mayer's PhD thesis that won the 1979 UK Astrological Association's prize for the most valuable contribution to astrology that year.

Astro-poetics sees astrological symbolism as astrology's most powerful attribute (in other words it provides superior clouds to see faces in). In his 2012 book *The Path of a Reluctant Metaphysician: Stories and Practices for Troubled Times*, Mayer emphasises that almost any symbols will do if they are meaningful. He gives this example (p.116) from his own chart:

the planet which rules one's rising sign is Venus, the planet of love and receptivity. It is placed in my chart in Taurus (an earth sign) in the Eighth house, the house of metaphysics. This symbolically expresses well my love with metaphysical systems related to the earth and the body. So, regardless of the actual scientific accuracy of the astrological system, it does seem to provide at least a language through which a person can give meaning to their lives.

It does not matter if people interpret the same factor differently. The aim of astro-poetics is meaning *creation*, not meaning *determination*. So the more flexible the symbol the better (p.130). It must be "meaningful for me". You no longer see Saturn as *limitation* (Hone) or *sensitivity* (Jones). Instead you search the chart for stories where a negative Saturnian expression (eg *suffering*) becomes positive (eg *control*), so the client can

now recognise a triumph of spirit over worldly afflictions. Bradley Kochunas puts it this way:

Try speaking for the dark parts of the chart. Don't try to suggest to clients how they can change their minds or solve their problems, thus cheating them of their discomfort. Help them to find the gold buried within it, to find soul within the symptom (*The Mountain Astrologer*, Aug/Sept 1996).

Another example. Suppose your client is having problems with his mother. His chart contains Moon opposition Saturn, which when explored suggests a conflict between his self-imposed duty and his right to independence. Another client has the same Moon opposition Saturn but no mother problems, so this time it suggests a natural reserve that could be misunderstood. In short, focus on whatever factor seems relevant and offers mileage.

10.3.4 Are authentic charts still necessary?

In principle any chart will do, which in practice is supported by the success of wrong charts (see 8.9.9), except that *if a chart is known to be wrong then success is unlikely*. This is because both astrologer and client need to believe they have an authentic chart, otherwise the personal connection is lost. For example Gregory Szanto (*Astrotherapy: Astrology and the Realization of the Self* 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.

To most people this relationship-based-on-birth-charts is not something that can be invented. Thus when Maggie Hyde asked the horary question "Can we make up charts?" the answer "was a definite no!" (*Jung and Astrology* 1992:158). Both points are of course entirely contradicted by wrong chart effects (8.9.9) and reversed chart effects (7.2.1987.4), which show that any

chart will work provided you think it is yours – the classic placebo effect.

To investigate how astro-poetics provides meaning and is helpful, Elena Kozlova interviewed four persons who were familiar with astrology (two were astrologers). They were asked how astrology helped to explain their lives. Each interview took about an hour:

All four saw astrology as helpful. It helped to shift their self-centred views to a broader universe-centred view. To personal experiences it gave philosophical meaning that had been hard to find until seen in the light of, say, astrological transits, for example being reassured that a financial crisis would end when the associated transit had passed. The symbolism was flexible enough to allow leaps from metaphoric to literal. For example a breakdown in a relationship was seen as a need to be free as shown by natal Uranus opposite the Ascendant.

All used astrology to understand social changes and significant others despite worries about identifying with the negative meanings that also exist in astrology, such as indications of health problems or accidents. None of them changed their behaviour based on chart *predictions*, or so they claimed. Instead astrology was used only as a way of better understanding themselves and their lives (*A Phenomenological Inquiry into the Process and Effects of Finding Meaning with Astrological Symbolism*, PhD thesis, Institute of Transpersonal Psychology 2011, for which Mayer was a supervisor, the above extracts are paraphrased from pp.127-133).

In US astrologer Joe Landwehr's 2004 book *Seven Gates of the Soul: Reclaiming the poetry of everyday life*, he explores the philosophical basis of astropoetics (here without the hyphen):

His book's Introduction explains that the *Seven Gates* are seven *ideas* that get in the way of our quest for meaning. For example the religious *idea* of immortality, and the scientific *idea* that truth must be objective. Here astrology "has an advantage in addressing matters of soul that are unique to the individual". Nevertheless "the individual soul does not need religion, science, psychology, or astrology to form a meaningful relationship to itself", because only by passing through the seven gates and casting aside the seven ideas can the individual soul discover its true nature.

However, the need for astrology to be meaningful does not mean that science is automatically excluded. It might be appropriate if astrology existed purely in the mind, but this is not how astrology is generally perceived. For more on Landwehr's views see 7.7.2005.2.

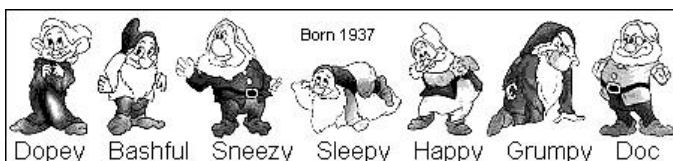
In the mid 1930s Carl Jung (1875-1961), in a conversation he had with Oxford University art historian Professor Edgar Wind, foreshadowed this lack of interest in reality. Wind had asked Jung whether he thought astrology was a predictive science, as claimed by astrologers, or merely a technique to stimulate therapy by conversation. Jung burst out laughing and said:

of course he meant the second, but if he told that to his patients it would not work. ... He believed that his schemata (or whatever you want to call the hocus-pocus) were *effective*, and that was all that interested him about them (*Skeptical Inquirer* 12(2), 266-267, 1987). [In effect Jung was a non-believing practitioner using astrology successfully]

10.3.5 Problems of astro-poetics

Although astro-poetics has abandoned astrology's *as above so below* correspondences, it is not for everyone. It is not suitable for clients who are emotionally unstable, prone to magical thinking, or likely to become dependent on their birth chart or therapist (Bogart, *Therapeutic astrology* 1996:92-97). Symbols must not be used to lead clients away from external realities. And as with any counselling, the counsellor has to manage the session in the best interests of the client. Symbols must never be used to empower the counsellor rather than the client.

But why should astro-poetics be better than any other technique for teaching coping skills? Answer: coping skills come not from astro-poetics but from training in counselling, so choose your astrologer wisely. Even if claims of actual correspondences are rejected, science may still be needed to test a particular technique against alternatives. It is not self-evident that astrological symbolism is automatically better than other symbolism for any particular purpose:



Thus Tarot readers might disagree. Yet neither is known to be more effective than one specifically designed for the purpose. Even the 7 dwarfs (originally chosen from a pool of about 50) might for some people be easier to understand than 7 planets.

Of course some astrologers may see any lack of interest in astro symbolism as hostility rather

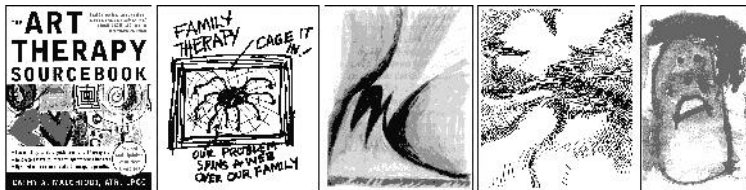
than indifference. But our tastes in such things, like our tastes in art, music, and poetry, can legitimately differ. Research has consistently found that differences are the norm, not the rule:

The same [music] composition could mean very different things to different people [and] quite different emotions can be experienced ... [Similarly] there were many contradictory impressions about the same poem ... a special sensitivity to the music of a poem [ie visual imagery and rhythm] may result in a poem being liked even when not understood, but disliked by those to whom the sound has no strong appeal (CW Valentine. *The Experimental Psychology of Beauty* 1962:415-417, an early work that is still among the best for the comparison of subjective views).

In other words astrological symbolism can legitimately be seen by Person A as inspiring and by Person B as ridiculous. It is a waste of time to argue that the real issue is not the symbolism but the connections it can make, because the bottom line is *what is meaningful to one person may not be meaningful to another*. Not everybody prefers Kahlil Gibran to Superman or *The Mountain Astrologer* to *New Scientist*, or vice versa. Which may explain why, without specific claims like *as above so below* to support its use, astro-poetics is catching on only slowly.

10.3.6 A parallel with art therapy

In terms of visually seeing faces in clouds, the orthodox therapy closest to astro-poetics is perhaps art therapy, which is essentially art plus therapy with no need for artistic talent. Art therapy began in the 1940s in the UK and USA, and is now an established profession (Cathy Malchiodi, *The Art Therapy Sourcebook* 2007, on which the following description is based).



Her book has more than 70 art therapy drawings. **From left:** (1) Cover image. (2) Deliberately simplistic drawing showing how it works p.230, most drawings in the book are much less graphic. (3) Some are abstract (grieving after divorce) p.156. (4) Some are more

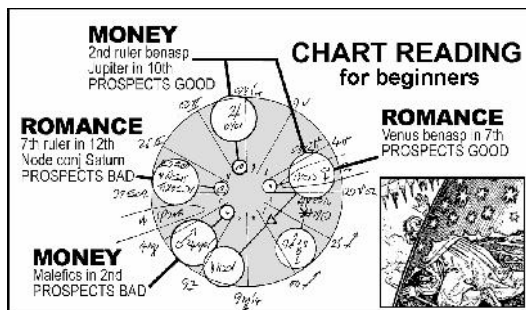
like scribble (life in chaos) p.105. (5) Some show the person (frightened and helpless) p.236. But the form is not important. What matters is the personal meaning, which of course may be totally obscure to outsiders.

Essentially you draw something based on how you feel rather than what you see, then talk to the therapist about the image and its personal meaning. For example is it happy, sad, anxious, or angry? The image externalises problems and separates them from the person, thus making them easier to examine. The therapist helps with choice of materials and guides the interpretation. Drawing while listening to your inner voice is as important as the interpretation.

In other words the drawing provides the same focus for interpretation as the birth chart but is less removed from fantasy and less easy to interpret without qualified help. Today in the USA for every astrologer who makes a living from astrology there are about 50 art therapists.

10.3.7 Will the nettle be grasped?

What do the findings of 10.3 mean for the future of astrology? Is it possible that astrologers could, in general, embrace an astrology that does not need to be true? A few astrologers have adopted the idea but even after 35 years not many have followed suit. Indeed, such a U-turn may seem unlikely because, based on their experience, most astrologers claim the opposite. For them astrology delivers literal truth. Here are some examples (the emphasis is ours):



Astrology is a discipline of study which can use scientific methods to arrive at **truth** just as other fields of study do (Marvin Layman, *Interviewing and Counseling Techniques for Astrologers* 1974:6,34).

Astrology in the counseling arts enables the counselor to help the person align himself with the **truth** of his nature and being (Stephen Arroyo, *Relationships and Life Cycles* 1979: 56).

We recognize the **truth** in the relationship between planet and event (Stephanie Jean Ennis, *Counseling Techniques in Astrology* 1982:42)

Maritha Pottenger (*Healing with the Horoscope: A Guide to Counseling* 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". To the client these are presented as **facts**

The astrological chart is far and away the most effective, comprehensive and reliable source of **information** about the client (Roy Alexander, *The Astrologer of Choice* 1983:xii).

Astrology has an excellent body of **knowledge** for the beginning of genuine psychotherapy. ... [It is] the most ... valid descriptive system in existence (Bernard Rosenblum, *The Astrologer's Guide to Counseling* 1983:18,22).

People with Neptune near the Ascendant keenly feel the needs of everyone they meet (Donna Cunningham, *The Consulting Astrologer's Guidebook* 1994:159). [Why would she say this if it wasn't the **truth**?]

Every astrologer I interviewed [over 30 of them including some of the most eminent] believes with some passion that their art can reveal genuine information about the world. (Garry Phillipson, *Astrology in the Year Zero* 2000:168).

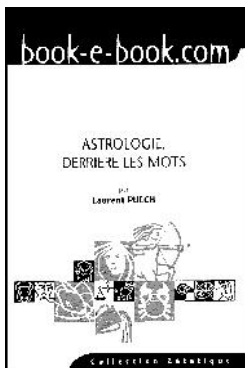
This does not deny that astrology may change in the same way that religion does, generation by generation. But the above practitioners see astrology as being factually true because they have personally experienced it. They see no reason to change their minds. It was a problem that Roger Elliot (then the UK's *TV Times* astrologer) had already noted about consultations:

I've learnt a lot about human nature ... mainly through the opportunity to meet thousands of people ... face to face as astrologer and client. I have discovered many tricks: how to get people talking, confessing, agreeing to disagreeable facts, reaching decisions on their own. ... And I have discovered many inadequacies in astrology itself, more than enough to make me sceptical of its role in the whole business (*Astrological Journal* 20(3), 112-117, 1978:117).

Can astro counsellors accept an astrology with "many inadequacies" that casts doubt on "its role in the whole business"? Or will they grasp the nettle and build on whatever merits it may still have? Either way, the force for change will come from the pressure of emerging evidence. Beliefs that are demonstrably true will always win more hearts and minds than beliefs that are demonstrably untrue. Why should anyone now believe there are canals on Mars?

To put it another way, the whole future of astrology is arguably at risk due to the belief that astrology is a source of factual information. It generates hostility from informed critics, misleads innocent students, and obscures the factors that could legitimise astrology's future.

French social scientist Laurent Puech, in a scholarly 2003 book-length study (*Astrology. Behind the words*, where astrology is a veritable machine for producing discourse but what is the reality behind the words?), suggests that the answer lies in providing of reliable information:



Astrology is a splendid heap of straw. For each pretence of proof that the planets are interested in our fate there is a convincing alternative explanation. But astrology is always there because (1) It takes five seconds to say an ineptitude and two hours to refute it. (2) Our immediate personal experience is worth more to us than an objective demonstration. (3) Our feelings can submerge our reason. (4) The media reinforce these points. I do not dispute the sincerity of astrologers; they will never disappear because they fill a need. But they have not met their duty of vigilance against error. It is not a question of censoring astrology but of helping people to find reliable information about it, and also to find the minimum critical tools for evaluating it (*Astrologie. Derrière les mots* 2003:265-268).

For astrologers unable or unwilling to discard invalid views of astrology the problem is how to stop people discovering the truth. It used to be difficult. Today Google makes it easy (search for "truth of astrology"). Question: will truth prevail? Next question: could astrology be harmful?

10.4 COULD ASTROLOGY BE HARMFUL?

10.4.1 The short answer is yes

Views differ but tend to be "potentially yes, astrology can be harmful". We don't hear of people dying from overdoses of astrology, but belief in its factual truth gives it an influence that can be unhealthy. Here are some relevant views:

In 1940 US psychologists concluded that "Faith in astrology or in any other occult practice is harmful insofar as it encourages an unwholesome flight from the persistent problems of real life" (Psychologists State Their Views on Astrology, reprinted in *Objections to Astrology* 1975:32-33).

In 1979 astronomers Culver and Ianna concluded that "Any such massive rejection of rationality stemming from ignorance of the facts, however, should be a matter of grave concern. A scan of human history reveals that when a society begins to embrace such irrational and fatalistic views, the end is close at hand". The authors are not claiming that astrology would be a cause, only that its popularity is bad news (*The Gemini Syndrome* 1979:207).

Like personality tests, astrology claims to give an "accurate description of individual potential and behaviour traits" and to assist at self-actualization. ... it promises to put you in touch with "the real You" ... Believers in astrology want to look into their souls as "safely and sanely" as the 4th of July without fireworks. Not for them the dark night of the soul, the assumption of responsibility for all aspects of one's being. They prefer an undemanding, comforting pseudo-religion that has been "sanitized for your protection" (Leahey and Leahey, *Psychology's Occult Doubles* 1984:41).

In 1989 Bible scholars Ankerberg and Weldon cited many reported cases of trauma (including suicide and murder) arising from visits to an astrologer, all generally excused by astrologers as telling it like it is. They point out that "The astrologer can command great power over his client because most people believe he is a kind of cosmic priest [behind whom] lies the power and the authority of the cosmos. Astrology seeks to affect key areas in life [houses] – spiritual life, health, family, children, spouse, finances, etc. Who should counsel people on the issues of life? Far from being a harmless pastime, astrology is fraught with danger" (*Astrology: Do the Heavens Rule our Destiny?* 1989, a book that is highly readable and well documented with 356 references. Pages 257-284 are on the dangers of astrology).

In 1996 researcher Andrew Boyd surveyed over 500 UK schoolchildren aged 14-15. Most saw astrology as harmless fun. But 88% read their horoscope columns; almost a third read them every day; and 38% actually believed what they read. A minority had been led to other occult practices that ended in trauma, so for them astrology was the opposite of harmless fun. Their young age had increased the risk (*Dangerous Obsessions: Teenagers and the Occult* 1996:ch 2).

10.4.2 The dark side of astrologers

Indeed, scattered across astrology books there are many cases of adult clients being near-traumatised by unwise chart readings. Here are some examples given by US astrologers:

Dane Rudhyar 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" (*Zetetic Scholar* 3-4, 83-85, 1979:85).

Lore Wallace 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" (*Astrology Now* 20, 59, 1978, her comments imply that the predicted events did not occur).

Donna Cunningham sees the problem as one of bad persons. She suggests clients should avoid the guru, the power hungry, the astro-junkie, the totally negative, the totally positive, the prurient peeping tom, and the spotlight seeker. But how? "I would tend to be suspicious of astrologers who advertise – the best ones operate solely on the recommendations of their satisfied clients" (*An Astrological Guide to Self-Awareness* 1978:ch 16).

Psychiatrist Bernard Rosenblum (*The Astrologer's Guide to Counseling: Astrology's Role in the Helping Professions*. 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. Astrologers should suspect these if they find themselves becoming impatient with clients, or having arguments, or avoiding certain topics, or yielding to frequent demands for extra time.

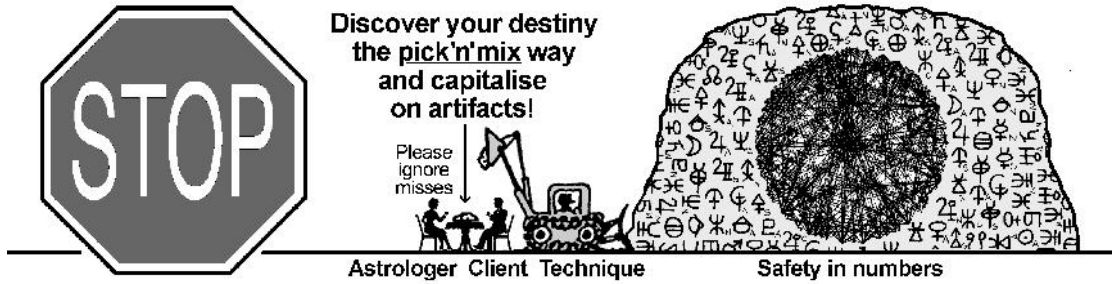
Stephen Arroyo says "when I was doing a lot of counseling, I would say maybe 30 to 40% of my clients came to me after going to another astrologer [his emphasis]. ... I had to spend a lot of time trying to undo damage ... Anxiety about the future had become an almost crippling disease in many of these clients. ... there is no doubt whatsoever that large numbers of practitioners are irresponsibly putting their egos and need to pose as know-it-alls before the welfare of their clients" (*The Practice and Profession of Astrology* 1984:21-22).

Charles Strohmmer says "Major sorrows came my way due to my involvement with astrology ... I would have been spared some major life disasters if I had not listened to the occult" (*What Your Horoscope Doesn't Tell You* 1988:55).

Such problems are of course not unique to the USA or to astrology. In an epic study involving travel throughout Europe and the UK in the 1960s, Ellic Howe (*Urania's Children: The strange world of the astrologers*, 1967:67, 246-247) concluded that, in astrology, cranks and crackpots greatly outnumber sane respectable people. Half a century later it is not hard to find astrologers who fit this description. Indeed, the not infrequent rifts between rival schools indicates a lack of exactly those qualities that astrological insight is supposed to bring. Until astrologers insist on using the whole evidence like they insist on using the whole chart, they should expect to find themselves disqualified from positions of credibility in Western society.

The case for and against astrology can now be stated:

11. THE CASE FOR AND AGAINST ASTROLOGY



Above: the whole evidence indicates that astrology works by seeing plausible faces in clouds of chart factors. Here the factors are just a few from *Recent Advances* in 5.18 but are enough to illustrate the point. All were proposed by astrologers of repute who failed to control for artifacts. So what kind of case can be made for and against astrology?

11.1 PREAMBLE

11.1.1 Astronomers and Astrologers

According to recent polls, one in four US adults don't know the difference. But it's not hard:

To an astronomer or physicist the stars and planets are balls of plasma, gas or rock with interesting physical properties. They can also be a source of beauty and wonder (think of Saturn's rings or the Crab nebula's crab-like filaments). But the one thing they definitely don't have is a particular meaning. No astronomer or physicist can look through a telescope and believe that Venus is harmonious or Mars is martial.

To an astrologer or occultist it is the other way round. Physical properties are not important, only assumed meanings based on mythology and metaphor. No astrologer or occultist can look at a birth chart and not believe Venus is harmonious or Mars is martial. Question: why?

11.1.2 The emerging picture

In this book the four of us (including the two who were former professional astrologers) have carefully trawled through a thousand empirical studies, more than fifty years of research conferences, and key events in the history of astrology. The emerging picture looks like this:

(1) Physics (gravity, magnetism, radiation, quantum effects) cannot explain how astrology could work. (2) But psychology (hidden persuaders and the grand delusion of experience, all familiar to psychologists but not to astrologers) can explain it very well. (3) What works is not astrology but astrologers, whose failure to apply controls has led them astray. (4) The claimed *as above so below* links do not exist. (5) Astrology is merely a time-honoured misdirection for non-astrological effects that explain outcomes equally well. (6) Birth charts are meaningful but so are wrong, reversed, invented or unknown charts. If you need one, any chart will do.

Our book could stop right now, except there is more to astrology than being true or false. To make a reasoned case for and against astrology at its various levels from trivial to profound, we must attend to what astrologers are saying, to what critics are saying, and to what tests on both sides are showing. Ignorance is not an option. And many challenges must be overcome:

11.2 CHALLENGES

11.2.1 The challenge of not missing the point

Astrology is drowning in books and articles well beyond anyone's ability to digest in a lifetime of reading. What it is not drowning in are facts, once the hardest things to find in astrology. But an exclusive focus on facts can miss the point as in the notorious *Objections to Astrology* launched in 1975 and endorsed by 186 (later 192) scientists including Nobel prizewinners. As noted in a subsequent letter to *Science News* by US professor of architecture Mimi Lobell:

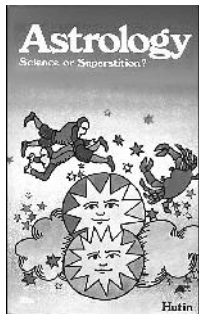
Astrology offers people what science does not: a psychologically meaningful link between the individual and the cosmos ... a need which has been part of the structure of the human psyche since the first extant traces of human life. By not acknowledging [this], scientists have not begun to understand the magnitude of the challenge put to them by astrology and other "superstitions" (*Science News* 108(14), 223, 1975).

Responses in subsequent issues (17, 20) of *Science News* disputed Lobell's argument, asking why a hypothetical link is needed when science has shown we are as much a part of the cosmos as any cosmic entity, and calling for evidence in lieu of hypotheses from those holding the burden of proof (ie astrologers, not scientists). Ultimately *Objections to Astrology* never got past damp squib status. Today, 45 years later, the need for evidence has been met. But the disputes rage on, beset by further challenges:

11.2.2 The challenge of finding impartial views

Impartial views of the case for and against astrology are hard to find. Most astrologers see science as irrelevant except when it appears to work in their favour. Scientists and philosophers see astrology as an unfounded belief of little value except as entertainment. Encyclopedias stress astrology's historical importance and then dismiss it as a baseless superstition. The English edition of Wikipedia says "astrology has not demonstrated its effectiveness in controlled studies and has no scientific validity, and is thus regarded as a pseudoscience". Which is not exactly helpful if scientific validity is not what you are looking for.

Indeed, the only work we have found that features "Case For and Against" is the one below by occult author Serge Hutin (1927-1997), published 1968 in French as *Histoire de l'astrologie* and then in 1972 in English.



FOREWORD

THE CASE FOR AND AGAINST ASTROLOGY

Apparently everyone today seems to 'know' what astrology —once the mysterious prerogative of men in pointed star-spangled hats—is all about. It might generally be defined as a body of belief 'claiming to bestow knowledge by permitting a soothsayer to establish a direct relationship between the stars and human destiny (individual and collective), so that he is able to foretell the future with absolute certainty.'

In fact, there are two attitudes widely current on the subject of astrology. The first may be illustrated by the familiar slogan, repeated by the horoscope 'salesmen': *Your destiny is inscribed in the stars and the planets.* Millions of people live in almost total fatalism, susceptible in one way

Hutin's approach consists of a few quotes for and against astrology over the centuries including biblical but with no mention of empirical studies.

His coverage ends indecisively with "We will leave the reader free to make his own conclusions after he has examined the historical dossier presented here" (p.7). None engage with astrology as practiced today so the quotes are effectively useless.

But quotes are usually one-sided. They deny us the whole story as in 4.1 and these examples:

On the whole we seem to be drawn to astrology by the same sort of force that draws us to religion – Derek Parker, *The Question of Astrology*, 1970:61. There are reasons for taking some parts of astrology very seriously – Peter Roberts, *The Message of Astrology*, 1990:16. 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*, 1977:116. The stars may affect no-one but astrology affects everyone. Anton LaVey 1968 *Astrology: The practice of foretelling things by the knowledge of the stars; an art now generally exploded, as without reason* – Samuel Johnson, *Dictionary*, 1755. What can be asserted without proof can be dismissed without proof – Christopher Hitchens (1949-2011).

11.2.3 The challenge of obfuscation

Or making things hard to understand. One obfuscation is ignoring a legitimate difference in viewpoints. Astrologers tend to judge astrology by how meaningful it is and conclude it works, whereas critics tend to judge astrology by how factually true it is and conclude the opposite.

Another obfuscation is the use of astrological jargon and unfalsifiable metaphysics to give the illusion of profundity, as with revered astrologer Dane Rudhyar who "set the standard for ... impenetrability years ago" (D Cunningham, *The Consulting Astrologer's Guidebook* 1994:29).

Yet another is the failure to understand that what works for clients is not *astrology-the-concept* but the *whole-experience-of-having-their-birth-chart-interpreted*. To see why, think of homeopathy (essentially the power of dilution until nothing remains), which as a concept cannot possibly be valid (Goldacre, *Bad Science* 2009:28-62). Nevertheless:

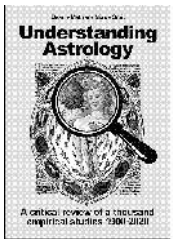
People do experience that homeopathy is positive for them, but the action is likely to be in the whole process of going

to see a homeopath, of being listened to, having some kind of explanation for your symptoms, and all the other collateral benefits of old-fashioned, paternalistic, reassuring medicine. ... homeopaths want to believe that the power is in the pill, rather than in the whole process of going to visit a homeopath, having a chat and so on. It is crucially important to their professional identity. But I believe that going to see a homeopath is probably a helpful intervention, in some cases, for some people, even if the pills are just placebos. (p.58)

That is, homeopathy and astrology do not work by themselves but via a ritual (a set of fixed actions) centred on the bedside manner in medicine and the chartside manner in astrology.

11.2.4 The challenge of cherry-picking

The failure to present the whole story in favour of selected bits that support a particular case is common in astrology, as when astrologers cite the Moon's power in creating huge tides but not its effect on a glass of water. Question: are our 1000 studies enough to prevent selection bias? Arguably the field of scientific enquiry closest to astrology is parapsychology because both are defined negatively (ie not the result of any means we can think of), and both have many unreplicated experiments. It can also be quantified to assist comparison. Thus in 1985 a critical unbiased review of parapsychology would have required an evaluation of:



upward of 3000 experiments [which] would take a responsible critic more than five years of almost full-time effort. (US psychologist Ray Hyman, A Critical Historical Overview of Parapsychology, in P Kurtz ed, *A Skeptics Handbook of Parapsychology* 1985:3-96); his overview has 45,000 words, 3000+ experiments, 108 references, vs our 650,000 words, 1000+ experiments, 4000 references.

The number of studies and time required in our work are not incomparable, so we might reasonably claim a similar freedom from selection bias. As a bonus similar problems exist as when:

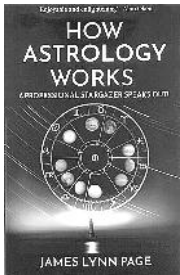
the critic denies that a claim is justified, [so] the proponent feels that his integrity or competence is being challenged [and thus] must show that the claimant is incompetent, gullible, or deficient in some serious way. I consider this a false dichotomy because competent and honest investigators can make serious judgemental errors when investigating new phenomena. ... [thus becoming] trapped into asserting and defending erroneous positions (1985:6-7).

So what Hyman calls a *false dichotomy* (name-calling, biased arguments) is the next challenge:

11.2.5 The challenge of false dichotomies

Instead of citing replicable experiments under controlled conditions to support their claims, many astrologers rely on name-calling, cherry-picking and dismissing critics as biased, bigoted, incompetent, ignorant, and having improper motives. The same is also true of homeopaths, whose ritual approach was referred to above:

Their literature and debates drip with ignorance, and vitriolic anger at anyone who dares to appraise [their ideas]. ... They bully, they smear, to the absolute top of the profession, and they do anything they can in a desperate bid to *shut you up*, and avoid having a discussion about the evidence (Goldacre pp.59,61, his italics).



A recent example of false dichotomies in astrology is a 2018 attack on critics in the 187-page book *How Astrology Works: A Professional Stargazer Speaks Out!* by James Lynn Page, who is not a professional astronomer but "a professional astrologer of over 25 years" (p.1) living in the north of England. On the back cover veteran US astrologer Alan Oken endorses Page's book as:

A wonderful job of synthesis – the perspectives of various ancient and modern philosophers, scholarly skeptics and metaphysical scholars, while adding his own keen and educated insights.

In fact this "job of synthesis" rests on repeated false dichotomies. A genuine synthesis would fairly summarise the views on both sides but right from the start Page tells us:

Astrology is ... not a topic to be broached among rational and intelligent people (p.1).

Similarly the question of whether controlled scientific studies have shown as-above-so-below correspondences to be real or illusory is never addressed in favour of name-calling:

The view that astrology is "anti-science" can arise only out of ignorance, born of a superior attitude that has deemed the subject not worth investigating. ... It can be galling to such people – raised on the supremacy of modern science

and its methods of operation (hypothesis, experiment, conclusion) – to even entertain the idea that there may be invisible "forces" (if that is the right word) in the Universe that cannot be measured by science (p.48).



From his website: a selfie of James Page with sunglasses showing a reflection of his hands. He also helps to write *Old Moore's Almanac* for Foulsham, worked for two years on a Tarot phoneline, has published books on various New Age subjects including love spells and Celtic magic, and offers various services including chart interpretations averaging £1 a minute.

Page's preference for name-calling rather than proper informed scrutiny leaves readers none the wiser. To persuade us that invisible forces exist he devotes many pages to sciencey things like quantum entanglement, im-plicate order, collective unconscious, and so on, which is clearly pointless because he has already asserted that astrology:

is meta-physics, a language of Consciousness which simply cannot be reduced to scientific empiric testing (p.24). [But if astrology cannot be tested it cannot also be claimed to have practical – therefore testable – benefits]

Much the same problem arises when Page asserts on his back cover:

there is good evidence that astrology works. Instead of just wild claims, this book gives you an insider's grasp of how the underlying patterns in astrology are at the centre of our lives, also backed up with firm, statistical evidence.

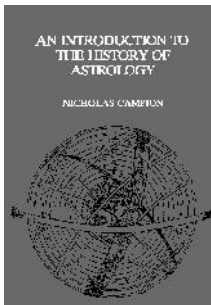
But his "firm statistical evidence" has been invalidated by his dismissal of "scientific empiric testing" in the first place. In other words he and his readers cannot have it both ways, even though his "firm evidence" boils down to cherry-picking a few results like Gauquelin's without mentioning the hundreds of negative studies that also appear in the references he cites.

Similarly he dismisses contrary ideas without discussion as "the prevailing wisdom among sceptics" (p.19). His preference for false dichotomies over objective discussion has denied readers the promised insight into astrology and especially into "How Astrology Works".

The next challenge is a crucial one if we are to properly understand astrology:

11.2.6 The challenge of meaning: objective vs subjective

As astro historian Nicholas Campion puts it in his modest but ground-breaking (because based on 12 months of research in the British Library to re-evaluate astrology's role in history) 1982



book *An Introduction to the History of Astrology*:

There are two main themes in modern astrology, one being the attempt to prove astrology an objective system which may be placed on an equal footing with any other science, and the other, quite the opposite is to provide astrology with a totally subjective importance as a tool for psychological growth and counselling (p.73).

This was also the difference cited by astrologers objecting to the influential 1977 book *Recent Advances in Natal Astrology: A Critical Review 1900-1976* that was based on reviews of hundreds of books, articles, and scientific papers, plus the efforts of 52 collaborators. It had concluded:

Despite much progress there remain few concepts in astrology that are not disputed among astrologers. To date the most significant research results have sometimes supported tradition but have more usually contradicted it. The emerging picture suggests that astrology works, but seldom in the way or to the extent that it is said to work (p.7). [It was a conclusion amply confirmed by the studies in the present work more than 40 years later]

Despite praise from many reviewers ("the most important book of its kind") it was condemned by others ("built-in prejudices"). Here are extracts from two complaining but thoughtful letters sent to *Recent Advances* during the first eight years after it was published:

February 1980. Lacks heart

Intellects can agree on that which is scientifically valid. Refined and sensitive hearts can also agree on what is true. The 'hard facts' of science are only convincing to those having a certain type of mental development; to others they seem not relevant to life. 'Hard facts' without 'heart facts' are empty artifacts.

April 1985. Lacks perspective

One of the main problems is your apparent materialist/reductionist stance which never addresses itself to what are the central assumptions of a living natal astrology as practised: ie that the universe is essentially a total meaningful

and purposeful whole. Models devised by psychologists seem very impoverished and lacking in a larger perspective. These are the kinds of issues that are relevant to the whole business of developing appropriate tests for astrology.

The above are from readers who saw subjective meaning and spirituality as more important than objective statements, even though others can legitimately disagree. Here the conflict is futile because if you seek only personal meaning (*Saturn aspects in your chart incline to delays, obstacles and material difficulties*), you can pick and choose and thus believe whatever you like. Objective facts simply don't matter. True believers never had it so good.

But if you value objective facts (*Saturn aspects have no actual effect in any birth chart*) rather than subjective meaning, you cannot believe whatever you like. Reality will sooner or later catch up with you (think of phrenology or bloodletting or Martian canals or a flat earth). Which is why the conflict is futile. True believers never had it so bad. Your choice.

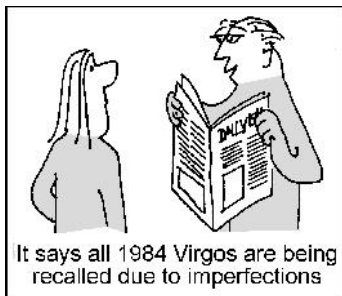
11.3 CASE FOR AND AGAINST ASTROLOGY

11.3.1 The case for astrology

Since the masses of the people are inconstant, full of unruly desires, passionate, and reckless of consequences ... the ancients did well, therefore, to invent gods ... It is rather the moderns, who seek to extirpate such beliefs, who are to be accused of folly — Greek politician, diplomat and historian Polybius, in *Histories*, c125 BC.

While it is the summit of human wisdom to learn the limit of our faculties, it may be wise to recollect that we have no more right to make denials, than to put forth affirmatives, about what lies beyond that limit — British biologist and inventor of the term *agnostic* Thomas Henry Huxley (1825-1895), in *Hume* 1878.

The case for astrology is that it is among the most enduring of human beliefs. It links us to the cosmos and the totality of things, provides an appealing way of describing ourselves, and has many applications from the trivial to the profound. The result is non-threatening, need not be true, and is always appropriate, ie it can be made to fit. In human terms astrology delivers.



Thus a warm and sympathetic astrologer can provide non-threatening therapy by conversation with great commitment that in today's society can be hard to find. You get emotional comfort, spiritual support, and interesting ideas to stimulate creativity and self-examination. Astrology can appeal to people who do not accept the world in scientific terms, who believe

there are truths beyond scientific truths, and who believe astrology shows a non-materialist dimension to human life. Exploring its symbolism can help believers with problems to learn coping skills from a qualified (and, for the occasion, non-skeptical) therapist.

In short, there is more to astrology than being true or false. Nobody can deny astrology's historical importance, nor its value in entertainment and the creative arts. It helps to make sense of human existence. It puts us at the centre of the universe, receiving high cosmic influences that can be read and found meaningful, whereas science has reduced us to insignificant beings living an insignificant life in an insignificant part of the universe. No wonder some people prefer astrology. It remains a wonderful thing, a fantastically complex and beautiful construct that draws our attention to the heavens. It can make us feel that we are still an important part of the universe. The ancient civilisations are gone, but their gift of astrology survives.

Most astrologers are affected by this, and their conferences can be wonderful experiences because of their energy and the excitement generated by the exchange of astrological ideas. Or as historian and social critic Theodore Roszak says in his 1980 booklet *Why Astrology Endures*:

The rich imagery of these old traditions has become a more inspirational way of talking about emotions, values, motivations and goals 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.

In effect believers get more benefit from poetry than from science. For them astrology has got its priorities right. Its tenacity suggests that astrology will continue to survive in entertain-

ment, in the creative arts, in man's history, and as a useful kind of fiction that people can use to explore their lives. Ultimately the issue is a personal one in which the results of empirical tests can be irrelevant: why seek factual truth when you can have personal meaning?

Indeed, in 1996 Bernard Eccles, then President of the Astrological Lodge of London and also a newspaper astrologer, saw sun signs as having even more potential than astrology itself:

The Sun-sign philosophy is an enormous departure from what went before it. [It] has given astrology what it needed to survive and to grow through the twentieth century. ... [it] took astrology away from a privileged elite and gave it genuine mass appeal. ... for those who still think that real astrology excludes such trivial nonsense as newspaper horoscopes, then let me say this: Sun-sign astrology doesn't just predict the future. As astrologers and astrology enter the new millennium, it IS the future. (*Astrological Journal* 38, 306-310, 1996)

Time will no doubt tell. Except to some critics the point is not whether any kind of astrology is the future but whether it offers a better future than the competition:

11.3.2 The case against astrology

Plato is dear to me, but dearer still is truth — attributed to Greek philosopher and polymath Aristotle 350 BC.

I wish to propose for the reader's favourable consideration a doctrine which may, I fear, appear wildly paradoxical and subversive. The doctrine in question is this: that it is undesirable to believe in a proposition when there is no ground whatever for supposing it true — British philosopher Bertrand Russell (1872-1970) in *Let the People Think* 1941:1.

The case against astrology is that it has failed hundreds of tests by astrologers and scientists. It has claimed the status of a science without adopting the methods of science, it does not deliver results commensurate with its propaganda, and its only contribution to human knowledge is as an example of hidden persuaders. If astrology works it is via beliefs created by its own pervasiveness. So its claim to connect us with the universe is hard to take seriously.

Thus users do not usefully agree on basics such as which zodiac to use or even on what a birth chart indicates. Users find that wrong charts (whose incorrectness they are unaware of) work in any application just as well as right charts, which confirms astrology as having no credible mechanism other than artifacts that lead to astrology-like outcomes. The insight it provides into non-materialist dimensions of human life is merely the meaning we read into clouds of purely symbolic speculations. Little hint of these problems will be found in astrology books or astrologers' codes of ethics, which in effect are exercises in deception. Instead of empowering us, astrology (if we let it) empowers only fantasy.



Reality or fantasy? In a sense this cartoon says it all. From the UK Astrological Association newsletter *Transit* February 1983:23. The cartoonist (who is not identified in the original cartoon) is the UK astrologer and psychotherapist (and believer) Michael Harding.

People may see astrology as merely harmless entertainment for exploitation by the media. But many believe in it, which is potentially harmful because it can affect real-life decisions and deny responsibility for human error (*let stars take the blame*). Even popular sun signs can bias our perceptions in damaging ways (*Scorpios are secretive and not to be trusted*). And astrology can be dangerous, as when astrologers play God or put their own needs before those of their clients, which of course is not a problem unique to astrology.

Astrology is especially open to commercial abuse and to exploitation of the uncritical. Which is why some critics see astrologers as misguided regardless of how well-meaning they may be. They are fraudulent if they present something as true when it is demonstrably untrue, which again is not a problem unique to astrology (think of psychoanalysis). But it presents an ethical problem that astrologers have generally failed to recognise let alone resolve.

Instead astrologers will insist that heavenly links are confirmed by their personal experience. But they rarely test it under controlled conditions, so they misinterpret the many artifacts in a chart reading as sure evidence that it works – a view that is unlikely to change because all

failures are automatically explained away (*birth time is unreliable, stars do not compel, client does not know herself, the manifestation is untypical, another chart factor is interfering, astrologers are not infallible*). So they refuse to accept that their experience can be unreliable, they automatically brush aside all negative evidence as not relevant, and they dismiss all critics as ignorant, bigoted and closed-minded. The false dichotomy is alive and well.

Astrology emerges as a misdirection, a time-honoured cover for the operation of artifacts that better explain the outcomes. There is nothing about astrology that requires astrology to explain it. Its only contributions to human understanding are fantasy and fallacious arguments. Its main problem today is how to prevent the public learning this. Like New Year, it has survived because enough people find it meaningful (and enough people find it lucrative) to give it a place in modern popular belief. But does this justify it having a place in our future? To see what is involved let us look at this point more closely:

11.4 ASTROLOGY AS A SOURCE OF MEANING

11.4.1 Two views



A popular view in the 1970s saw science as maybe coping with astrology's mysteries. It turned out to be correct and was memorably expressed by UK astro researcher Joe Cooper in this poem from his 1981 work *Astroverse*:

My Lady Astrology / Doth need a Moderner Physick: / Brewed in some Binary Dome /
By delicate computers / Distilled / Statistically, / Thus revived /
She may move about us majestically / Assisting / In the nicest possible way

The modern view is that astrology has little to contribute to human understanding except as a reminder of how we can be led astray, but is potentially useful in the sense of investing chance with a meaning (ie a value or importance) it would not otherwise have, that is, as a "divination".

11.4.2 Astrology as divination

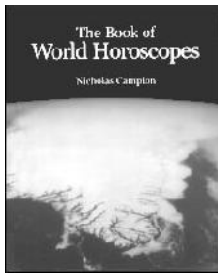
The birth chart engages our curiosity and allows us to focus on something interesting and personal (ie its apparently unique-to-us symbolism) to help explore our personal issues. If we make progress we will attribute it to astrology. But it is actually due to exploring faces in clouds that can seem surprisingly personal but which are merely projections of ourself, not a mysterious property of birth charts (see 10.2.4.3 and the Tarot lesson in 7.2.1986.2). It is not so much a matter of astrology giving us meaning as of us giving astrology meaning.

In other words we have a case for astrology as divination in the special sense of giving us new viewpoints from which to explore personal issues, not in the popular sense of fortune-telling. So it justifies looking at clouds of astrology. But the same can be said of talking to close friends or reading self-help books or discussing classic novels or travelling in strange countries or subscribing to a course in critical thinking, so why should astrology be somehow special?

Indeed, until controlled tests are made we have no objective grounds for choosing one rather than another. The success offered by clouds of cookery in 7.7.2010.1 is a reminder of the need for caution. At which point critics might well lose interest in spiritual arguments for astrology – indeed any arguments – because people can believe anything they like. So why bother? But here, for completeness, we need to bother:

11.4.3 The case for astrology as a source of meaning

The case for astrology as a type of divination (ie dependent on the inventiveness of astrologers as opposed to cookbook rules) has been argued many times. For example Geoffrey Cornelius in his 2003 book *The Moment of Astrology* sees the birth chart as a source of omens controlled by gods whose direct answer we are hoping to achieve (a view equally praised and disputed by other astrologers). But perhaps the clearest case for astrology as a source of meaning has been made by Nicholas Campion in his acclaimed *The Book of World Horoscopes*, 3rd ed 2004:



There is a clear gulf between the rhetoric of astrology – that precise data is vital – and the practice (to judge from astrological books and journals) – which is that, in many cases, it just doesn't matter. ... one may just as easily roll a set of astro-dice as go to the bother of casting a horoscope. ... I came to this conclusion ... after considering many astrologers' ability to make the right reading from the wrong horoscope. [So] it is not the *astrology* but the *astrologer* which works ... meaning is more important than mathematics. (pp.10,12)

In other words chart symbols allow concerns to be explored like players in a war game. Factual meaning is not important, nor what *other* astrologers see in them, only what *your* astrologer sees in them. As Campion puts it:

astrology, as a symbolic language, becomes not a means to discover the truth, but to invent it. (p.19)

An example is the popular Gemini rising ("quick, versatile") chart for the birth of the USA:

It matters not that the founding fathers were unconscious at 2:17 am, tucked up in bed and dreaming their dreams. All that matters is that a good fifty percent of US astrologers believe that Gemini was rising. For them it is therefore a sufficiently powerful divinatory tool to be able to impart meaning to their experience as Americans (p.18)

The consequent upwelling of meaning is thus unremarkable, a subtle sleight of mind.

11.4.4 The case against astrology as a source of meaning

The perils of sleight of mind when combined with spiritual interests are famously itemised by former fake psychic ML Keene's *The Psychic Mafia* 1976, which describes how he and his fellow fakes were swindling clients, and how the clients were eager collaborators in their own swindling due to what he calls the "true believer syndrome":



One of the most alarming things ... is how completely some people put their lives into the hands of [fakes]. I was routinely asked about business decisions, marital problems ... and similar intimate and important subjects. That people who ask such questions ... are risking their mental, moral, and monetary health is a shocking but quite accurate description of the matter (p.10). [Keene was so successful that he was elected to committee positions among fake psychics in the USA. But in due course his conscience rebelled against his own fakery. His book threatened the financial income of so many fakes, albeit only temporarily, that it led to death threats and two shooting attempts on his life, one leading to time in hospital.]

Arguments about whether an invented truth is acceptable in a counselling based on unfalsifiable generalities ("people can change their minds when it suits them") rather than contestable specifics ("next month you will get a pay rise") can easily become bogged down in appeals to "meaning" and "spirituality" and the extent to which your feelings matter. But such an astrology remains seriously problematic whenever objectivity is important, which is why it never appears in legal briefs or formal liabilities for income tax. But as in 8.2.1 we should still ask about the *extent* to which astrology can deliver meaning.

11.4.5 The extent to which astrology can deliver meaning

In effect astrologer and client create meaning from a mix of selected chart ambiguities. The appeal of this astro misdirection is eloquently described by Kirk Little in his 2014 review (see www.skyscript.co.uk/rev_nasser.html) of astrologer Rafael Nasser's 2004 book *Under One Sky*. Nasser brings together twelve blind readings of the same accurately-timed chart (a US-born well-travelled 60-year-old female), each by a highly reputable astrologer using a different technique, thus allowing the techniques to be compared. An earlier review by *Considerations* editor Ken Gillman that is not mentioned by Little had concluded "Not a great success rate ... The dominant theme is inconsistency" (see 7.2.2004.2). But Little claims that nothing useful can come from comparisons like Nasser's even though:

It clearly was not his [Nasser's] intention to produce a book like Geoffrey Dean's *Recent Advances in Natal Astrology* designed to reduce the self esteem of every practicing astrologer [but see 5.18 for strongly contrary views]. He has a much more hopeful outlook ... to find some clear winners and losers.

But Nasser failed, and failed decisively, because:

only a tiny minority of modern practitioners embrace the notion that astrologers are able to plumb the complete mysteries of the human soul with nothing more than their client's birth data. ... In my view, astrology is not a science [critics would agree but not 50% of astrologers, see 7.3.2012.1] and astrological readings have more in common with

good literary reviews or perhaps poetry, than they do with some type of service evaluated by some kind of consumer board. [no page reference because the web article is unpaginated]

In other words astrology is not a pill but a complex interaction, see 11.2.3. Playing with symbols can lead to inspiring outcomes that are quite unlike their rational interpretation:

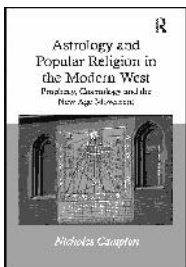
the reading catches fire and both people are gripped by a process which draws them into a mysterious realm, where the real work takes place. This is the realm of the imaginal, where the horoscope's symbols speak; they have a valence – emotional, spiritual, and even physical – which has resonance for both the astrologer and the client. Both participants become implicated in the symbols and are moved by them. ... Without that divine spark or mutual desire to discover meaning, these readings never move into this significant realm. [As per Campion's stress on *significance*]

In short, ignore textbook astrology and let your imagination do the work. The concrete interpretation of symbolism (which is how most people think it works) leads to a dead end:

This approach plays into the hands of our skeptical critics, ever ready to devise more tests, which reduce astrology to nothing more than an absurd practice based on outdated theories of the cosmos, whose techniques do not stand up to empirical testing. ... Laboratory astrology ... ensures that no magic can take place.

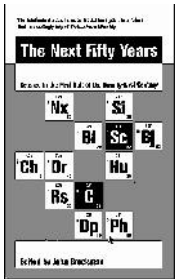
Well, of course it does. Controls are like that. Otherwise pareidolia (see 9.4) takes over as in:

The birth-chart [helps man] to find his place in the great stream of life in terms of an archetypal pattern of order. (C Derk Janssen. *Archetypal astrology: Jungian psychology and astrology*. MA thesis, Prescott College Arizona 1999, p.88)



The astrological chart is not merely a tool or a technique ... it has much deeper meaning [by introducing a divine-like third party into counselling] ... which in turn deepens clinical work. (Dvora Weil. *The lived experience of psychotherapists who integrate astrology into their depth psychology practice*. PhD thesis, Pacifica Graduate Institute 2002, p.iv)

The appeal of astrology is further described by Nicholas Campion in his 2021 book *Astrology and Popular Religion in the Modern West*, a well-documented sociological overview showing how astrology persists in the modern world mostly as a normal part of popular culture. He condemns academics for being ignorant about what they quickly dismiss, which in effect misdirects our attention from the underlying reality, which is that people desperate for meaning can always find faces in clouds (any clouds see 7.7.2010.1), so the ignorance of academics is hardly relevant. Even *the cat sat on the mat* can be seen as hostile science oppressing our future, or (conversely) astrology doing the same. But that was from ignorant academics. What do recognised elite thinkers say?



During 2002-2019 US literary agent John Brockman presented controversial topics to elite thinkers and published their responses in a series of annual books. Some, such as *The Next Fifty Years* 2002 and *What We Believe But Cannot Prove* 2005, focused on future developments in dozens of areas including physics, psychology, sociology, and theology. Only one response mentions the paranormal (Michael Shermer "there is no such thing ... only mysteries we have yet to explain") and none mentioned astrology, implying none saw a serious place for astrology in humanity's future.

But why should clients care about pontifications from ivory towers by so-called elite thinkers? All that clients care about is the quality of chart readings and their own *experience of satisfaction* – such as the experience described above by Kirk Little, and by Helen and Peter Cooper in their richly-illustrated 107-page 1983 book *Heads*:



What is being done here is a form of mental rehearsal. The person *becomes* the different configurations, exploring and checking, to reveal that sense of fitness, oneness, within oneself, one's body and environment. This particular method, however, is one way of translating ancient ideas into modern practice, ... it becomes clear that it offers fascinating potential for aiding self-realisation, building on contemporary knowledge, and adding its own unique features. What [it] has to recommend is its antiquity, discipline and deliberate idealism for self-perfection (p.104)

This is what clients care about – except Helen and Peter are referring not to astrology but to phrenology. They were trying hard to revive phrenology but, nearly 40 years later, clearly without success. The experience wanted by clients of phrenologists is exactly the same as in astrology but it didn't save phrenology. Why should it save astrology?

Conclusion The extent to which astrology can really deliver meaning depends ultimately on whether it has advantages over close friends or tea leaves or self-help books, and on whether you can be interested in the first place. Obviously only you can decide. More words from us would be a waste of time, like arguing over ice cream flavours. In his 2013 book *The Good Life*, honorary professor of social science at Wollongong University Hugh Mackay puts it like this:

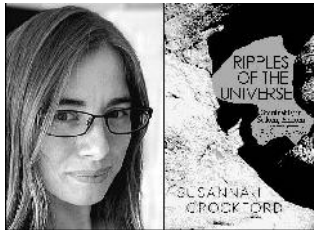
we yearn to know but cannot know, so we construct or accept ... a set of beliefs to satisfy our sense of what's going on. If it's not religious belief, it might be astrology, the free market, feng shui, superstition, science, a particular philosophy... [But if] corrupted by the arrogance of certainty, it ceases to be faith and becomes mere delusion (p.72).

But there is one final issue that needs to be addressed:

11.4.6 Suppose astrology was an accepted part of our future

Would increasing standards of education encourage or suppress it? For clues we could visit India (the world's #1 for astrology) where the lives of most Indians are dominated by astrology, for example see 8.8.4. But religious connections are a serious confound.

For less confounded clues we can visit Sedona, a desert town in central Arizona surrounded by stunning sandstone formations and pine forests. A substantial (but not dominant) part of its 17,000 population claim it has powerful vortex energy sites where meditation, clairvoyance and channelling are enhanced. This reputation encourages tourism (its main source of



income) and numerous stores selling spiritual goods and services like crystals, psychic readings, and astrology. Life in Sedona is described by British anthropologist Susannah Crockford following fieldwork 2012-2014 in her 2021 book *Ripples of the Universe* and her article A Mercury Retrograde Kind of Day in *Correspondences: Journal for the Study of Esotericism* 6(1), 47-75, 2018. In Sedona she discovered there was:

little interest in the question of whether astrology was true. It was an accepted and useful part of the general spiritual culture. This is very different from the wider culture in America, where astrology is not held to be true. [In Sedona] astrology "works" in three distinct forms: as an explanatory model of causation, as a symbolic system, and as epistemic capital within a specific religious framework (p.51).

That is, **(1)** by explaining things, as when a retrograde Mercury is used to explain a misfortune, **(2)** by providing a cloud of symbols into which you can read the real you and your soul's purpose, and **(3)** by being seen as a special form of knowledge (often because it was rejected by science) which is useful for elevating your spiritual status. But is this enough to justify a deliberate astrological future? Crockford continues:

During my fieldwork I observed that new age spirituality was an aspect of the town that coexisted uneasily with the tourist industry [and its orthodox residents]. The city council passed ordinances specifically aimed at [cleansing] their charming resort town, such as banning camping within city limits (p.52).

It was not important whether you believed in it [astrology] or not. Indeed, I did not believe in the astrological chart reading I was given but often used it in social interactions [because it made them] easier and more successful (p.69).

Astrology has a very low level of social power and status in elite American society, but much more social power and status in Sedona. ... Sceptical commentators are often mystified by the prevalence of astrology in the face of a wealth of scientific studies indicating that it does not work. However, they are examining it in a rationalistic frame; when examining it from an ethnographic [ie cultural scientific] perspective it does have social utility (p.72).

11.4.7 A deliberate part by government decree

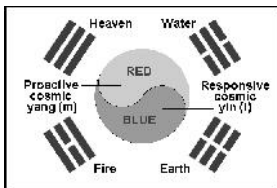
For an interesting twist we can visit South Korea, population 52m, once poor, now wealthy, vastly modernised, urbanised (91% in 1995), highly educated (probably the world's highest college enrolment rate), and sufficiently Western (English is widely taught) and high tech (similar to the UK and Sweden in internet usage) to be proxy for a Western country. With a crucial difference – in the 1970s astrology, divination, shamanism and the paranormal were endorsed by the government as central to South Korean culture, identity and pride, so they became a deliberate part of the nation's future. And it shows – only 2% of people in the West

have a serious interest in astrology (see 1.4.2), but in South Korea it is close to 50%, with a conspicuous tendency among South Koreans:

to believe in fate and divination ... there are reportedly more than 300,000 practicing fortune tellers [roughly 1 per 100 adults] ... In addition to regular fortunetelling services that are found in virtually every street corner of the nation, there are also fortune tellers who set up makeshift booths on busy streets. There are also "fortunetelling cafes", where patrons can seek the divination of fortune tellers while drinking coffee or beer. More recently ... fortune-telling services have gone on-line – as of early 2002, there were more than 1000 such websites. Mobile phone companies have also started to provide fortunetelling services [and] have gone one step further by selling electronic amulets. Patronising these services are people of all classes and backgrounds, irrespective of age, gender, education, or profession. ... the most popular forms are divination based on birth date [using Chinese astrology] (AF Kim, Nonofficial religion in South Korea. *Review of Religious Research* 46(3), 284-302, 2005:286).

Auspicious birth dates are so embedded in national culture that they affect mean salaries:

If auspicious birth date = 100, then moderately auspicious = 90, moderately inauspicious = 81 (N = 1017, p.300). The most auspicious day in every 60 years occurred on 27 October 1991. "On that day wedding halls and churches were bursting with weddings, and hospitals were practically overflowing with pregnant women wanting to deliver their babies, quite often resorting to the Caesarian operation. Moving or hauling companies were inundated" (p.289).



The pro-Western Republic of South Korea gained independence on 15 August 1948. Sun in Leo is trine Jupiter orb 3.6°, Mercury is exactly conjunct Saturn (North Korea has it conjunct Neptune). Its flag, adopted a year later, exhibits more cosmic symbolism than any other national flag – a central intertwined red yang (male) and blue yin (female) are surrounded by the trigrams for Fire, Earth, Water and Heaven, the whole representing universal harmony and unity. The image positions, aspect ratio (3:4) and colours (Pantone 186C and 294C for red and blue) are exactly specified.

Similarly David Kim (*Divining Capital: Spectral Returns and the Commodification of Fate in South Korea*. PhD thesis, Columbia University 2009) found that horoscope reading is so popular that in 2004 it was worth the same as movie ticket sales. He comments:

People want knowledge about their personal lives that they can apply in a practical fashion. Fortunetelling for them is valuable, hopefully dependable, information about how they should run their lives, their businesses, etc (p.149). The accuracy of readings, or their efficacy, is determined by the skills of the diviner [who can call on] a whole set of processes and strategies which are meant to immerse the clients in a web of retrodictions and predictions which the diviner, and patron [ie client] for that matter, then cuts and pastes into a coherent reading (p.150). ... [But] Why is it that so many go to receive knowledge of their future, only to forget what they hear days, if not hours, later? ... does accuracy really matter? (p.152). ... Many younger patrons visit tellers in groups ... it is a social form of entertainment ... indulging in a commodity that is a mirror of the self (p.155). ... many patrons, especially students, say they go to diviners "for fun". ... Patrons want the knowledge and the story, but not necessarily the ending (pp.157-158).

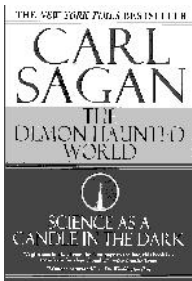
The moral seems clear. If you boost an astrology that was once the gourmet sipping of wine into a deliberate everyday way of life, you are likely to end up with routine boozing or at least routine entertainment. Benefits are not denied, but attempts to predict only a gourmet future for astrology seem likely to be defeated by human nature and end up as fruitless speculation.

So we are back to where we started in 1.5.2 – the challenge of factual truth vs meaning – and now the challenge of understanding astrology and forming a personal view:

11.5 UNDERSTANDING ASTROLOGY

11.5.1 Background to forming a personal view

Understanding is the key to progress. No understanding, no progress. Astronomer Carl Sagan stresses this in his acclaimed 1996 book *The Demon-Haunted World*, where demons are popular unsupported beliefs such as astrology that meet:



powerful emotional needs that science often leaves unfulfilled ... fantasies about personal powers we lack and long for. ... [But] for me, it is far better to grasp the Universe as it really is than to persist in delusion, however satisfying and reassuring. Which attitude is better geared for our long-term survival? Which gives us more leverage on our future? (pp.12,14).

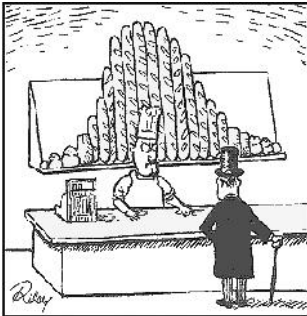
To recap, the most consistent understanding to arise from the thousand studies reviewed in this book is that none of astrology's claims (*as above so below*, people with X in their charts are more Xish than those without) are

actually true beyond a level explained by self-attribution and other artifacts. Yes, some people find astrology personally helpful for various personal reasons, but it is not without potential harm if it involves vested interests or claims that are invalid. It seems unlikely to disappear as long as it can attract attention, and people (not just astrologers) can make money from it.

11.5.2 How to be unhelpful

Perhaps understandably, astrologers tell us "forget this fancy stuff, just visit an astrologer and see for yourself how well it works – and trust your experience". In effect their argument is "we are so highly knowledgeable about the environmental, social, psychological and other circumstances of the case that the only possible explanation is that astrology works". Yes, but it still works if the birth chart is unknown, wrong, reversed, invented, or not needed.

Alternatively astrologers can say things like the following (with our response in italics):



To reject something as old as astrology is to reject the experience of mankind. So we must re-embrace a flat earth?

Thousands of astrology books cannot be wrong, so astrology has to be true. A fraud in most areas risks a fine or a jail term. But in the world of publishing the only risk in most countries is getting rich under the protection of free speech, which allows people to say anything they like whether true or not as long as it is not libellous.

Reality is not what you arrogantly assume. Astrology is personal participation in a unique situation, following a divinatory logic with a symbolic attitude, and open to multiple truths and perspectives. It is useful, elegant, and liberating. It speaks to us in a language we love and understand. You take the view "All I care about astrology is that it works for me". Why should that be a problem for the rest of us?

If the above is still not helpful for forming a personal view, try this:

11.5.3 Key questions to ask

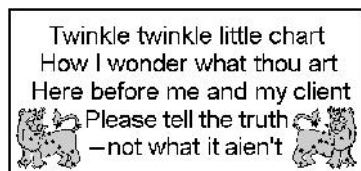
It is not for us to say whether you should prefer meaning or truth. Or whether you should test ideas before accepting them. But if you believe astrology works (where "works" is whatever you want it to mean), ask yourself *does it need to be factually true*, ie where its claims can be confirmed or disconfirmed by empirical tests as summarised in the present book.

If **No**, you are safe. You have exercised your right to put meaning before facts. Best of luck.

If **Don't Know** because topic is too technical, revisit the low-tech chapters listed on page 943.

If **Yes** (as many astrologers claim like Phillipson in 10.4.6), then the studies in this book show you are on shaky ground. You should now ask yourself which of these explanations for

supposed astrological influences is the more likely:



- (1) Principles unknown to science for which there is no observable evidence.
- (2) Known artifacts in human reasoning that astrologers remain blind to.

If (1) is your answer, what evidence would you personally accept as showing you were wrong? The few astrologers who answer this one have relied not on evidence but on ignorance of artifacts. For example:

To change [my belief in astrology] would require an ironclad, irrefutable proof that materialism is a completely correct description of reality, followed by a proof that physical science has fully described all forces and interactions possible in that material reality and that none of those forces could let planetary motions affect individuals on earth (Mark Pottenger, *Correlation* 13(1), 37, 1994). [Why is a seriously negative matching test not good enough?]

Either way, if astrology survives it seems likely to do so for the following reasons:

(1) It is useful in areas such as entertainment, the creative arts, human history, and perhaps as a tool in counselling. (2) Some people have a personal need to believe and astrologers have a practical need to make money. Both follow not where the facts lead but where the need beckons. (3) Astrology is arguably ideally suited to the scientific study of pseudoscience. In terms of longevity and popularity it has a clear edge over other questionable beliefs. For every student of pseudoscience, astrology would seem to be a good place to start.



Glossary 85 entries

Abbreviations. Adopted internationally but not unanimously in 1975: **SO** Sol (Sun), **MO** Moon, **ME** Mercury, **VE** Venus, **MA** Mars, **JU** Jupiter, **SA** Saturn, **UR** Uranus, **NE** Neptune, **PL** Pluto. **NN** and **SN** Moon's N and S nodes, **AS** Ascendant, **DS** Descendant, **MC** Medium Coeli (Midheaven), **IC** Imum Coeli, **VX** Vertex, **RA** Right Ascension.

AR Aries, **TA** Taurus, **GE** Gemini, **CN** Cancer, **LE** Leo, **VI** Virgo, **LI** Libra, **SC** Scorpio, **SG** Sagittarius, **CP** Capricorn, **AQ** Aquarius, **PI** Pisces. Gauquelin professionals see 6.4.7.

Anecdotal evidence. Personal testimony, stories, isolated observations. The evidence on which most of astrology is built. Rarely worth serious interest since invariably confounded by uncontrolled variables.

Angular. Positioned on or near the horizon (Asc-Desc) axis or MC-IC (highest-lowest points on ecliptic) axis, where a planet is said to have its maximum influence. Both axes pass through Earth's centre, so this horizon differs from the visible horizon, see 6.9.4.

Archetypes. Symbolic and mythical images like The Great Mother that Carl Jung (1875-1961) believed were transmitted genetically. Arguably nonfalsifiable.

Artefacts. Objects such as a man-made tool or decoration, especially if of historical interest

Artifacts. Non-astrological factors such as hidden persuaders and inappropriate procedures that give astrology-like outcomes, thus wrongly persuading us that astrology works. Encouraged by everyday astro practice and prevented in properly controlled tests.

Aspects. Specific angles between two points (usually planets) usually projected on to the ecliptic. Major aspects are conjunction 0°, sextile 60°, square 90°, trine 120°, opposition 180°. Minor aspects include 30°, 45°, 72°, 135°, 150° (many others are possible). Said to blend principles in a neutral eg 0°, harmonious eg 60° 120°, or stressful eg 90° 180° way.

Astrologer. Defined unhelpfully in most dictionaries as a student of astrology, in others as a star diviner, in this book as someone who can interpret a birth chart and does so fairly regularly, not necessarily for paying clients. Other terms are *astrologian* (obsolete) and *astrologist*, a word not listed in the latest (1991) edition of the full *Oxford English Dictionary*.

Astrology. A determined survey of 35 dictionaries and encyclopedias, 35 reputable astrology books, and a discussion group uncovered many definitions see 7.3.1984.2 including unhelpful ones, and some that defy understanding see 1.3.5. Collectively they reduce to reflecting either *as above so below* or mind-related processes such as intuition and divination. Essentially belief in celestial influences on human behaviour and destiny. Most cultures have an astrological tradition.

Belief. A proposition held to be true and shared with others but not necessarily true. Some beliefs have personal meaning (God exists) and are vigorously defended. Others (it may rain) are not. All arise from our intolerance of uncertainty and our craving for

certainty. Strong cravers will prefer absurd beliefs to none at all. Ironically most people cannot recognise sound evidence (see 8.9.6) even though what matters is their understanding of what is going on.

Big Five. Factors widely accepted since the 1980s as the fundamental dimensions of human personality, namely *extraversion* (whether a person is sociable or retiring), *neuroticism* (worrying or calm), *agreeableness* (pleasant or unpleasant), *conscientiousness* (careful or careless), *openness of intellect* (curious/creative or shallow). In a business setting the most important factors are conscientiousness, and **IQ** (which is not a personality factor but a cognitive one).

Chart factor. Anything interpretable in a chart such as a planet, sign, house, aspect, midpoint, fixed star.

Chi-squared test. Tests whether the difference between observed frequencies and theoretical expectancies is statistically significant. The test is invalid if the expectancies are empirically determined because it does not allow for their sampling errors.

Cold reading. Using cues leaked by the client to confirm your claimed powers. Invariably persuasive.

Confidence intervals. Statistically the confidence you can have that an observed value lies within a specified range. A 50% interval means there is a 1 in 2 chance the actual value lies inside the specified range. A 95% interval means there is a 1 in 20 chance.

Controlled test. Uses a control group identical to the test group but not exposed to the test treatment, thus controlling for any artifacts in the treatment. Belief in astrology survives mostly due to an absence of controls. So forget controls if belief is more important than truth. See also Truth.

Correlation. The extent to which one variable varies in tune with another. See also Effect Size and *r*.

CPI, EPI, EPQ, MBTI, MMPI, NEO-FFI are the California Psychological Inventory, Eysenck Personality Inventory, Eysenck Personality Questionnaire, Myers-Briggs Type Indicator, Minnesota Multiphasic [multi-purpose] Personality Inventory, and Neuroticism Extraversion Openness Five-Factor Inventory (Big Five). Many astrologers see personality tests as irrelevant because astrology reflects only the inner person, yet most tests use questions that necessarily involve the inner person, so in fact the opposite is true.

Daemon. Non-malignant intermediaries between gods

and man. Claimed to help astrologers experience the relevant chart symbolism and thus potentially know everything. But there is no agreement among astrologers on whether they are needed or even exist.

Delusion. A belief with no basis in fact. Not the same as *illusion* (a misleading experience).

df degrees of freedom = (number of categories) – (number of independent restrictions). A 2 x 2 table with fixed row and column totals and a fixed total of N observations has $df=1$ because a value assigned to any one of the four cells leaves no freedom for the others to vary. For a 3 x 5 table $df=(3-1) \times (5-1)=8$.

Directions. Aspects to natal positions from natal positions changed by a set amount, eg 1°/year of life.

Diurnal circle. Apparent path of a celestial body due to the Earth's daily rotation. It moves in a plane parallel to the Earth's equator and its axis coincides with the Earth's axis. Not the same as the ecliptic. *Diurnal* is a technical term meaning *daily*.

Divination. The attempt to know something unknown or obscure or in the future by means other than reasoning, such as invoking the help of gods via prescribed rituals. The rituals serve to hide what is really happening (essentially chance) and thus invest the result with a meaning it would not otherwise have. A way of reducing uncertainty, see Belief.

E and N. Evidence for the validity of **Extraversion** (sociable–reserved) and **Neuroticism** (worrying–calm)



is among the best in personality psychology. They are two of the Big Five, see above. They are also among the qualities claimed to be readily discernible in birth charts. E and N scores tend to decrease slightly over the course of a person's life, otherwise they are stable and unchanging. E and N are arguably more useful than anything actually shown in a birth chart.

Ecliptic. Plane in which the Earth orbits the Sun. The usual reference for chart positions. Same as the zodiacal circle. Angle between it and the equator (same as the tilt of the Earth's axis) is currently 23.45°. Range over many thousands of years is 22.1° – 24.5°.

Effect size. The extent to which one thing eg height varies with another eg weight. It tells us how large the extent is. Usually given as a correlation r , a number between +1 and –1. Or as d , the difference in pooled standard deviations between observed and expected means with no fixed limits. See Meta-analysis and 8.2.

Ephemeris. Table listing planetary positions.

Evidence. State the claim, examine the data, list the explanations, pick the most likely and provisionally accept it as evidence. The best evidence is objective, typically the result of controlled experiments as opposed to personal experience, see Anecdotal evidence.

Gods. Imagined beings thought to have power over human affairs. Planets in astrology generally relate to the planetary god (which has human characteristics) rather than the physical planet (which does not), so involving astronomy is arguably a misdirection.

Happiness does not consist of a single dimension (happy at one end and unhappy at the other) but of two independent dimensions, *happy-unhappy* and *constant-variable*, located 45° from E and N so that E+N– (Air) is happy and constant, E–N+ (Water) is unhappy and prone to crises, E–N– (Earth) is neutral and constant, and E+N+ (Fire) is neutral and variable. Nor is the situation decisive – winning the lottery or becoming a paraplegic makes little difference to the level of happiness. So your E and N scores are a reliable guide to your happiness level throughout life. That is the kind of act that astrology has to follow.

Hidden persuaders. Serious artifacts in reasoning of which we are usually unaware (hence the name) but which can make the vaguest chart reading seem amazingly accurate. For some reason they are almost never mentioned in astrology books. See 9.7.

Higher realities. Said to underlie everyday reality. By definition unobservable. See also Unseen world.

Horoscope. Its early meaning was the degree of the ascendant or star that rises at a certain moment, which was then held to predict the destiny of a person born at that moment. Today *horoscope* means either the birth chart all by itself (no interpretation) or just its interpretation. The context indicates which.

Hypothetical planets. Invisible planets held to exist by some astrologers often using psychic means. Dozens have been proposed, none agreeing with each other, and all made possible by ignoring controls.

I Ching. Ancient Chinese proverbs selected from a set list by a random but ritual process that are held to provide guidance suited to those who consult them. Essentially a projective test. See Projection.

Intuition. Unconscious processing of previously stored information. If the information happens to be incorrect (which is the tricky bit, see Belief) so is the intuition. Nothing genuinely psychic is involved.

k kappa. A measure of agreement and effect size. A substitute for correlation r when only Observed and Expected frequencies are available, see 8.2.1.

Knowledge can be defined in various ways but here it means that which is factually known. Knowledge has to survive attempts to refute it, which is precisely where astrology-as-knowledge fails. Astrological chart indications are not knowledge, nor are testimonials or

beliefs or anything that has not survived testing.

Mandala. A figure whose design is symbolic of some aspects of the universe. Allows you to explore space without having to leave home.

MC. *Medium Coeli*, Latin, midheaven, where the Sun is at noon. Not the same as *zenith*, highest point.

Meme. An acquired belief or idea. Analogous to a gene but transmitted by imitation. Think of jokes.

Meta-analysis. Collecting effect sizes from relevant studies and analysing them statistically as a single dataset. Allows correction for artifacts such as sampling error to see if a real effect exists (something not possible with an individual study). It can also tell if the dataset contains both apples and oranges. Since the 1970s it has generally revolutionised research by removing confusion. More than 10,000 meta-analyses are now available in PsycINFO alone.

Orb. An aspect's permissible inexactness. Little agreement but typically around 5°, or 1° in event astrology.

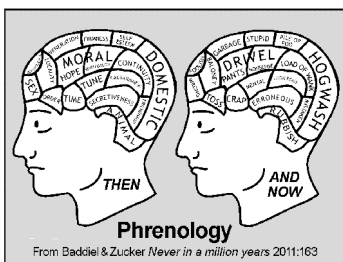
Palmistry. The notion that features of our hands (eg lines, finger length) show character and experiences.

Paranormal. Not scientifically explainable (at least not yet) and not normal experience. Characterised by a huge diversity of claims defined not by what fits but by what does not fit, leaving little common ground for them to share. But they generally involve (or seem to involve) anomalous connections with people.

Parapsychology is the scientific study of claimed paranormal experiences regardless of whether they are objectively real. The experiences are real enough to those who experience them, so any associated dispute is about how they are best explained.

Personal validation. Having a personal reading, seeing it fits, then concluding the system works. Mostly useless because it ignores hidden persuaders and the need for controls, thus fostering false beliefs. See also Evidence and Anecdotal evidence.

p value. A measure of probability from 0 (zero) to 1 (certain). The value $p = 0.05$ means the probability is 1 in 20; $p = 0.001$ means it is 1 in 1000. Unlike effect size, p depends on sample size, does not indicate practical significance, easily leads to wrong conclusions, and is no longer fashionable. *Regardless of your technical skills 7.7.2016.3 is essential reading.*



Phrenology. Predicting character from size & location of head bumps. Was more popular than astrology is today until invalidated by neuroscience.

Placebo. Pronounced *pla-SEE-bo*. A fake procedure whose effectiveness is based on suggestion, see 10.3.2. If the intention is adverse it is called a *Nocebo*.

Progressions. Aspects to natal positions by positions on dates changed by a fixed amount, eg by one day per year of life. The change can be either forwards or backwards in the zodiac. As in Directions there is no agreement on details but much confident assertion.

Projection. Assumes we reveal our hidden attributes and needs by projecting them on the ambiguities of a picture, birth chart, Tarot card, etc. Outcome depends on the supervisor, so the assumption is open to doubt.

Psi. A one-size-fits-all description of whatever may be involved in paranormal phenomena.

Psychic (noun). A person with an apparently non-physical mental means of accessing information. But the actual means are generally those that people are generally not equipped to notice. Indeed, if psychic skills were real then casinos would go out of business.

PsycINFO. Academic database of psychology abstracts. Accessible only via licensed institutions.

Quantum physics. Is mysterious, as is astrology, so they must reflect the same thing – or so astrologers can argue. See 7.7.1990.2 for appropriate correction.

r correlation coefficient. A measure of similarity between two variables where +1 = total, -1 = total inverse, and 0 = none, Is also a common measure of effect size, examples see 8.2.2. For similar measures and their calculation and interpretation, see 8.2.1.

Rationalisation. In this book the intellectual art of selecting evidence to produce a desired conclusion.

Reliability. Trustworthiness. In psychology and in this book, how reproducible and stable a particular measurement is. Not how true it is, for which see Validity. Reliable measurements are essential for validity but do not guarantee it.

Rhetoric. A style of discourse that hides awkward facts by focusing on feelings and plausible arguments. But be careful not to be too specific, otherwise your errors may become obvious.

Sampling error. Not an error as in mistake but one that arises because the sample is too small to be representative of the population. A common problem.

Scientific approach. Assumes that worldly events exhibit at least some order, and that the order can be discovered by observation. It is why we now explain combustion without phlogiston, planetary motion without epicycles, and thermal conductivity without caloric fluid. There is no question that it works – we did not reach the Moon by divining sheep's livers. In principle the scientific approach is no different from what practical people do every day, except it is more rigorous. If observation (direct or indirect) is denied then so is the scientific approach.

Self-attribution. Where knowledge of astrology leads to behaviour that mimics its claims. Thus if X is fussy then people who know they have X tend to see themselves as fussy. Important because astrology's popularity easily explains any non-zero effect sizes.

Skeptical. Not from the Latin *scepticus*, doubter, but from the Greek *skeptikos*, to look about, consider, observe. Skeptics demand evidence, not rhetoric.

Skepticism is about appraisal not denial. It requires seeing all the evidence, keeping an open mind, and not rejecting claims prior to examination. This may require much tedious hard work, so most people lose interest. Why should they bother about getting it right when believing is so popular and easy?

Spirit guide. A human essence held to exist independently of the physical body and claimed by the believer to act as a link between this world and the unseen spirit world. Unsupported by factual evidence.

Spiritualism. The belief that assumes the existence of spirits capable of being contacted.

Spirituality. Intangible non-material matters. \neq religion (requires worship). The opposite of *materiality*.

Standard deviation. Or sd. A common measure of scatter usually calculated by $sd = \sqrt{(\sum(x-\bar{x})^2)/(N-1)}$ where x = observed value, \bar{x} = mean value, N = no of values. In principle 68% of values lie within ± 1 sd, 95% within ± 2 sd, and 99.7% within ± 3 sd.

Statistics. Numerical statistics summarise things by numbers (the width of X is Y). *Inferential* statistics draw conclusions from evidence, eg fat people tend to be overweight. That the latter requires many cases for a conclusion does not (as is often asserted) make it inapplicable to individuals. If tests show most fat people are overweight then, if fat, you may well be the same.

Synasty. Comparison of one chart with another (commonly via aspects between charts) to determine compatibility. Easily tested with census marriage data, which gives the largest sample sizes in astrology.

t-test. Tests whether the difference between two observed means (ie averages) is statistically significant.

Tarot. Cards with symbolic images (eg the World, the Hanged Man) that when selected by a random but ritual procedure are used to forecast one's destiny. As in astrology, the outcome depends on the practitioner.

Testability requires a claim to be specific enough to be tested. A claim such as *a benign force pervades the universe* is too vague to be testable.

Trait. A generally consistent pattern of behaviour that the owner is likely to display. Examples are shyness, honesty, tidiness, and ignorance. In English, after eliminating synonyms, around 4500 distinct trait names exist, underlying which are broad dimensions such as the Big Five (see above) that explain most of the differences. See also E and N.

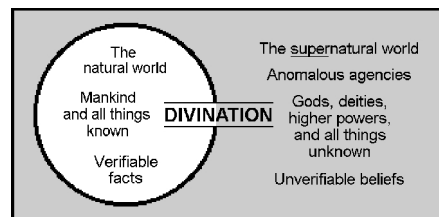
Transcendence. The experience of heightened functioning. Examples are greater sensitivity, abilities apparently beyond ordinary ones, apparently real visions, and mystical and ecstatic feelings of joy and contentment. See also 4.3.4.

Transits. Aspects to natal positions (eg of planets) by actual positions on a given date.

Truth. Definitions of truth have occupied philosophers since the world began. In this book truth is what ordinary people define as truth. It is true that you are reading this page and that Mars has no canals. It is not true that you are on Pluto and that rain never falls on London. Defining something as "true for me" does not make it true in our sense. If it did then astrologers would be infallible. It is true that astrologers are not infallible.

Unconscious. That part of our being not available to ordinary consciousness. This definition omits almost everything that is relevant and useful, for which see the whole of 8.9 (mind-related factors).

Unseen world. The supernatural world of gods, higher powers, and all things unknown. Traditionally believed to be accessed by divination see 8.9.4.9:



Useful. Here the term *useful* means *clearly* useful. Your gloves are clearly useful for handling hot cakes whereas a sheet of tissue paper is clearly not useful. The distinction is crucial for understanding astrology.

Validity. Here the extent to which a test measures what it is supposed to measure, or a true conclusion follows from the observations. It has nothing to do with "it's valid for me".

Variance. The scatter in a set of data = mean of squared sds. The squared bit makes it deceptive because most things vary linearly, as does our thinking.

Zodiac. Circle of signs along the ecliptic used to indicate position. The *tropical zodiac* (used mostly in the West) has 12 equal signs starting from where the Earth's equator intersects the ecliptic at the start of northern spring, which in the southern hemisphere allocates signs to southern births that are 180° out of sync with southern spring. The *sidereal zodiac* (used mostly in the East) is tied to a fixed star such as Spica and is currently about 25° (no agreement on this) ahead of the tropical zodiac. Tropical AR is now mostly sidereal PI, getting closer by 1° every 72 years due to precession. Estimates of when 0° tropical AR enters sidereal AQ to begin the Age of Aquarius range from AD 1457 to 3550, see 7.1.2000.1.

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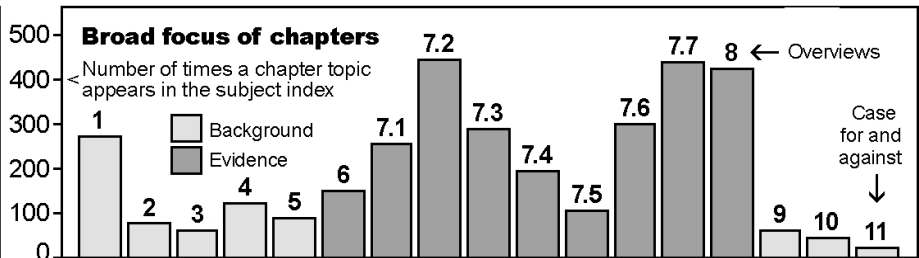
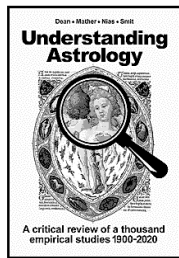


Fine – we Leos
aren't easily fooled



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Publications and organisations are in *italics*.



About 77% of subject-index topics focus on evidence with peaks at application issues, research issues, and overviews. If you are new to astrology or to technicalities, the least technical chapters are 1, 2, and 11. Then 4, 5, and the FAQs on pages 416-419. Or just read this index.

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Planet mean periods, years

From *Collins Dictionary of Astronomy* 1994.

Sidereal period (vs 0 Aries)

ME 0.24, VE 0.62, TE 1.00, MA 1.88, JU 11.86, SA 29.46, UR 84.01, NE 164.79, PL 248.59

Vesta 3.63, Chiron 50.38
Synodic period (*conjunct Sun*)
 ME 0.32, VE 1.60, MA 2.14,
 JU 1.09, SA 1.04, UR 1.01,
 or $1/(1-(1/\text{sidereal period}))$

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Dean • Mather • Nias • Smit

Understanding Astrology



A critical review of a thousand
empirical studies 1900-2020

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