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The detection of fraud and fakery

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Summary. Fraud is often found in science, especially in what is termed, 'fringe science'. There are several reasons why scientists should be aware of the fact that they, too, can be deceived, both by subjects in experiments and by themselves. The will to believe is strong even among 'hard-headed' academics, and is often the factor that causes them to publish results that do not stand up to subsequent examination and/or attempts to replicate. In some cases, scientists would be well advised to consult with such experts as conjurors, when skilled frauds are in a position to mislead them.

Key words. Fraud; fakery; deception; faith healing; conjuring; parapsychology.

Scientists are very easily deceived. They think logically, extrapolate possibilities from evidence presented, assume (with a good probability of being right) certain aspects of the observed data and draw on their past experience in coming to decisions. This is to say that they act very much as all humans do, struggling with sensory input to derive new facts from it. But scientists do this with a certain authority and certainty born of their training and discipline. They are thus excellent candidates for being flimflammed by a clever operator who is aware of the fact that scientists seldom bring the human element into account.

Protons, grains of sand, cannon balls and planets behave themselves. They do the same thing, under the same influence, in essentially the same way each and every time. They are predictable, within definable limits. When they misbehave, the scientist perks up and is compelled to determine just why this has happened. If something new is discovered by these means, the parameters are redefined and we know something more about our universe.

One factor often overlooked is the human factor. I will postulate a simple situation: Let us suppose that a researcher has decided to check the quite accepted fact that mixing two parts of hydrogen with one part of oxygen and passing a spark through the mix will result in the creation of a drop of water accompanied by a minor explosion. The appropriate equipment is assembled, and a run of 10,000 trials scheduled. As expected, the first 700 trials result in explosions and water drops. At that point, a lunch break is called, and all retire from the lab. Upon returning to the experiment, the chief experimenter discovers that upon passing the spark, no ex-

plosion results and spectroscopic examination of the gas mixture shows it to be argon!

Is the scientist justified in concluding that occasionally the hydrogen/oxygen mixture will combine to form argon rather than water? Of course not. Why not? Because: 1) It is well-established that elements under these conditions do not transmute; 2) Parsimony dictates another answer; 3) This experiment is very well repeated and has never had this result before, especially in such a short run; and 4) The one startling result was obtained immediately following a break in the experiment during which tampering with the apparatus was possible.

That last condition says it all. A prank on the part of an associate is far more to be expected as an answer than a major breakthrough in alchemy.

In the parascience of parapsychology, a strong belief structure exists that predisposes the parapsychologist to ignore otherwise obvious factors that could provide a simple, non-extraordinary solution to a problem. Indeed, the very fact that a paradox presents itself is enough to fire up a parascientist to the publishing point. This is my First Axiom: In parapsychology, any evidence of a paradox is proof of the profundity of the phenomenon.

My Second Axiom follows swiftly: It is not the quality of the evidence, but the quantity of it, that really counts. This is often expressed in lay language as, 'Twenty thousand astrologers can't be wrong.'

But what qualifies me, a mere amateur, to declare on these weighty matters? Let me explain. I am a conjuror (often mis-called, 'magician') and as such I have a very powerful,

albeit narrow, expertise. I know when people are being deceived. It is difficult to describe how I can come to that conclusion, just as it is difficult to describe how to play the violin, but I have been rather successful in pointing out where certain individuals have allowed themselves to be lead astray. I have not always been thanked for those efforts. One fact that I discovered early on was that some persons fool themselves as much as others fool them. This can best be illustrated by outlining some of the recent investigations in which I have been involved.

I have been looking into the claims of the faith healers, here in the USA and abroad. My investigations of these people can serve to show just how obvious the fakery should be, but is not. Faith healing has received validation from many medical doctors and other academics, though the vast majority of scientists have refused to accept the claims. I have found, invariably, that those who believe are driven by their religious convictions, and that in most instances they have refused to examine individual cases with the kind of rigor that should be expected. Religion, they seem to believe, does not have to stand for examination.

The practitioners of faith healing have, in recent years, extended their influence far beyond what was previously possible when they were confined to folding chairs and a tent as a theater. Now, they have millions of people available via television and radio. The question I have sought to answer is whether or not any healing takes place as a result of their ministrations.

For something so popular, it is a striking fact that faith healing has a remarkably undocumented success rate. But this is a flimflam of a somewhat different style from real-estate schemes, vitamin frauds and get-rich-quick hoaxes. It bears religious, semi-scientific and emotional labels that lend it a considerable – though quite false – pedigree.

Evidence to prove faith healing must be of good quality. No number of purely anecdotal accounts can suffice. Before-and-after medical evidence is absolutely essential, along with careful consideration of the possibility that any remission may be within the probable incidence of such occurrences and not at all remarkable in itself, though we still do not understand the causes behind, for example, cancer remissions.

The faith healers are quick to identify science – and thus all scientific procedures and standards – as tools of Satan. Thus, it is hoped, skeptics will not insist upon rigorous proof of their claims. Others, such as amateur parapsychologist Hans Holtzer, who writes endless accounts of miracles without any demand for rigorous evidence, even accepts the infamous Delawarr 'black boxes' as working tools of the healing quacks. These devices were long ago shown to be prime hoax material, but Holtzer hasn't heard about that fact, or chooses to ignore it. His criterion for whether or not a healer is the real thing further reflects his rather loose standards: "If you have been helped, the healer was genuine." Holtzer is not entirely without common sense, however. Says he of alternate healing methods, "eye of newt or the head of a toad" treatment is "nothing but fantasy". Except for his mutilation of Shakespeare, I agree.

There is a frightening tendency among those who embrace belief in faith healing to resist any attempts to properly investigate the evidence that is offered to support the claims. But religious folks have always felt that their faith must not be too closely examined. The Christmas season of 1986 brought the USA a media blitz of articles and interviews about yet another miracle of the 'bleeding statue' or 'weeping icon' variety, this one of a Virgin Mary painting in Chicago that was said by Church authorities to exude 'a very thin, oily sweet substance very similar to the [liquid] we use to baptize children or [sic] unction for the sick.' These authorities firmly declined to have the 'tears' examined by chemists, saying that, "To further analyze [this phenomenon] would be al-

most blasphemy. The Archdiocese thinks [investigators] should not subject [the substance] to a scientific analysis, which is not a very religious procedure."

Little wonder that there was such reluctance to really look into the matter. The previous year, a similarly attractive myth collapsed when another religious figure, this time a combination weeping/bleeding statue in Montreal, Canada, turned out to have been smeared with a quite mundane mixture of the owner's own blood and Old Spice shaving lotion. The resulting fuss was no surprise to experienced observers of these matters. Exposure of the hoax brought a barrage of hate mail to the local bishop. The letter writers felt that in spite of the evidence – a direct confession from the hoaxter – the bishop still should have declared the event a genuine miracle.

The glaring fact that has emerged from my investigation is that the vast majority of those who go to be healed are not healed except for temporary symptomatic relief – certainly none of those suffering from actual organic problems are healed – and those who believe they have been healed are simply wrong in that delusion. The April 1986 issue of the magazine *U.S. Catholic* offered a startling rationalization of this obvious fact while maintaining the unproven claim that 'some are healed'. They offered the explanation that, "Redemptiveness is a way of explaining why some are healed and others not. It injects purpose into the equation. Once, a blind friend and fellow priest asked [two Catholic healers] if they thought his sight could be restored. Will being able to see make you able to love more?, they asked him. No, he replied. Then the healing was unnecessary and counterproductive, they concluded."

It appears that a quick shuffle is possible even in a cassock. Why do the victims continue to believe? Ben Franklin was aware of that strange quirk of human nature which elects the victim as chief supporter of the trickster. Said he, "There are no greater liars in the world than quacks – except for their patients." He had a way of seeing through hoaxes.

Let me explain how we went about solving one of the puzzles. One of the US faith healers, Peter Popoff, was famous for his ability to 'call out' members of his audience. 'Calling out' consists of selecting an audience member, giving his or her name, naming the doctor involved and the illness, along with other data. The healer is careful to point out that he has never approached the subject nor asked any questions. The result is considered to be a manifestation of The Gift of Knowledge, an ability said to be conferred upon anointed ministers by God.

Obtaining the needed information about the victims is the easiest part of it all, we discovered. This is accomplished simply by having someone else ask them! Since people are admitted to the auditorium or coliseum as much as three hours before the performances, I had insisted that my working team of observers must arrive with me at the very moment the doors first opened. Spreading out in groups of two or three, we had waited patiently until we were eventually approached by someone from the evangelist camp. (All of the healers we examined send out their respective wives to tour around and gather information, and all of them send their 'front men' for that same purpose.) Striking up casual conversation with early arrivals, these workers then determined names, addresses and other information easily, noted the location and a brief but adequate description of the person involved, and then hurried backstage to record that data. In addition, their visits were watched via video cameras which were being monitored backstage.

We were able to verify all this when employees of the healers defected following a major television exposé of one of the major faith healers that I carried out.

In addition to this bold method, 'healing cards' provided another rich source of information. These slips were handed

out to all who entered, and it was asked that specific information concerning 'prayer needs' of the individual be written down, as well as names and addresses. The slips were gathered up early and taken backstage, bearing the same sort of data that had been obtained by the questioning system.

Each of these systems has its advantages and drawbacks. The vast majority of the audience, not arriving until just before the scheduled performance, can not be aware that certain individuals have been passing around to gather information from earlier arrivals, and can not understand how trickery can be employed to actually locate each of those persons when they are subsequently called out. The healing card method gets around the problem of blatantly questioning the people individually, though the location of persons who made out the cards can not now be known to the preacher when he is ready to approach them. He has to ask them to identify themselves.

When I had first seen Popoff's performance, in Houston, Texas, it was in the company of Steve Shaw, a colleague who first came to national attention as half of the Project Alpha team. That project consisted of my sending two teenagers into a major psychic research lab disguised as psychics, to prove that the parapsychologists could be fooled by amateur conjurors. Alpha had proven a resounding success. Steve, now a full-time professional mentalist performer, was the ideal choice as a side-kick. We had the assistance and total cooperation of the Houston Society to Oppose Pseudoscience (H-STOP).

Steve and I had watched Elizabeth, Popoff's wife, and Reeford Sherrell, his strong-arm man and front man, circulating in the audience gathering information for later use, as expected. Mrs Popoff, we noted, repeated clearly each name and other detail given her, as if her purse contained a transmitter...

But after Popoff had come waltzing out and was well into the big healing scene, Steve and I became aware that there was something more than mnemonics (a memory system) being used to store the data. Popoff had just too much information available to him, and he was finding each person, among the thousands present in the Sam Houston Coliseum that afternoon, with great accuracy. We decided that he had some sort of electronic communicator working, and Steve, who had already volunteered as an usher, went up to Popoff to peek into his ears and see if there was a device in there. After nearly bowling the Reverend over in the aisle, Steve returned to me and announced that Popoff did indeed have a piece of pink plastic in his left ear. We doubted that someone who regularly heals deafness in others would need a hearing aid. Someone, or something, was talking to Peter Popoff, and his crusade show would be visiting San Francisco the following week. We knew what our next move was.

I contacted Robert Steiner, a high-ranking official of the Society of American Magicians and then-chairman of the Bay Area Skeptics, who put me in touch with an electronic whiz named Alec Jason. It became their job to find the source of Popoff's transmission. With a highly sophisticated scanner device operating, Steiner and Jason stationed themselves in the San Francisco Civic Center, posing as repair men. The moment that Elizabeth Popoff finished her in-audience chores and retired backstage, the show began. Reverend Sherrell began the warm-up for the star's entrance by claiming that Popoff had raised the dead and had visited Heaven at the special invitation of God, who told him 'things never before revealed to a mortal'. And 45 minutes later, just as Popoff himself entered to the hysterical plaudits of the faithful, Jason turned to Steiner with a big grin and gave the thumbs-up sign.

The scanner had zeroed in at 39.170 megahertz. And this is what they heard:

"Hello, Petey. I love you, I'm talking to you. Can you hear me? If you can't you're in trouble. 'Cause I'm talking. As well as I can talk. I'm looking up names, right now."

What followed was a revelation. We heard Elizabeth Popoff feeding back to Peter Popoff all of the data that she and Sherrell had gathered from the audience an hour before. There was a huge mobile television studio trailer, hired by the Popoffs, parked outside the coliseum. It was there for the purpose of recording the meeting for use on the weekly Popoff telecast. But it served another – very vital – purpose. Mrs Popoff, we later learned, was enthroned in a sealed-off section of the trailer, facing a bank of TV monitors that covered the action inside the coliseum. She sat before a transmitter, directing her husband to the individuals on her list. After she had run through that list, she turned to Sherrell's list, and he joined her to point out on the monitors the persons he had pumped for information. Then they turned to the healing cards (also known as 'prayer' cards) and selected a few of the more spectacular ones. Reverend Popoff would shout out the name and look about for someone to respond. His wife and Sherrell would assist him by spotting the individual on the TV monitors and directing 'Petey' to that person.

I cannot say that it required the special expertise of Steve Shaw and myself to solve the Popoff gimmick. But I think it is clear that we were able to go immediately to the essential aspects of the matter and design methods of detecting and controlling them, without going down blind alleys that others might have travelled. Sensing fakery by body language, voice intonation and eye movements are all abilities that conjurors develop. These are not easily explained and are difficult to teach. Thus, an experienced conjuror is an essential part of any such investigation.

Project Alpha, previously referred to, taught that lesson well. The university that was given \$ 500,000 to do research on children who could bend spoons (supposedly with their psychokinetic powers alone) had announced that the research would not be conducted under tight controls, since the children seemed not to be able to work that way. I understood the reason for that quite well, but the scientists involved chose to believe that loose controls were part of the necessary elements for success, and were not reason for suspicion. I immediately wrote to the project head and suggested eleven rules for design and implementation of any tests, but was told in return that my input was not needed. Therefore I launched Project Alpha.

I called two young amateur magicians who I'd not even met yet, though I'd been in correspondence with them. I told them to write the lab giving suitable 'paradigms' for the parapsychologists to accept them as psychics. They invented tall stories and were accepted. *All* of my suggestions to the parapsychologists – any one of which would have inhibited the wonders the subjects exhibited – were ignored. Over the next three years and more, on weekends and holidays, taking no money for their efforts, the kids successfully deceived the lab personnel with the very simplest of tricks and a preliminary report was issued that said they had exhibited psychic powers in many different ways. Before that report became a proper published paper, we deflated Alpha and there was much squealing from bruised egos.

Following the close of Project Alpha, The Parapsychological Association had the good sense to suggest that their members should call in a competent conjuror in cases where human chicanery might be an element of the research. Immediately following that move, I was contracted by two leading researchers in the field, and my contributions resulted in fraud being revealed for both. Since that time, now several years past, I have heard nothing from the parapsychologists. I note that no new psychic wonders have been announced, either.

Common sense is a powerful weapon. It filters out most of the nonsense that can consume time and funds in science. However, in cases where there may seem to be merit in an unusual claim, no scientist can rightly ignore the claims presented. It is at that point that a scientist must move carefully and call in experts to assist. A chemist will call in a statisti-

cian, a physicist will summon a photographer. Bear in mind that a conjuror may also be waiting in the wings...

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Astrology

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Summary. As a divinatory practice, astrology is without equal in both its colorful history and modern day popularity. Astrology has grown, over thousands of years, into a huge and ornate superstructure that lacks a central design. Although astrology has been dimly veiled by its occult mystique for centuries, the light of modern day inquiry has shown its substance to be mostly illusionary and revealed its foundation to be the shakiest possible: that of self-justification and anecdotal evidence. Despite the many claims of its practitioners and followers, extensive investigation has revealed astrology to be a great teetering monument to human gullibility.

Key words. Astrology; horoscope; natal chart; Sun sign; Mars effect; planetary heredity.

Introduction

Astrology, the oldest and most entrenched of all the 'occult arts', has been a source of entertainment, controversy and livelihoods, for nearly four thousand years. It is not just an idle pastime, taken seriously by only a few. Astrology pervades our popular culture. It has captivated the imaginations of tens of millions and influenced decisions of great import. Great battles have been waged, empires have fallen, and fortunes made and lost on the advice of astrologers. Although harassed by the Church and attacked by skeptics throughout history, astrology has risen in modern times to become a world industry, affecting the lives of millions every day.

Although first conceived by the Babylonians circa 2000 B.C., astrology has been adopted and modified by many cultures. That astrology developed in relation to ancient cosmology is undeniable. Our distant ancestors populated the heavens with the divine beings. And since they believed the divine to be keenly interested and involved in human affairs, these peoples watched the skies with great interest and expectation. Certainly, they observed some correspondences between celestial events and life on Earth. Calendars which foretold the planting, harvesting, and hunting seasons were calibrated by celestial occurrences. These peoples also observed 28-day cycles in both the human female and the Moon. Eclipses and the appearance of comets, dramatic events in an otherwise changeless sky, terrified many cultures and were attributed to direct action by the Gods. From such observations, our ancestors inferred that celestial happenings foreshadowed the course of all human affairs. Specially appointed observers watched the night sky and, from the perspectives of their various religious traditions, interpreted how what they saw related to life on Earth.

In medieval times, astrologers resided in nearly every king's court. Called upon to interpret history in terms of astrological influences and divine meaning from the appearance of comets, supernovae, and other dramatic astronomical events, court astrologers became politically powerful men. Their advice on foreign policy, health and medicine, and the military campaigns which forged both medieval Europe and the Far East shaped our history and forever changed the world.

Even in the 20th century, astrologers have remained strong in number and powerful in influence, and their art has developed into many diverse forms: Natal astrology, Horary astrology, Sabian astrology, Humanistic astrology, Medical astrology, Astro-cartography, to name a few. To escape the stigma of ancient superstition, today's astrologers present themselves as modern professionals. The briefcase, three piece suit, and computer are the modern answer for the dust covered satchel, long robes, and astrolab of old. But changing external trappings does not alter substance. The basic beliefs of today's astrologers were passed down from distant times without change. Astrology is still essentially medieval. Astrology has millions of followers worldwide. Every year, international astrological conferences, boasting attendance of hundreds to thousands, are held in the United States, the United Kingdom, Europe, Australia, and India. Europe has at least 18 major astrological associations; the U.S. has four associations with over 150 local chapters. Though disagreeing on the number of full-time astrologers there are in the United States, most U.S. associations' estimates range between one and ten thousand. Many of these individuals advance their craft by giving seminars and writing 'how to' books, of which more than 12,000 titles reside in the U.S. Library of Congress.

Assuming that there are between one to ten thousand full-time U.S. professionals, and that each of these ekes out a marginal living of \$ 10,000 per year (many make significantly more), then astrology is a ten to one hundred million dollar per year industry in the U.S. For every full time astrologer there are probably ten part-timers and fifty serious students. Adding their revenues to the money made from thousands of books and tens of thousands of magazine sales, one thing becomes obvious: Astrology is big business.

On realizing the size of the business and the degree to which astrologers affect their clients' lives, one may become justifiably concerned. Some people decide whether to get married on the advice of astrologers. Medical astrologers advise the clientele on what medical treatment they should or should not receive. 'Astro-cartographers' frequently counsel clients to move to other parts of their country, and even to emigrate to where the astrological influences will supposedly be more