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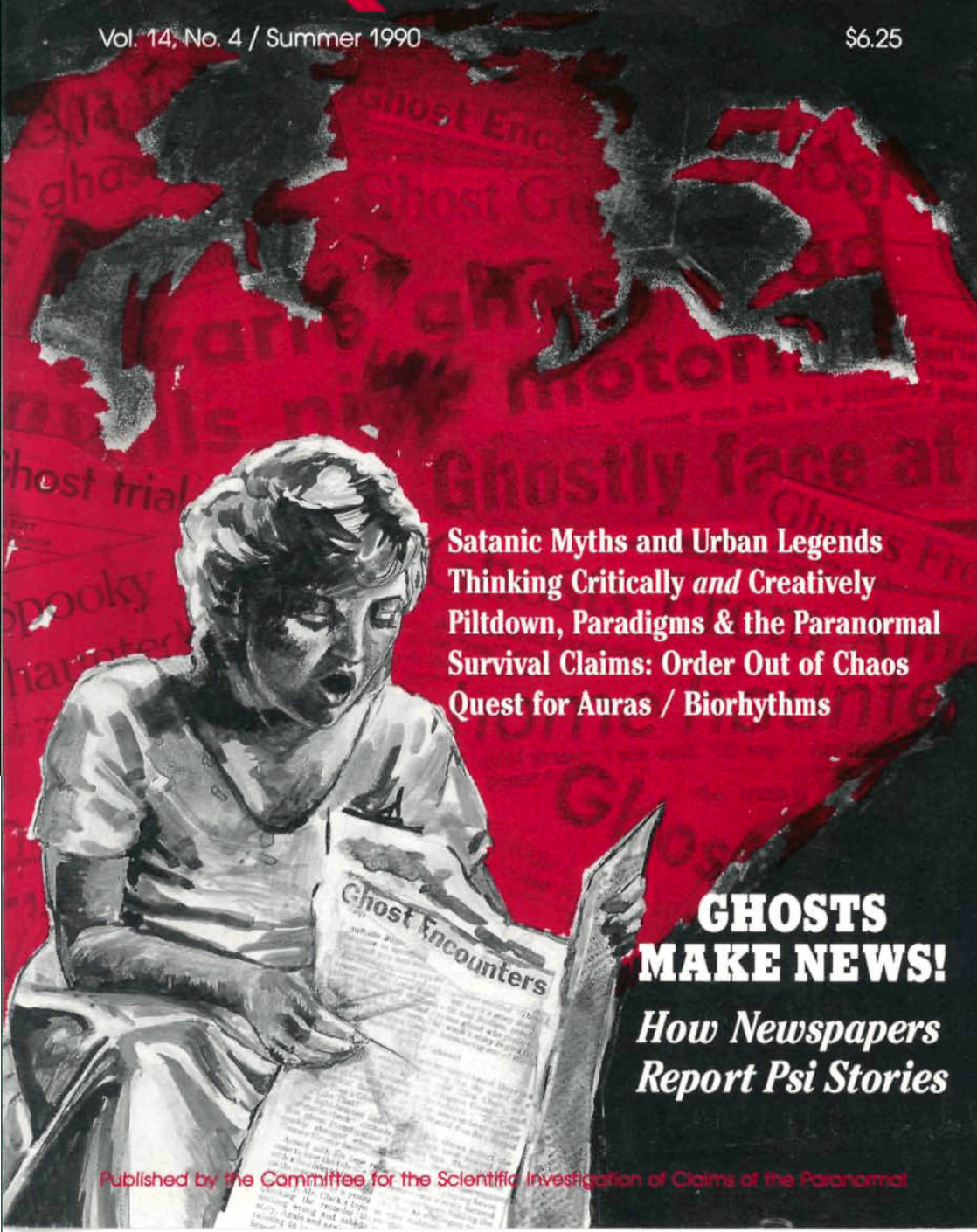

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Survival Claims: Order Out of Chaos
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Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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ARTICLES

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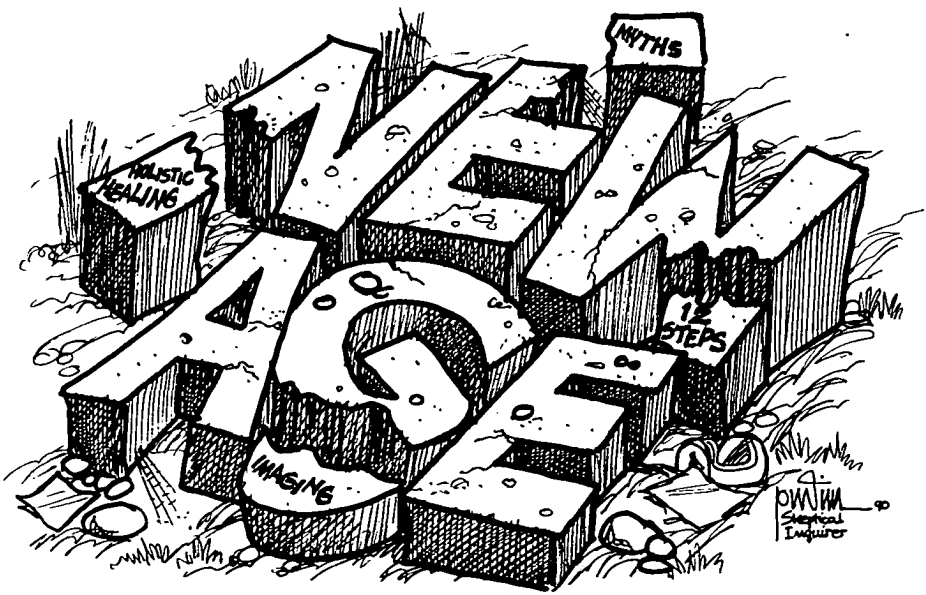
News and Comment

The Old Age Of the New Age

"I have the sense that the New Age is slowing down," says Davis Dutton, co-owner of a Los Angeles bookstore that carries New Age materials. Bookseller Peggy Taylor of Webster's of Milwaukee agrees: "Five years ago most bookstores renamed their occult section 'New Age.' . . . Probably in a year, New Age as a term will die and we'll have an 'Occult' section once again."

The November 3, 1989, *Publishers Weekly* included an essay by Jeremy Tarcher, the pioneer New Age publisher. Titled "Here's to the End of the New Age," it concludes: "This decade has offered such a thorough exploitation of all that is classified as New Age that there is little fresh to say. We've cooked the New Age chicken 1,001 ways and it is increasingly difficult to come up with exciting, fresh recipes."

What was—or is—New Age? (See *SI*, Spring and Summer 1989.) Most observers agree that its roots are found in the sixties' quest for fresh options. While some young people sought political alternatives, others tended toward personal alternatives. Hippies who began by meditating and demonstrating found, after the Viet-



nam war, that they were focusing on changing themselves rather than society. It seemed a lot easier to do.

Critics labeled this, variously, as narcissism, me-generationism, escapism, or surrender. Fasting, meditating, yoga, macrobiotics, the cultivation of "higher powers," Eastern mysticism, channeling, curative crystals, and the rediscovery of past lives increasingly occupied the time of many of the grown-up flower children.

The New Age mingled hope, hype, holiness, and hucksterism. Nowhere was this more evident than in publishing, where many new imprints were established to fill the demand for books on personal growth and "transformation." Because the New Age grew out of a dissatisfaction with the status quo, it needed *unconventional* dogmas. Established religion would not do. For new ideas the publishers turned to—what else?—old belief systems.

Davis Dutton says: "I feel that there is a kind of cynicism on the part of some of the publishers who just spew this stuff out, much of it regurgitation of what's been around 100 to 200 years, just to make a buck."

Philip Sansone of Book People in Austin, Texas, puts it this way: "New Age is just a category that publishers have latched onto in order to market to a certain segment of society."

What segment? First the college-educated baby boomers who came out of the protest movements. Their numbers were increased by more conventional types attracted to metaphysical moonshine by the popularity of Shirley MacLaine's books—as well as by her glamour—especially after more of the rich and famous confessed to also being devotees of channeling, astrology, reincarnation, and other New Age beliefs.

A herd instinct took over, as it became first safe and then chic to disclose one's fascination with various cult and occult notions and practices. Atavism, barbarism, superstition, and simple stupidity all "came out of the closet" at about the same time. It had become respectable to dabble in the dubious.

But there is more involved in the wide acceptance of the New Age, and Davis Dutton put his finger on it when he said, "The popularity of New Age is due to the failure of our educational system to instill rational thinking." New Agers are educated, even college-educated. They can read. But whether they read critically is a separate question. We have made so much out of learning the mechanics of reading that the need for evaluating what one reads has become neglected.

If the New Age fades, what will happen to those whose need to believe made it so successful in the first place? Not to worry. There will be new (old) cerebral sanctuaries for the superstitious. What has yet to be determined is the new *term* under whose rubric the warmed-over wisdom of the ages will be served up as "the latest thing." It has to be broad enough to encompass such old chestnuts as alchemy, astrology, kabbalia, I Ching, Tarot, black magic, white magic, witchery, Earth religions, and Tibetan and Tantric Buddhism.

More important, it must include the *recent* tendencies that will give the next stage of New Age its distinctive flavor and probably its new name. The most popular "new" currents are: holistic health; mythology, with subsets for Goddess and Native American religions; 12-step recovery programs; and visualization, or imaging.

1. *Healing.* Insofar as the marketing of literature is concerned, holistic health and alternative healing have the inestimable advantage of being marketable not only through traditional bookstore channels but also in

the thousands of health-food stores where the faithful graze. If there is an *in* word today, it is surely "healing." Consider the titles of the following runaway bestsellers: *You Can Heal Your Life, Healing the Shame, Healing Your Sexual Self, You the Healer, The Dancing Healers, Where the Healing Waters Meet, The Healing Zone,* and *Healing Visualization.*

The appetite for miracles being what it is, the interest in such modalities as Ayurvedic medicine, crystals, therapeutic touch, homeopathy, acupuncture, radionics, psychic healing, naturopathy, chiropractic, and aromatherapy grows by leaps and bounds.

2. *Mythology.* What Shirley MacLaine and her 35,000-year-old former self, Emmanuel, were to channeling, Bill Moyers and the blissfully defunct Joseph Campbell are to mythology: 35 million viewers saw the programs and 100,000 bought videocassettes of *The Power of Myth.* The Goddess religions occupy the spiritual penumbra of feminism: every mundane movement has its extramundane reflection. Native American religions, which grew out of matriarchal cultures, have the same attraction, although their revival is partly due to the growth of ecological consciousness. A prominent German member of the Green Party said, "In Germany ecology is the basis of a political movement; in America it seems to be the basis of a religion."

3. *Twelve-step recovery programs* from addictions are patterned on Alcoholics Anonymous. What was once a habit, sin, or personal problem is now seen as an "addiction." Thus we have addictions to sex, drugs, gambling, alcohol, overeating, smoking, sleeping, undereating, dependency, codependency, shopping, use of credit cards, hand-washing, and house-cleaning. These have called forth a flood of treatment and recovery books, tapes, lectures, and workshops by recovered or lapsed addicts (self-diagnosed).

There is glamour and money in the A and R (addiction and recovery) business: athletes, movie stars, and wives of famous politicians grace the billboards with gripping testimonials, public confessionals, breast-beating, and self-flagellation. Not even our elementary schools are safe from the maudlin confessions, hand and heart wringing, dire warnings, and threats of those who have "done wrong and seen the light." Sinning and saving are back in style.

4. *Visualization, or imaging,* is especially big among the holistically healthy who believe that if you *picture* white blood cells fighting cancer cells it will kill them. It is equally big in big business circles, where the ultimate encomium these days is to be thought a "visionary" and where "visioning" is the apogee of commercial creativity. Popular book titles are: *Creative Visualization, Healing Visualization, Creative Imagery*—and for those so insecure they need to have all the bases covered, *Creative Visualization: The Power of Myth.*

The words *creative* and *power* are power words these days. Primitive people used to think you got smart by eating the brains of animals. A lot of "smart" people today seem to think that if you use the word *power* you become powerful.

We are assured by Robert Hall, executive editor of the New Age publisher Humanics, that the firm's books are in use by DuPont, IBM, Tenneco, Texaco, and the Mitchell-Bradford Chemical Corporation. Is this why the nation's industries seem to be losing power?

Fifty years ago, a publishing joke was that if you wanted to produce a bestseller you had to cover three burning interests of the public: Abra-

ham Lincoln, doctors, and dogs. Thus, a sure-fire winner would be titled "Lincoln's Doctor's Dog." Today, a bestseller is more likely to be called: "Creatively Imaging Power Sex with a Goddess While Recovering from an Addiction to Visionary Healing."

—*Murray L. Bob*

Murray L. Bob is director of the Chautauqua-Cattaraugus Library System, Jamestown, New York, and a widely published freelance writer.

Airplane-Gate: New Age Scheme Backfires

"There are no standards, ethical or otherwise, for being part of the New Age community. . . . The fact is that the New Age community in New York as well as across the country has never had the guts to police its own, to reject the leeches and New Age scum that have permeated their ranks from day one. As a result they've taken in and supported some of the lowest dregs that mainstream society has thrown away, and they've gone beyond supporting them, they've made them 'leaders.' And in doing so created a sick community, one that thrives in a fantasy world where the normal laws of logic and reason don't apply."

Is the individual quoted above (*a*) a subscriber to the SKEPTICAL INQUIRER, or (*b*) the editor and publisher of *Whole Life* magazine, self-described as "The Journal for Holistic Health and Natural Living"?

The answer, remarkably, is (*b*). Marc Medoff, editor and publisher of *Whole Life*, makes these remarks in a recent issue of his publication. Before a friend gave me a copy, I could not have imagined the circumstances that would lead me to recommend *Whole Life* to a skeptic, except as a catalogue of the latest New Age hokum. But statements like the one above appear throughout a fascinating story about a pyramid scheme promoted in the New Age community in New York in 1987. Touted in "prosperity workshops" as a "basis and model for a new economic, political and social order," the scheme required participants to put up $1,500 in order to take a "seat" on an airplane piloted by someone who'd entered the game as a passenger some time before. To pass through the stages of crew-member and co-pilot before attaining the pilot's seat, one had to bring in other passengers, who were also required to put up $1,500. The State Attorney General's office, which has arrested and successfully prosecuted a number of the game's promoters, is quoted in the article to explain the way the scheme operated: "Pyramids such as the Airplane Game require an ever-expanding number of participants. If a thousand games are operating statewide, 56,000 new investors will have to be found to pay off the so-called pilots, co-pilots and crew members who have already put in their $1,500. Those 56,000 new investors would have to find 504,000 additional investors in a matter of days. The numbers escalate so rapidly the pyramid eventually collapses, leaving the latest—and most numerous—group of investors without any chance to recover their investment, let alone make a killing."

Medoff shows no mercy toward the people who were taken in by the scheme—labeling them "ignorant slobs," among other things. The sordid details of how the game was put over, and by whom, are interesting in the

way that crime stories set in a particular milieu always are: there's the sociology to consider, along with the particulars of the crime. Airplane recruitment meetings were fertile ground for New Age revelation. "This game isn't about money," Medoff quotes one promoter, "because you're involved in a process and you're getting to know a lot of things about yourself, your own life, your stuff and why you're not moving or getting what you want. And you start learning about relationships at a very high level."

Other superb examples of New Age glossolalia abound, but it is Medoff's criticism of the so-called New Age community that makes the most worthwhile reading. He may seem to a skeptic to be stating the obvious, but for the publisher of a magazine seemingly devoted to New Age practices and theology (although Medoff insists it never was a typical New Age magazine) to so roundly criticize that "community" is noteworthy. Again and again, he cuts to the void at the heart of the New Age:

> . . . A major irony of the Airplane Game is that one of the reasons it was able to flourish so rapidly had to do with its adherents following a very questionable, but well-entrenched New Age "principle." That tenet implies that you just sort of accept things that come your way, you don't criticize, analyze or question the ideas, programs and philosophies that are presented in this community, you just follow them. Yes, that's right, like good little Nazis. The majority of people in this community are like that, they don't ask questions, they just believe—like they did in Jonestown.

And:

> The Airplane Game is a variation of an age-old con-artist's formula that has been used and re-used for decades. . . . And of course that's what makes the whole thing all the more disturbing—if such a large segment of the New Age community fell so easily for such a transparent scam, can you imagine what would happen if a scheme with the slightest bit of sophistication were introduced? Not since the similarly promoted Circle of God scam in the late 1970s (another illegal pyramid swindle that was cloaked in New Age jargon, it involved mailing sums of cash to complete strangers in anticipation of a big payoff) have so many people from so many different walks of life been suckered in so easily. . . . The Airplane Game should never have happened in the first place; it should have been dismissed the same way we laugh off three-card monte dealers, street-corner "gold" watch salesmen, and people who still contend the earth is flat.

On the last page of the article, Medoff reveals how deeply his faith has been shaken by the Airplane Game con:

> When I began publishing "Whole Life" nearly three years ago it was with the intent of serving New York's "holistic community," a community I took to be intelligent, progressive, open-minded people who wanted to change themselves and in doing so help transform society. . . . Is there really such a community? Or is there just a large pool of New Age piranhas, where the most cunning, most manipulative, and most predatory of us prosper, and everyone else loses? I think about that, and I have to be honest with you. I really don't know anymore. I really don't.

Despite his growing doubt, Medoff still accepted the kind of advertising that plays on precisely the same vague notions about mind and matter that

Medoff: 'We Became a Pariah'

The SKEPTICAL INQUIRER asked Marc Medoff to elaborate on any of the points in the accompanying news report. He provided this additional comment.—ED.

During my two-and-a-half-year tenure as publisher of *Whole Life* I was forced to travel the agonizing intellectual path that led me from being a cautious New Age enthusiast to being a critic, a skeptic, and finally a downright opponent. During this course, nothing distressed me more than the dawning reality that most of the advertising *Whole Life* carried was, sad to say, little more than what Mary Hoffman refers to as "hokum."

The bulk of the editorial content, though, never conformed to what could accurately be characterized as a "magazine devoted to New Age practices and theology." At no time in the course of the nine issues we published did we sing the praises or in anyway promote the activities of channelers, UFO "abductees," crystal healers, or any of the other bizarre New Age practices that are the cover-story mainstays of virtually every New Age publication in the country. Indeed, we lampooned and criticized these activities with increasing severity over the years. In point of fact, several issues into our publishing history I ordered the term "New Age" removed from all of our promotional, advertising, and self-referenced documents.

Had we stuck to the New Age "party line," we would have been able to significantly add to our advertising revenues. As a result of our increasingly anti-New Age stance *Whole Life* became a pariah among New Age publications, some of which refused to run our subscription ads and attacked *Whole Life* for being too "critical of the New Age movement."

In the end, those we criticized in our editorial pages also decided we were treading on forbidden soil. After our publication of an article attacking the Airplane Game in 1987, those we exposed stole and destroyed thousands of copies of that issue in a desperate attempt to suppress its release. Those thefts so crippled *Whole Life* financially that we had finally to cease publication in the summer of 1989, some time after issue No. 9 came out and experienced similar thefts. Threatening the New Age cash cow that exploits them for profit and criticizing their belief systems does not sit well with committed New Agers.

—*Marc Medoff*

the Airplane Game promoters used to attract players. For example, in one ad the manufacturers of herb vitamins promise that their formulas "contain only herbs which help your body accumulate positive life energy. . . . The more of it you have, the faster your health improves. There are no limits to how much positive energy your body can create: The process is endless and everyone can grow stronger as they grow older."

Another ad, for "High Tech Meditation" tapes, claims they produce "enhanced whole brain synchrony," and a psychic uses her ad to broadcast her "surprising" discovery that "there are ancient talents which are provid-

ing information beyond what can be gleaned by the most sophisticated computer. I am talking about a dimension now being accepted at the highest levels as valid: parapsychology, ESP and similar psychic phenomenon."

One could go on and on. Obviously, Medoff had to go on paying his bills while he pondered the lessons of the Airplane Game ripoff. In the end, *Whole Life*'s increasingly anti-New Age stance offended both its readers and those who placed the ads. Some New Age devotees mounted nasty campaigns against the magazine, and it was forced for financial reasons to suspend publication (see box). "You could say that *Whole Life* was the first New Age publication in the country to critically examine and attack the New Age, and as a result was forced out of business, in part due to this position," Medoff told the SKEPTICAL INQUIRER. "The New Age is not a community that takes criticism well. *Whole Life* found that out."

—*Mary Hoffman*

Mary Hoffman, a member of the New York Area Skeptics, teaches at a public school in Brooklyn.

Remote Viewing, Statistics, and Jahn

In the past few years the mass media have reported instances of "remote viewing," or "remote perception." One of the most prominent instances was the article "Questions for the Cosmos" in the November 26, 1989, *New York Times Magazine*. This article reported the results of Professor Robert Jahn's research at Princeton University. The article stated: "Jahn has figured out that the statistical likelihood of achieving these results by chance is 1 in 10 billion." I proposed in a letter to the *NYTM* a simple test that could be performed in one day by two people that might settle the question once and for all. The *NYTM* did not print my criticisms of it and Professor Jahn. It printed only two letters; one congratulating Jahn, and one very short, incisive letter from Martin Gardner. Since I have never seen my test described in the SKEPTICAL INQUIRER, I shall now quote my letter to the *NYTM* in its entirety:

> I feel it is unfortunate that the *New York Times Magazine* published the article "Questions for the Cosmos" without some kind of peer review. What appeared to be two scientific experiments (one on remote viewing and the other on psychokinesis) seem to have had serious flaws not pointed out by your writer.
>
> The most serious (remote viewing of Paris from Princeton) claimed that "the statistical likelihood of achieving these results by chance is 1 in 10 billion." To my knowledge, it is not possible to make a valid statistical analysis of an open-ended situation such as choosing a scene from *anywhere* in Paris. If there really exists such a phenomenon as remote viewing, then Professor Robert Jahn should be willing to submit to a far easier task which can, as well, be evaluated statistically. He, or his colleague in Paris, can choose ten quite different locations in Paris, and even study detailed photos of these locations numbered from 1 to 10. Then at a predetermined time, his colleague will go to one of the ten locations chosen by a

random-number generator and "transmit" his perceptions. At that time Prof. Jahn will record which of the ten photos is the closest. If he can successfully repeat this ten times in a row, then the odds really will be one in ten billion.

So far, whenever scientific controls have been applied to a

Graham Reed, Scholar of Anomalous Experience

Professor Graham Reed, who originated the term "anomalous experience" and wrote a classic scholarly work on the subject, died on December 29, 1989, at his home in Toronto following a year-long battle with cancer. Born in Coventry, England, Professor Reed obtained degrees from Cambridge University and the University of Durham and his Ph.D. in psychology from the University of Manchester in 1966. In 1969, he moved with his family to Toronto, where he joined the faculty of York University, serving variously as departmental chair in psychology and as dean of graduate studies.

Professor Reed was a productive and well-respected scholar, publishing many research articles in professional journals. In 1985, he published his *Obsessional-Compulsive Disorders*, which he considered to be his *opus magnum*, summarizing a professional lifetime of inquiry into obsessive-compulsive behavior.

Reed's long and active interest in a rational approach to the paranormal goes back to his early association with C. E. M. Hansel in England. In 1972, Reed published his classic, *The Psychology of Anomalous Experience*. A revised edition was published in 1988 by Prometheus Books. This book stands by itself in providing a cognitive framework through which the whole gamut of strange and seemingly paranormal experience can be understood as manifestations of somewhat rare but certainly "normal" psychological mechanisms. It was in this work that Reed coined the term "anomalous experience" to describe experiences that are so odd that they are taken to be paranormal.

Reed's last presentation on behalf of skepticism was at the 1988 CSICOP conference in Chicago, where he delivered a paper on the psychology of channeling. Those who heard him will remember his witty and charming style. In the same year he was elected a CSICOP Fellow.

Professor Reed will be remembered by his colleagues and friends as a wonderful and remarkable human being, whose intellect, humor, and probing insight touched the lives of all who came to know him. He will be remembered by his students as an educator par excellence, who stimulated them to think critically, while at the same time making education an enjoyable and invigorating experience.

—*James Alcock*

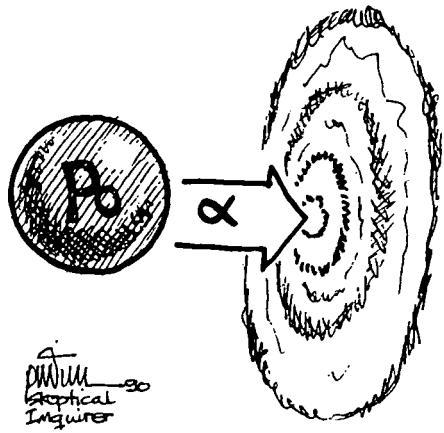
James Alcock is professor of psychology at Glendon College, York University, Toronto.

psychic phenomenon, the phenomenon vanishes. Science is not science without adequate controls. It is not the role of scientists, or even the media, to report unpublished and uncontrolled phenomena which on the surface may appear to be scientific experiments.

—*Jay Orear*

Jay Orear is a professor of physics at Cornell University.

A Solution to The Tiny Mystery Of 'Po Halos'



For years, some people who believe the earth was created during a six-day period 6,000 years ago have been citing a natural phenomenon known as "po halos" to dispute the contention of scientists that our planet formed from molten rock 4.6 billion years ago (*SI*, Summer 1989: 357).

"Po halos" are concentric rings of discolored rock found in a variety of ancient crystals. They are created when radioactive material embedded in the rock decays and releases alpha particles. The alpha particles strike adjacent rock, discoloring it.

The radioactive element polonium was believed responsible for "po halos" because polonium releases alpha particles that have enough energy to penetrate the rock and create large discolorations.

Yet polonium halos have puzzled scientists because polonium has a half-life of three minutes and it decays completely within a matter of months. Because it took much longer for the earth's rocks to cool, the polonium should have vanished long before the rocks began to solidify.

Creationists, who accept the Bible as a literal scientific textbook, say "po halos" prove that the earth was created instantaneously by God.

But two Florida State University geologists report that they have solved the mystery. Leroy Odom and William J. Rink said they discovered that scientists were wrong when they assumed that the largest halos were caused by elements that emitted the strongest, most penetrating alpha particles. In at least one case, Odom and Rink found halos that extended more than twice the distance that an alpha particle could naturally travel in the rock.

Thus "the size of the ring is not necessarily controlled by the energy of the alpha particle," said Odom. That means a longer-lived radioactive element, and not polonium, could easily be responsible for the halos.

So how do the halos grow so large? When the radioactive material decays and sends an alpha particle into the rock, Odom explained, it creates a positive electrical charge that builds up in the surrounding rock and slowly spreads outward like a drop of blue dye spreads on a piece of white cloth.

The rate of diffusion is excruciat-

ingly slow: roughly a millionth of a meter every 20 million years. But in rocks that are more than half a billion years old, that's enough time for halos created by long-lasting radioactive elements to expand and give scientists the illusion that only polonium could have created them.

"The migration could be even faster," depending on other conditions, said Odom, whose research is reported in the October 6, 1989, issue of *Science*.

—*C. Eugene Emery, Jr.*

Gene Emery is a science writer at the Providence Journal, *75 Fountain St., Providence, RI 02902.*

Mental Messages, Mars, and Making Money

When we last left Alan Shawn Feinstein, the Rhode Island financial advisor, he was touting the importance of the "face" on Mars to the readers of his newsletter, prompting Mars expert Conway Snyder to chastise Feinstein for his "falsehoods and half-truths" about something that is probably a natural feature (*SI*, Summer 1988, p. 340).

Since then, Feinstein's followers have been led into other realms of the bizarre.

In the first half of 1989, citing "a private briefing" to NASA about extraterrestrial life, Feinstein began recruiting participants for "Operation Indigo," a "top secret" project he billed as "the greatest attempt in history to contact life in outer space." The only requirements: send two stamped envelopes and a $10 registration fee and promise "to keep everything about this operation absolutely confidential."

People who sent in the $10 were asked to broadcast a one-minute mental message to space aliens at 10:00 P.M. EDT on June 29. Participants were supposed to mail in reports of any strange phenomena they subsequently experienced. "Study and analysis of these debriefing forms at command headquarters, in conjunction with other project data, will then commence immediately, in complete secrecy," he pledged.

Feinstein said 5,000 Americans had signed up, but he insisted that the project was "not a money-making

venture." He denied that participants were required to pay or that the project was a secret. He also declined to say who would analyze the responses. (The "private briefing" on the Mars face turned out to be one of the lectures in a regularly scheduled series, open to the public, held at NASA's Goddard Space Flight Center. The topic the previous week had been "Diet and Cancer.")

Feinstein's report on the results consisted of one paragraph explaining that nothing had been found (he declined my request to see the reports he received), and 16 paragraphs touting a second telepathy project, this one designed to broadcast a mental message to the hostages in Lebanon. People were invited to get details in a three-month trial subscription to one of his monthly four-page newsletters (regularly $90 a year).

In the beginning of 1990, Feinstein was offering to sell his newsletter subscribers a set of 37 souvenir stamps, printed by the African country of Sierra Leone, that included one stamp (worth about $2.40) illustrated with the image of the Mars face. The price of the total set: $100.

If the face turns out to have been carved by intelligent beings, he told his subscribers in January, "this stamp set could become one of the most valuable collector items in the world."

A month later, Feinstein was promoting the set with a letter from "leading science researcher" Richard C. Hoagland, author of *The Monuments of Mars* (see review in *SI*, 13:76), in which Hoagland expressed confidence "that in the near future these sets should be worth no less than $10,000.00–$25,000.00 apiece!"

Who says you can't make money by banking on something that's more than 35 million miles away?

C. Eugene Emery Jr.

Tampa Bay's Weeping Icon Fiasco

In July 1989, tears allegedly began to flow from the Virgin Mary's eyes in a color photograph of a painting hanging in the Greek Orthodox Shrine of St. Michael in Tarpon Springs, Florida, a Tampa Bay community. While priests from the two nearest Greek Orthodox churches agreed that a miracle was in progress, they differed somewhat in their perspectives. The Rev. Christos Matos told the faithful that it was "a sign from God we are sinful and (must) repent," while the Rev. Tryfon Theophilopoulos speculated that perhaps it was "a sign of happiness from . . . the holy mother." More serious disagreement was to follow.

Widespread newspaper and television coverage attracted crowds and

"Tears" on photo hanging in Tampa Bay shrine turned out to have been there all along. (Photo by Guss Wilder, Tampa Bay Skeptics)

donations to the privately owned shrine. I went for a look, bringing a newspaper photograph of the photo that was taken four days before my visit, and noted immediately that the "tear" pattern of white dots hadn't changed one iota in those four days, despite Matos's claim that the tears continued to flow. None flowed during my visit, but Matos explained that this was because they "crystallized" from time to time. Placing my head against the wall to look across the icon's plane, I saw nothing but a flat piece of photographic paper, without any three-dimensional "crystals."

Taped to the picture's frame was a caption that began, "The Guiding Mother of God Weeping Icon. . . ." This seemed odd for a photo that Matos swore had been hanging in the shrine for seven months, with *no* "tears" until several days earlier. The caption named the St. Nicholas Albanian Orthodox Church in Chicago, where a nearly identical *painting* remains on display for "veneration" two years after having made national news when *it* reportedly wept. I contacted Jim Zaluba of the Midwest Committee for Rational Inquiry, who visited the church, noting barely a hint of the original tear pattern on the painting. The souvenir photo sold at the church has the *identical* caption, but bears a tear pattern of dark streaks rather than white dots, and appears to be artistically altered.

I was originally the only source of skeptical commentary about Tampa Bay's "weeping icon," in interviews with the *Tampa Tribune* and four television and radio stations. As skepticism began to grow, the Rev. Theophilopoulos distanced himself from Matos's continued assertions of tears and called a representative of the Diocese of Atlanta to arbitrate what appears to have been an intense behind-the-scenes dispute. When the dust settled, Matos was no longer permitted to operate at the shrine and was awaiting assignment to another church, with all three parties refusing media interviews. But shortly before the fiasco exploded, Matos acknowledged to photographer Guss Wilder that, yes, the white "tears" had actually been present on the shrine's photograph all along!

Responding to my letter criticizing the area's largest newspaper, the *St. Petersburg Times*, for having published photographs and eight articles on this story without once addressing the "tear track" incongruities, the metro editor responded: "I think some of the fun of reading a newspaper involves making one's own discoveries about what really happened." Fortunately, several members of the Tampa Bay Skeptics were able to make *their* own discoveries.

—*Gary P. Posner*

Dr. Posner is a St. Petersburg internist and founder of the Tampa Bay Skeptics. He has written for Free Inquiry *magazine as a member of its Faith-Healing Investigation Project.*

Magnetic Fields Of the Brain

The human brain is alive with pulsating magnetic fields. A law of physics holds that magnetic fields are produced whenever an electrical current passes through a conductor. The brain's nerve cells, called neurons, are triggered by small electrical currents. This has been known for decades and doctors routinely record the intensity and patterns of these electrical brain waves. Until recently,

however, the magnetic fields that accompany these electrical currents couldn't be measured. In fact, they couldn't even be detected.

"The magnetic fields produced by neurons and other nerve cells are extremely weak. The entire magnetic field of the brain is a mere one-hundred-billionth of those magnets used to hold notes to refrigerator doors," explains physicist Samuel Williamson of New York University's Neuromagnetism Laboratory.

Today, highly sensitive detectors can spot even these faint magnetic fields, and Williamson, a member of the American Physical Society, and his colleagues are busy mapping the brain's magnetic activity. Every brain function, from imagining a pay raise to lifting a forefinger, uses the neurons of a specific location. Detecting magnetic fields can pinpoint these geographical areas. In one instance, Williamson discovered which part of the brain generated a magnetic field when a subject moved a forefinger. Moving the thumb produced magnetic fields from a slightly different spot.

"Our sensory and motor systems are tied to highly specific brain areas," says Williamson. "In one experiment, we passed a brush over the the tip, center, and base of a person's finger. We found that this produced magnetic fields from three distinct areas of the brain."

Magnetic research of the brain is of great interest to surgeons, doctors, and psychologists. With this tool, specific brain locations are being linked to specific body activities. In the area of psychology, monitoring the brain's magnetic activity is helping determine the nature of imagination and thought processes. Magnetic fields of the brain, states Williamson, are a helpful window into the workings of our mind.

—*American Institute of Physics Science Report*

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This photo was taken by Daniel J. Phelps, a graduate student in the Department of Geological Sciences at the University of Kentucky, along U.S. 27 in Jessamine County, Kentucky, near Nicholasville.

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Notes of a Fringe-Watcher

MARTIN GARDNER

Relativism In Science

In recent decades there has been a growing trend among a small group of sociologists and humanities professors, even among a few scientists and philosophers, to deny that science moves closer and closer to objective "truth." This bizarre view is closely linked to an anti-realist trend that has been stimulated by the paradoxes and mysteries of quantum mechanics. The properties of particles and quantum systems are, in a sense, not "real" until they are measured. The measurements can be made by apparatus, but the apparatus itself is a quantum system, so it too seems to be in an "indefinite" state until it has been observed by a person. Alas, the observer also is a quantum system. Is he indefinite until someone observes *him?* And how can we escape from this seemingly endless regress?

A few physicists, notably Eugene Wigner, argue that the quantum world, which of course is the entire universe, has no reality until observed by conscious minds. This view runs into grave difficulties over the question of how high on the evolutionary scale a mind has to be to make an object real. As Einstein, who was repelled by this kind of social solipsism, liked to ask: Is the moon nonexistent until a mouse observes it? And how about observation by a butterfly? Evolution seems to entail, for someone like Wigner, that reality is a matter of degree; that as life evolved on (at least) the earth, the universe slowly developed from some sort of featureless fog to the complicated mechanism it is today. And what would happen to the universe if all life became extinct? Would it fade back into the gloom?

If the universe has no reality without human observers, it is an easy step to suppose it is *we* who shape the structure of the outside world. If you and I are the creators of its laws, it follows easily that science should be regarded as similar to art, poetry, music, philosophy, and other products of human culture. Because folkways change in time and vary from culture to culture, and because science clearly is part of culture, one can look upon the history of science in the way one looks upon the history of fashions. Women's skirts are up in one decade, down in the next, then up again. The height of the skirt is a cultural preference. We cannot say a particular height is "true" and the others "false."

It is hard to believe that some intelligent people not only see the history of science as a series of cultural preferences but even write books

about it. The Harvard astronomer Bruce Gregory, for example, recently produced a volume entitled *Inventing Reality: Physics as a Language* (Wiley, 1989). His wild theme is that physicists do not discover laws of nature. They invent them. Newton didn't discover the law of gravity. He invented it. J. J. Thompson didn't discover the electron. He made it up the way one makes up a tune. "The universe is made of stories," Gregory quotes the poet Muriel Rukeyser, "not of atoms."

Gregory's views are in the tradition of pragmatists who put human experience in the center of what is "real." They don't deny that there is an outside world with which we interact; but because we can know nothing about it except what we experience, they are unable to take seriously any talk about structures "out there" independent of human minds. Following in the footsteps of such pragmatists as Karl Pearson and Benjamin Lee Whorf, Gregory focuses on human language (including, of course, the language of mathematics) as the principal shaper of what scientists like to think is out there. "The stubbornly physical nature of the world we encounter every day is obvious," he writes. "The minute we begin to talk about this world, however, it somehow becomes transformed into another world, an interpreted world, a world delimited by language. . . ."

Since the world we talk about is the only one we can know, it follows that "as our vocabulary changes, so does the world." Again: "When we create a new way of talking about the world, we virtually create a new world." Books are real "not because of some mystical connection between language and the world, but because you can ask me to bring you a book and my action can fulfill your expectation."

Consider unicorns. Ordinary people would say they are unreal because there *are* no such animals. But Gregory claims that "unicorns are not 'real' because our community has no expectations about living or dead unicorns that can be fulfilled. . . ." Moreover, our language can even alter the past. When we stopped talking about unicorns, they ceased to be real. "History is not as immutable as we might think; language can apparently transform the past as readily as it shapes the present and the future." Shades of Orwell's *1984*, in which communist historians continually rewrite history!

It is a short step from such human-centered hubris to the belief of Shirley MacLaine and other New Agers that we have the power to create our own realities. There may be some sort of timeless world out there; but if so, as Kant maintained, its ultimate structure is forever beyond our grasp. "The laws of physics," Gregory bluntly puts it, "are *our* laws, not nature's." *We* are the gods who shape reality.

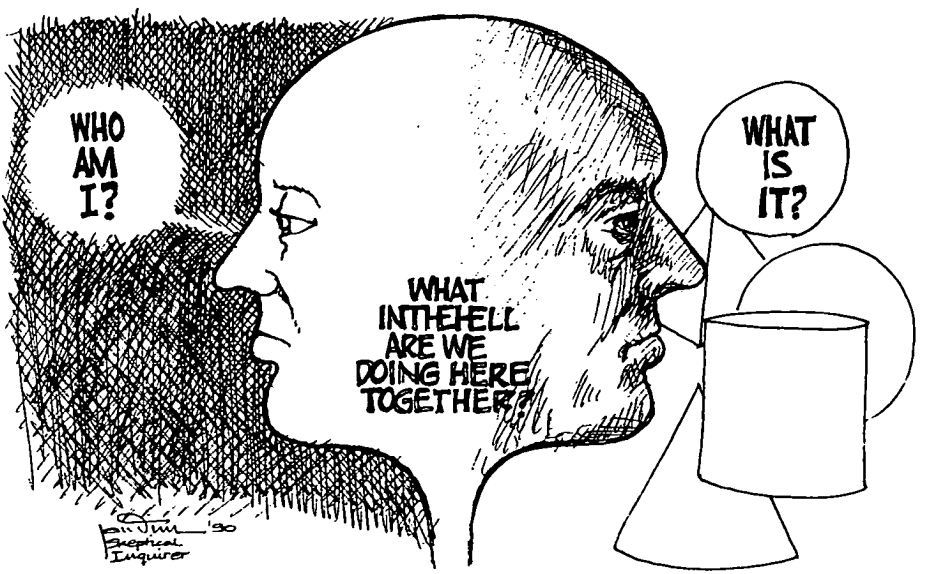
It is not surprising to learn that Gregory is a devotee of the early New Age cult of *est*. "I owe my appreciation of the immense power of the myth of 'is,' " he writes, "to Werner Erhard's relentless commitment to making a difference in my life. Absent his unremitting efforts to uncover the role of speaking in shaping experience, this book never would have been written."

Let's try to clear up some confusions involving subjectivity and relativism. First, the notion that science is always fallible is an ancient one, ably defended by the Greek skeptics, that no scientist or philosopher today denies. The very term *fallibilism* was coined by the American philosopher Charles Peirce to emphasize the way scientific statements differ from theorems in mathematics and formal logic. In logic and mathematics there

are ironclad proofs inside formal systems. For example, you can prove the Pythagorean theorem within the system of Euclidian geometry—a proof that remains undamaged by the non-Euclidian structure of space-time. Given the axioms of Euclidian geometry, the theorem is true in all possible worlds. Science, on the other hand, has no infallible proofs.

Although all scientific statements are corrigible, it does not follow that they can't be placed in a continuum of probabilities that range from virtual certainty to almost certain falsehood. No one doubts, for instance, that the earth is shaped like a ball, goes around the sun, rotates, has a magnetic field, and has a moon that circles it. It is almost certain that the universe is billions of years old and that life on earth evolved over millions of years from simple to more complex forms. The big bang origin of the universe is not quite so certain. The inflationary model of the universe is still less certain. And so on. Science at present lacks any technique for applying precise probability values, or what Rudolf Carnap liked to call "degrees of confirmation," to its statements. That doesn't mean, however, that a scientist is not justified in saying that evolution has been strongly confirmed or that a flat earth has been strongly disconfirmed.

The title of Nancy Cartwright's book *How the Laws of Physics Lie* (Oxford University Press, 1983) seems to suggest that she agrees with Gregory, but on careful reading it turns out otherwise. What she does maintain—and who can disagree?—is that the phenomenological laws of physics (laws based on direct observations) have a much higher degree of confirmation than theories. We can be sure that all elephants have trunks because we can verify the statement by direct observation. Cartwright says she "believes" in the phenomenological laws, and also in such theoretical entities as electrons, even though their observation is indirect. If electrons don't make tracks in bubble chambers, she asks, what does? But when you turn to theoretical laws, such as the laws of relativity and



quantum mechanics, she doesn't "believe" in them in the same way because they are too far from strong confirmation, and too subject to change. It is in this sense that science "lies."

Where does this leave us? Surely it does not leave us with a relativism in which competing scientific theories are "incommensurable"—that is, without standards by which they can be ranked. Science is like an expanding region with a solid core of truths that are very close to certainty. As you move outward from the core, assertions become progressively more tentative. In no way can one deny that science progresses in a manner quite different from the "progress" of music, art, or fashions in clothes.

Like almost all scientists, philosophers, and ordinary people, Peirce was a hard-nosed realist. Science, he wrote, is a method "by which our beliefs are determined by nothing human, but by some external permanency—by something upon which our thinking has no effect."

Here is how the eminent Harvard physicist Sheldon Glashow said the same thing in a mini-essay in the *New York Times* (October 22, 1989):

> We believe that the world is knowable, that there are simple rules governing the behavior of matter and the evolution of the universe. We affirm that there are eternal, objective, extrahistorical, socially neutral, external and universal truths and that the assemblage of these truths is what we call physical science. Natural laws can be discovered that are universal, invariable, inviolate, genderless and verifiable. They may be found by men or by women or by mixed collaborations of any obscene proportions. Any intelligent alien anywhere would have come upon the same logical system as we have to explain the structure of protons and the nature of supernovae. This statement I cannot prove, this statement I cannot justify. This is my faith.

It is important to understand that, when a theory becomes strongly confirmed by repeated observations and experiments, it can move across a fuzzy boundary to become recognized by the entire scientific community as a fact. That planets go around the sun was once the Copernican theory. Today it is a fact. That material objects are made of molecules was once a conjecture. Indeed, for many decades it was ridiculed by many physicists and chemists. Today it is a fact. In Darwin's day there was a theory of evolution. Today, only ignorant creationists refuse to call it a fact. It is also important to understand that so-called revolutions in science are not revolutions in the sense of overthrowing an earlier theory. They are benign refinements of earlier theories. Einstein didn't discard Newtonian physics. He added qualifications to Newtonian physics.

"The history of physics makes it hard to sustain the idea that we are getting closer to speaking 'nature's own language,' " Gregory naively writes. On the contrary, the history of physics makes it easy. Who, except academics smitten by relativism, can deny that science steadily improves its ability to explain and predict? Absolute truth may indeed be forever unobtainable, but if theories are not getting closer to accurate descriptions of the universe, why do they work so amazingly well? How is it we can build skyscrapers, hydrogen bombs, television sets, spacecraft, and other wonders of modern technology? Why is quantum mechanics able to predict with accuracies of many decimal places the outcomes of thousands of sophisticated experiments?

Surely it is insane to suppose that the enormous predictive power of science is nothing more than the power to predict the behavior of a world fabricated inside our tiny skulls. Of course all predictions are tested by human experience, but since everything we do is human experience, to say this is to say something obvious and trivial. Wigner wrote a now-famous essay on "The Unreasonable Effectiveness of Mathematics." To those who believe in a mathematically structured universe, independent of you and me, what could be more reasonable than the way mathematics fits the universe?

Nobody denies that science is a human tool, or that its history is influenced by cultural forces in all sorts of interesting ways. Nobody denies that scientists invent theories by creative acts similar to those of poets and artists. But once a theory is formulated, it is tested by a process that, in the long run, is singularly free of cultural biases. False theories are not shot down by a change of language, but by the universe.

James Trefil, in his stimulating book *Reading the Mind of God* (Scribner, 1989), recalls a lecture by a young sociologist on the history of the now-popular conjecture that dinosaurs were killed off by climatic changes that followed the impact of an extraterrestrial object striking the earth. She was good in describing the infighting among geologists, but she had no interest whatever in the evidence pro and con. From her perspective, her only task was to describe the conflict as if it were a battle between two rival art critics, with no mechanism for ever deciding who was right. A frustrated senior paleontologist in the audience finally burst out with the question, "Is it really news to sociologists that evidence counts?"

After all, Trefil concludes, "gravity pulls on the Bushman as well as on the European." Reading Shirley MacLaine, you might decide to create your own reality by jumping off a high building and soaring like Superman. Are we not assured by transcendental meditators that with training one can suspend gravity and levitate? Did not Jesus, that great super-psychic, walk on water? Last year a Russian psychic stood on a railroad track and tried to suspend the law of momentum (mass times velocity) by stopping a train. The poor man is no longer with us. Here is how Stephen Crane, in one of his short poems, reminded us that we are not the measure of all things:

A man said to the universe:
"Sir, I exist!"
"However," replied the universe,
"The fact has not created in me
A sense of obligation." ■

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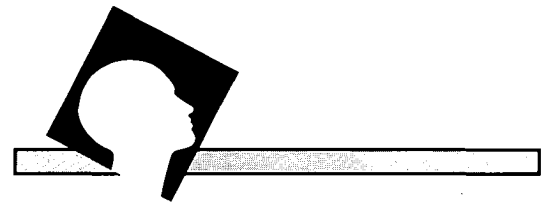

ROBERT SHEAFFER

The news has been breaking so fast these past few months that some important items on the para-front may have been missed in the shuffle.

The U.S. Army reported from Panama on the sinister weapon deposed dictator Manuel Noriega employed against his enemies: witchcraft. The *Washington Post* recounted some of the remarkable discoveries made in Noriega's private quarters. A "glutinous ball of corn meal" was wrapped in a blue ribbon and white string. Inside, it contained a crumpled-up picture of Guillermo Endara, the man whom the Panamanian voters had the audacity to prefer over Noriega. A large rock was found sitting on a piece of paper. Among those whose names were being crushed on this and similar papers were the presidents of Venezuela and Costa Rica, several prominent Panamanian officials of the Catholic church, various diplomats—including Henry Kissinger, U.S. presidents Ronald Reagan and George Bush, U.S. senators Alfonse D'Amato and Jesse Helms, and *New York Times* investigative reporter Seymour Hersh.

The harshest punishment of all seemed to have been reserved for one individual whose name had been sealed inside a rotting cow's tongue, which was found sitting in a bowl of white corn and eight spoiled eggs. The tongue was folded in half and nailed shut. Unfortunately, we do not know who was singled out for such malice, because all this putrefaction had rendered the ink on the paper quite illegible.

While events thus far do not inspire confidence in the efficacy of Noriega's voodoo, we should reserve judgment until we see whether he beats the rap and has the last laugh.

Elsewhere, the controversial Black Muslim minister Louis Farrakhan recently disclosed some previously unmentioned allies: some occupants of UFOs, he says, are on his side. Farrakhan described in a press release a vision he had had while in Mexico in 1985. He says that a wheel-shaped UFO picked him up, and whisked him

up to what he calls the "Mother Wheel." There he says he received advance warning of the impending U.S. attack against Libyan targets. "During the confrontation in the Gulf of Sidra," reports Farrakhan, ". . . a bright orange object was seen over the Mediterranean. The Wheel was, in fact, present and interfered with the highly sensitive equipment of the aircraft carrier, forcing it to return to Florida for repairs." In a similar vein, Farrakhan told his followers that, should his alleged enemies lay a hand on him, America would suffer "the fullness of Allah's wrath" in the form of many UFOs, followed by great disasters.

* * *

You probably didn't realize that "Creation Science" offers exciting new perspectives not just on the origins of life and Noah's flood but on earthquakes as well. Stephen Austin, chairman of the Geology Department at the Institute for Creation Research, has published in ICR's *Acts and Facts/ Impact* some exciting new research, titled "Earthquakes in These Last Days." Noting the destructive California earthquake this past October 17 (which, incidentally, occurred just four minutes after 00:00 GMT the following day, and hence is known to science as the Loma Prieta earthquake of October 18, 1989), Austin discusses the "special purposes" that biblical earthquakes have served, beginning with the one on day three of creation week.

"Recent earthquakes," explains Austin, "should receive a different interpretation in the Christian's thinking. Jesus Christ spoke of them as 'signs' of His coming again to earth." One of these "signs" will be "earthquakes in diverse places" (Mark 13:8), which heralds "the beginning of sorrows." Austin describes this ambiguous prophecy as "a fact now verified by the global distribution of earthquakes recorded on seismographs." He notes that the Greek word translated as "sorrows" actually denotes "birth pangs," so recent earthquakes should be understood as the "birth pangs" of the time of Jesus' Second Coming.

Digging further into biblical prophecy, Austin cautions us to expect a "great future earthquake" that is "associated with the return of Christ to Jerusalem (Acts 1:9-12; Zechariah 14:1-11), and is described as inflicting severe topographic and geologic changes on a global scale." A series of seismic charts are presented to determine whether any trend is building up toward such a calamity, which he fortunately determines is not: "No steady trend suggesting increased frequency or intensity has been indicated." Nonetheless, he writes that "the birth-pangs notion of earthquakes is verified by seismographic data, which shows their erratic occurrence. . . . Global seismic activity is very non-uniform in time; it is like waiting for birth pangs. When will there be another global upturn in seismic activity?"

Austin concludes his scientific paper by observing that earthquakes have "been used" by God for "special purposes." While you may have thought that earthquakes were to be understood in terms of the motions of tectonic plates, this distinguished creationist geologist proclaims that "three purposes—judgment, deliverance, and communication—should form our basis for understanding earthquakes." So the next time we Californians feel the earth heaving beneath us, we should ponder whether it is Divine Judgment, Divine Deliverance, or Divine Communication that is triggering the latest tremblor.

* * *

Speaking of California, many of the residents of that great state would object if I were to say that "only in California would a reincarnated Egyptian deity seek public office," so I won't. Nonetheless, seeking election to the Palo Alto City Council last fall

was Ronald Francis Bennett, who also goes by the name of "Ptah." Claiming to be the reincarnation of that long-deposed deity, Ptah's campaign platform was, "I'm God, you're God, we're all God." Asked how he judged his prospects in last November's election, Ptah replied, "I think my chances are about one in three." His optimism notwithstanding, out of 17 candidates Ptah finished last.

* * *

More news on the Creation front: The plans of ICR's president, John Morris, to study Flood geology at Mount St. Helens were interrupted this past September by an urgent trip to Turkey because "the remains of Noah's Ark had possibly been discovered on September 15." Once again, the annual ICR expedition to Mt. Ararat had spotted some remarkably ark-shaped rocks. However, the ICR later reported that even though "the objects appear visually much the same as eyewitnesses have frequently described their encounters with the Ark," after careful study of it from the air, they were all convinced that "the object was most likely of natural origin." ■

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Ghosts Make News

How Four Newspapers Report Psychic Phenomena

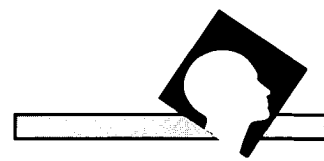
ROGER KLARE

Ghosts are welcome guests in daily newspapers. Other types of psychic phenomena are entertained as well. Uncritical reporting is the norm: newspapers often do not follow the objective model of news reporting—getting both sides of the story—when covering these topics (Meyer 1987:157).

What makes this type of reporting so popular? First, uncritical stories try to amuse readers by playing up the strange and irrational nature of alleged paranormal events. These stories are thought to be virtually harmless if it is later shown that the events were not really mysterious (Cowen 1981:16). For newspapers, then, the paranormal serves as entertainment. This is one of the major reasons they run ghost stories (Brunsman 1988:30).

Articles on the paranormal also serve as news. They are a blend of unusual events and personalities, a combination that favors the feature-story format, specifically the human-interest story. This type of story shows "a subject's oddity or emotional or entertainment value" (Itule and Anderson 1987:292).

Since newspapers attempt to balance coverage of "domestic and foreign affairs—serious hard news—with human-interest stories—soft news" (Weiman 1985:82), a psychic becomes a logical choice to fill the need for the latter. This also ensures that psychics and their paranormal claims will continue to receive news coverage. However, it appears that the problem of uncritical stories is inherent in the reporting process itself. Yet within that process are two strategies that may help increase the coverage of skeptics.



Newspapers feature extensive coverage of paranormal proponents; nevertheless, reporters' emphasis on science and controversy may increase coverage of skeptics.

A Closer Look at Newspaper Reporting

I made a study of newspaper stories about psychic phenomena that appeared from 1977 to 1988. I chose to start with 1977 because this was the first full year after the formation of CSICOP.

The newspapers used in this study were the *Cleveland Plain Dealer*, the *Columbus Dispatch*, the *New York Times*, and the *Washington Post*. Curtis MacDougall (1983:535) found that such events as the predictions of local psychics rarely receive coverage outside a limited geographical area. I chose the *Cleveland Plain Dealer* and the *Columbus Dispatch* to provide coverage of local and regional events. MacDougall also found that other events, such as the activities of well-known psychics, receive national coverage through the Associated Press and major newspapers. I chose the *New York Times* and the *Washington Post* to provide coverage of national events as well as some local and regional ones.

I examined 222 stories. They were primarily about individual "psychic" experiences, parapsychologists who collect reports of these alleged experiences, and claims made by self-proclaimed psychics. I located the stories in newspaper indexes.[1]

Most of the stories included only one topic, though some discussed two and some three. There were 19 Story Topic categories, ranging from poltergeists to Kirlian photography.

I classified each article by Story Type, Reporting Approach, Story Image, and Story Sources.[2] The Story Type had two categories: news story and feature story. B. D. Itule and D. A. Anderson (1987:6) define news stories as those that "chronicle the who, what, where, when, why and how of timely occurrences." They define feature stories as those that "analyze the news, entertain an audience or describe people, places or things in or out of the news."

The Reporting Approach taken in a story fell into one of four categories:

1. Credulous: Specific paranormal claims were made by a story source or by the reporter without critical comment.
2. Neutral: Specific paranormal claims were made and addressed, or no claims were made. Also included in this category were stories in which the reporter used qualifying terms, such as "so-called" and "alleged," to describe persons or claims.
3. Skeptical: Specific paranormal claims were addressed by a source or by the reporter.
4. Interdeterminate: Reporting approach could not be determined.

The Story Image conveyed fell into one of three categories:

1. Danger to person(s) encountering the psychic phenomenon.
2. Benefit to person(s) encountering the psychic phenomenon.
3. Not specified as being either danger or benefit.

Based on how newspapers identified their sources, the Story Source classification had seven categories:

1. Experiencer: A person who had an alleged paranormal experience and did not claim any psychic powers.
2. Practitioner: A self-proclaimed psychic.
3. Parapsychologist: This category included scientists and psychologists, those employed in research laboratories, and field

workers.
4. Scholar: A sociologist or other academic.
5. CSICOP Investigator. This category included CSICOP spokespersons and CSICOP scientific and technical consultants.
6. Scientist or Other Investigator not connected to CSICOP.
7. Other: Anyone not matching the descriptions above. This does not include the reporters covering the individual stories.

I counted a Source category only once in a story, regardless of how many representatives of that category were mentioned. For example, in a story with three Experiencers that category counted as one.

The Findings

Story Topic: The topics were categorized in Table 1, which shows the percentage of the 222 stories that discussed a given topic. Note that poltergeists and ghosts top the list.

Story Type: Of the 222 stories in the study, I found that features outnumbered news stories nearly 2 to 1.

Reporting Approach: Uncritical articles on the paranormal outnumbered those with a skeptical approach by well over 2 to 1. (See Table 2.)

Story Image: Paranormal phenomena were more often portrayed as beneficial than as dangerous. (See Table 3.)

Story Source: Experiencers, Practitioners, and Parapsychologists each outnumbered CSICOP Investigators by more than 2 to 1. These ratios changed slightly when Scientists and Other Investigators were substituted for CSICOP Investigators.

The relationships these classifications have with one another tells us something about the nature of newspaper reporting.

TABLE 1. Distribution of Story Topics Among 222 Newspaper Stories

Topic	%
Poltergeists	27
Ghosts	18
Psychokinesis	14
Precognition	13
Clairvoyance	12
ESP	9
Psychic healing	7
Psychic crimefighting	6
Telepathy	5
Spiritualism	5
Reincarnation	4
Remote viewing	3
Parapsychology	3
Auras	2
Channeling	2
Near-death experiences	2
Out-of-body experiences	2
Kirlian photography	1
Psychic phenomena (general)	1

Note: Figures total more than 100 percent because some stories included two or three topics.

TABLE 2. Distribution of Reporting Approach Among 222 Newspaper Stories

	Frequency	
Approach	#	%
Credulous	104	46
Neutral	70	31
Skeptical	39	17
Indeterminate	14	6

Note: Five stories had two reporting approaches.

Comparing Story Type with Reporting Approach (Table 4), I found that news stories were associated with the Neutral approach and features were associated with the Credulous

TABLE 3. Story Image Conveyed by 222 Newspaper Stories (N = 222)

	Frequency	
Image	#	%
Benefit	72	32
Danger	62	27
Not specified	92	41

Note: Four stories conveyed both benefit and danger.

approach.[3] This indicates that the skeptical view does have some hope of being heard within the news-story format. True, a skeptic is usually given only a few sentences to state his or her case. We can say, however, that at least in principle, news stories about the paranormal are guided by an "ideal of neutrality."

The presence of neutrality in news stories is a contrast to its absence in features. But the feature's ability to analyze a situation in depth actually makes it a more promising vehicle for skeptical views. Feature writers can go beyond mere entertainment, though often this is not the case.

In a story classified as Neutral, a reporter may highlight either the views of paranormal proponents or those of skeptics. The number of sentences attributed to each Story Source—direct and indirect quotes—measures the relative amount of attention given to that viewpoint. For example, suppose we have a story in which a CSICOP Investigator has but one sentence to address a claim. (In some stories this is what I found.) If a Parapsychologist is given several sentences to state his or her case, the skeptical comment acts like the warning statement in a cigarette ad: few readers may notice it. Though it would be hard to prove that the reporter intended to discredit the skeptical

TABLE 4. Distribution of Reporting Approach by Story Type

	News Story (N = 79)	Feature Story (N = 148)
Approach	%	%
Credulous	35	51
Neutral	43	24
Skeptical	18	17
Indeterminate	4	7

Note: Five stories had two reporting approaches.

view, a reader could easily think so.

Nearly all stories had at least one source; therefore sources play a role in determining the reporting approach in most paranormal stories. When we compare Story Source with Reporting Approach (Table 5), we find that Experiencers, Practitioners, and Parapsychologists were all associated with the credulous approach. This indicates that many paranormal claims were made without critical comment. CSICOP Investigators were associated with the neutral approach; their comments were primarily used to balance claims. Scientists and Other Investigators, who included both proponents and skeptics, were split among the Credulous, Neutral, and Skeptical approaches. The appearance of a small percentage of CSICOP Investigators in the Credulous category indicates that claims were not addressed in some stories.

I counted the number of sentences attributed to each source in every neutral story. Of the total number of sentences, CSICOP Investigators had only 8 percent. Scientists and Other Investigators had just 5 percent. In contrast, Parapsychologists, Practitioners, and Experiencers had 26, 18, and 16 percent, respectively. These numbers reveal the extent of

TABLE 5. Distribution of Reporting Approach by Story Source

	Exp. (N = 97) %	*Prac.* (N = 68) %	*Para.* (N = 65) %	*Schol.* (N = 9) %	*CSICOP Inv.* (N = 29) %	*Other Sci.* (N = 37) %	*Other* (N = 92) %
Credulous	59	56	54	33	14	38	47
Neutral	29	24	34	56	52	32	33
Skeptical	7	15	9	0	34	27	18
Indeterminate	5	6	3	11	0	3	2

Note: For statistical analysis, indeterminate category was combined with neutral category.

newspaper neglect of the skeptical view: even in neutral stories, where there was some attempt to balance opposing views, coverage was lopsided in favor of proponents.

It is important to remember that the presence of a particular Story Source does not by itself determine the Reporting Approach. Many other factors, such as Story Type and the reporter's beliefs, are also involved.

Table 6 shows a breakdown of Reporting Approach by newspaper. The *Plain Dealer*, the *Dispatch*, and the *Post* all have similar percentages of credulous stories, while the *New York Times* is odd newspaper out.

Another relationship was Story Source and Story Image (Table 7). The mass-media image of psi has been characterized as demonic and malevolent (McClenon 1984:200). An alternative media image is one that emphasizes potential benefits.

Table 7 shows that Experiencers were associated with a Story Image of danger, though this finding was not statistically significant. Practitioners, who stand to profit monetarily from their self-proclaimed psychic powers, were associated with an image of benefit, which may reflect the self-promoting abilities of practitioners noted by Kendrick Frazier (1985:5).

TABLE 6. Distribution of Reporting Approach by Newspaper

	Cleveland Plain Dealer (N = 36) %	*Columbus Dispatch (N = 55)* %	*Washington Post (N = 71)* %	*New York Times (N = 65)* %
Credulous	53	56	49	29
Neutral	42	25	23	38
Skeptical	3	13	20	26
Indeterminate	3	5	8	6

Note: Five stories had two reporting approaches.

TABLE 7. Distribution of Reporting Story Image by Story Source

	Exp. (N = 91) %	*Prac.* (N = 67) %	*Para.* (N = 65) %	*Schol.* (N = 9) %	*CSICOP Inv.* (N = 27) %	*Other. Sci.* (N = 37) %	*Other* (N = 95) %
Benefit	25	72	20	44	11	54	34
Danger	45	12	38	33	30	19	25
Not specified	30	16	42	22	59	27	41

Effects of Uncritical Newspaper Coverage

I looked at two effects of uncritical coverage: how it validates alleged psychic experiences and how it reinforces existing belief in the paranormal.

Although newspapers treat paranormal phenomena as entertainment, by reporting these alleged occurrences as straight fact they imply that the paranormal interpretation is based on solid evidence. Newspapers also reward persons seeking to report experiences or publicize claims: having their names in the paper gives them status (Weimann 1985:84). This recognition seemingly adds weight to their claims when the stories exclude any opposing views. Uncritical coverage therefore supports both the claims and the persons making them.

Uncritical coverage also supports existing beliefs (Weimann 1985:84). Newspapers call attention to the paranormal by concentrating on personal experiences. Evidence indicates that these experiences are the main factor contributing to belief in ESP and other psychic phenomena (Evans 1973:209; McClenon 1984:147). People do have unusual experiences that they may interpret as paranormal. ("He called yesterday after ten years just when I was thinking about him. I know it's not just a coincidence—it must be ESP. Explain that, Mr. Skeptic!") Those choosing this interpretation will find support in print.

The influence newspapers have on paranormal belief is not easily measured. It appears they act more as a mirror and less as a cause. Does it follow, then, that newspapers should do nothing more than merely reflect the superstitions of our time? As Meyer (1987:157-158) reminds us, "It is not unusual for a newspaper to simply announce some paranormal event and let it go at that, as if there were no reason to question it."

Problems exist with this laissez-faire approach. For one, many people lack the knowledge to separate science from pseudoscience (Miller 1987:28). For another, newspapers can be used as a forum by so-called psychics to promote their claims. Such claims can be dangerous to the public's physical, mental, and monetary health.

Our next question is this: Do newspapers have a responsibility to go beyond uncritical reporting? We can look to an important theory of the press for our answer. The social responsibility theory focuses on the role of the press in a free and complex technological society. It simply says that it is "the responsibility of the press not only to present diverse viewpoints but also to interpret them

responsibly" (Itule and Anderson 1987:673). This philosophy has become a major influence on how the press operates.

Paranormal reporting needs to be included in the domain of this philosophy. CSICOP is one of the primary agents for bringing this about.

Improving Newspaper Coverage

Changing the way newspapers cover the paranormal will of course take time, considering that uncritical reporting has long been a staple item. How has CSICOP fared so far? The results from this study are not encouraging at first glance. CSICOP Investigators had infrequent appearances in the stories analyzed, and their comments were severely limited in most stories. Skeptics are thus heavily outmanned and outgunned.

These are gloomy findings for the state of skepticism in newspapers; however, some hopeful signs can be seen. By its very existence, CSICOP has helped to make newspapers aware of the skeptical view. This may cause some reporters to insert critical comments; at least, they are aware that another side exists. Several critical comments came from sources other than CSICOP Investigators; many came from the reporters themselves.

To determine the role reporters play in providing critical comments, we first need to find out which sources appeared in the various stories. Table

TABLE 8. Percentage of Stories Using a Given Source, by Story Topic
(Percentages total from left to right)

Topic	*Exp.* %	*Prac.* %	*Para.* %	*Schol.* %	*CSICOP Inv.* %	*Other Sci.* %	*Other* %
Poltergeists (N = 61)	62	8	43	3	21	7	48
Ghosts (N = 40)	53	13	13	0	3	5	60
Psychokinesis (N = 32)	34	25	59	9	25	19	28
Precognition (N = 28)	21	64	14	0	0	0	43
Clairvoyance (N = 26)	15	58	27	8	12	8	38
ESP (N = 19)	32	32	53	11	32	16	37
Psychic healing (N = 15)	33	53	7	0	13	33	53
Psychic crimefighting (N = 13)	0	62	0	0	0	23	85
Telepathy (N = 12)	8	17	50	8	17	8	33
Spiritualism (N = 10)	30	90	0	0	10	10	50
Reincarnation (N = 8)	0	38	25	13	0	13	38
Remote viewing (N = 7)	0	14	57	0	0	29	43
Parapsychology (N = 6)	0	0	0	17	50	17	50
Auras (N = 5)	20	60	0	0	0	20	40
Channeling (N = 5)	60	100	0	40	0	40	40
Near-death experience (N = 4)	25	0	0	25	0	50	0
Out-of-body experience (N = 4)	75	50	25	0	25	50	25
Kirlian photography (N = 3)	0	0	66	0	33	0	0
Psychic phenomena (N = 1)	0	100	0	0	0	0	0

8 compares Story Topics with Story Sources. Each number indicates the percentage of stories discussing a particular topic that used the given source. The table shows that of the 28 stories about precognition, 64 percent used Practitioners as sources, but none used a CSICOP Investigator, or a Scientist or Other Investigator. Now compare the precognition topic in Table 4 and you'll find that half the stories were skeptical or neutral. Reporters provided critical comments in some of these stories.

Frazier (1982:16-18) suggests several guidelines reporters and editors can use when covering paranormal topics. Some stories in this study showed evidence that these or similar guidelines were followed. For example, some reporters explained tricks used by psychics and others used qualifying phrases when referring to psychics to indicate the questionable nature of their claims. Few reporters looked at the paranormal from a scientific point of view, however.

By emphasizing science, reporters may increase coverage of those skeptical of the paranormal. The science reporter has the important task of explaining what science has to say about the paranormal. In addition, he or she has the equally important task of investigating specific claims. This latter role reflects the changing focus of science reporting; investigative reporting is seen as a vital component (Logan 1985:55).

Unfortunately, only a handful of newspaper stories about the paranormal are written by science reporters; most are written by general reporters (Frazier 1985:6). Despite this, science reporters are not without some influence. As role models, they may help paranormal reporting give up the practice of merely announcing claims to concentrate on investigating them.

An emphasis on science and investigative reporting will strengthen the ideal of neutrality in news stories. Newspapers tell the "who," "what," "where," and "when" of paranormal events, but often only partly tell the "why" and "how"—the skeptical view—or leave it out altogether. The original news story may lack the space to explain the why and how, and it may take time to track both of them down. But if we're going to treat the paranormal as a news item, what's needed is more follow-up. As it is, most news stories are just one-day affairs—and readers are frequently left with claims only partially answered.

Of course, some general reporters do investigate paranormal claims. For example, general reporters played a major role in refuting the reincarnation claims made in *The Search for Bridey Murphy* (MacDougall 1983: 130). The skeptical view of the paranormal can hold the interest of newspaper readers, as witnessed by the existence of some skeptical columnists.

Reporters may also increase coverage of skeptics by emphasizing the inherent controversy in the paranormal. Conflict and disagreement make news; proponents and skeptics alike have colorful speakers. In addition to supplying news, controversy also supplies a form of entertainment (McClenon 1984:127).

Philip Meyer (1986:41) notes that the personalities of skeptics, psychics, and parapsychologists can become the focus of a story, as opposed to reporting and investigating the paranormal claim. While this is true, emphasis on the controversy does at least allow the inclusion of the skeptical view. And it takes advantage of a recognized force in newspaper reporting: the power of conflict.

Now if we're really going to cover the controversy, what we need is an

in-depth look at the opposing views. To do this, reporters will need the length of the feature story. It also means that more space needs to be allotted to skeptics, to balance the current lopsided coverage of proponents. This would extend the ideal of neutrality to the feature story.

Improving newspaper coverage is an important and difficult goal. For the paranormal has long been considered to be entertaining news, with stress on the entertainment. Newspapers have reported alleged paranormal events as fact and extensively covered the views of proponents. Good reporting implies that the other side—the skeptical side—should receive equal coverage. But judging by what is often found in newspaper stories, rationality has only a ghost of a chance.

Acknowledgments

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Notes

1. There is no commonly accepted definition of what topics to include under the term *psychic phenomena*. After consulting the literature of proponents and skeptics, I drew up a list of topics. I then checked these topics against newspaper indexes, not only for the sample newspapers but also for five others. For this study, then, I considered the topics newspapers included in the indexes I examined. I also consulted newspaper databases for possible topics and stories, but available databases had two problems: newspapers were not indexed back to 1977 and only selected stories were included.

2. An independent coder classified a sample of 51 stories. Percentage of agreement on coding decisions made by coder and author: for story type, 96 percent; reporting approach, 83 percent; story image, 96 percent; story sources, 97 percent.

3. Associations are statistically significant ($p < .05$) unless otherwise noted.

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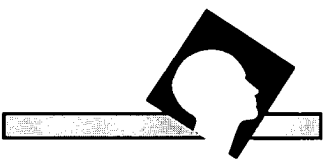
Thinking Critically And Creatively

CAROLE WADE and CAROL TAVRIS

These days, most college students know that you have to exercise the body to keep it in shape. But they assume that thinking doesn't take any effort at all, and certainly no practice. You just do it, like breathing. But thinking does need practice. All around us we see examples of flabby thinking, lazy thinking, emotional thinking, and nonthinking. Sometimes students justify their mental laziness by proudly declaring that they are "open-minded." "It's good to be open-minded," replies philosopher Jacob Needleman, "but not so open that your brains fall out."



Critical thinking fosters the ability to be creative and constructive. Here are eight general guidelines for learning to think critically.

One of the greatest benefits of studying psychology is that students can learn not only how the brain works in general but how to use theirs in particular—through the disciplined guidelines of critical thinking. Critical thinking is the ability and willingness to assess claims and make objective judgments on the basis of well-supported reasons. It is the ability to look for flaws in arguments and resist claims that have no supporting evidence. *Critical thinking, however, is not merely negative thinking.* It also fosters the ability to be *creative and constructive*—to generate possible explanations for findings, think of implications, and apply new knowledge to a broad range of social and personal problems. Critical thinking cannot really be separated from creative thinking, for it's only when students question *what is* that they can begin to imagine *what can be.*

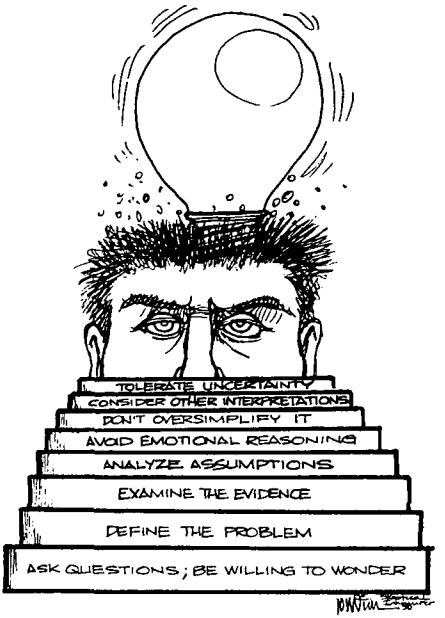
For example: Many people, when faced with a setback to their expectations, narrow their horizons instead of expanding them. We know a fellow named Victor whose entire dream in

An excerpt from *Psychology*, 2nd ed. (Harper & Row, 1990). Reprinted by permission.

life was to be a veterinarian. Victor's love of animals was legendary: at three, he wouldn't let you kill a bug in his presence. But Victor wasn't admitted to any of the veterinary schools he applied to, and his reaction was panic and despair: "My whole life is ruined!" At first, Victor was not thinking critically; he had divided his possibilities into only two alternatives: become a veterinarian, or nothing. But by examining this assumption and by *thinking creatively* about all the possible occupations that would make use of his love of animals, Victor realized his choices were endless: pet-shop owner, Hollywood "pet therapist," trainer at Sea World, designer of humane zoos, organizer for an endangered-species group, ecologist, wildlife photographer, and so on.

Some researchers find that most people don't think critically until at least age 25. This doesn't mean, however, that they *can't* think critically. Even young children can do so, though often they don't get much credit for it. The ten-year-old daughter of a friend, when told that ancient Greece was the "cradle of democracy," replied, "But what about the women and slaves, who couldn't vote and had no rights? Was Greece a democracy for them?" That's critical thinking. And it is also creative thinking, for once you question the basic assumption that Greece was a democracy for everyone, you can begin to imagine other interpretations of Greek civilization at that time.

However, we agree with the growing number of educators, philosophers, and psychologists who believe that the American educational system shortchanges students by not teaching them to think critically and creatively. Too often, they say, both teachers and students view the mind as a bin for storing "the right



answers," or a sponge for "soaking up knowledge." The mind is neither a bin nor a sponge. Remembering, thinking, and understanding are all active processes that require judgment, choice, and the weighing of evidence. Unfortunately, children who challenge prevailing opinion at home or in school are often called "rebellious," rather than "involved." As a result, say the critics, many high school and college graduates cannot formulate a rational argument or see through misleading advertisements and propaganda that play on emotions. They do not know how to go about deciding whether to have children, make an investment, or support a political proposal. They do not know how to come up with imaginative solutions to their problems. They cannot use their heads.

Critical thinking involves a set of skills that can be applied to any subject or problem. But it is particularly relevant to psychology, for three reasons. First, the field itself includes

the study of thinking, problem-solving, creativity, emotion, and other components of this process, and by its very nature fosters critical and creative thinking. In one recent study, graduate students in psychology substantially improved in their ability to reason about the events of everyday life. In contrast, graduate students in chemistry showed no improvement (Lehman, Lempert, and Nisbett 1988). Second, the field of psychology generates many competing findings on topics of immediate personal and social relevance, and people need to be able to evaluate the studies and their implications. Third, the public's appetite for psychological information has created a huge market for what R. D. Rosen (1977) calls "psychobabble": pseudoscience and quackery that have a veneer of psychological language. Critical thinking can help separate psychology from psychobabble.

In part, learning to think critically means following the rules of logic. But there are also some general guidelines involved (Ennis 1985; Paul 1984; Ruggiero 1988). Here are eight of the essential ones:

1. *Ask questions; be willing to wonder.* What is the one kind of question that most exasperates parents of young children? "Why is the sky blue, Mommy?" "Why doesn't the plane fall?" "Why don't pigs have wings?" Unfortunately, as children grow up, they tend to stop asking "why" questions.

"The trigger mechanism for creative thinking is the disposition to be curious, to wonder, to inquire," writes Vincent Ruggiero (1988). "Asking 'What's wrong here?' and/or 'Why is this the way it is, and how did it come to be that way?' leads to the identification of problems and challenges." Some occupations actually teach their trainees to think this way. Industrial engineers are taught to walk through a company and question everything, even procedures that have been used for years. Other occupations prefer to give trainees "received wisdom" and discourage criticism.

2. *Define the problem.* Once you've raised the question, the next problem is to identify its issues in clear and concrete terms. "What makes people happy?" is a fine question for midnight reveries, but it will not lead to answers unless you have specified what you mean by "happy." One psychologist defined a "happy marriage" as one that had lasted ten years and produced two children (Toman 1976). Would you agree with that definition?

The wrong formulation of a question can produce misleading or incomplete answers. The question "How does hypnosis improve memory for events?" assumes that hypnosis always improves memory. But putting the matter another way—"How does hypnosis *affect* memory?"—allows for other possibilities. As it happens, hypnosis can also increase memory *errors*, and some hypnotized people will even cheerfully make up details of an event that never happened.

3. *Examine the evidence.* In the heat of argument, people often exclaim: "I just know it's true, no matter what you say" or "That's my opinion; nothing's going to change it" or "If you don't understand my position, I can't explain it." Accepting a conclusion without evidence, or expecting others to do so, is a sure sign of uncritical thinking (or of no thinking at all). It implies that all opinions are equal, but they are not. A critical thinker asks, *What evidence supports or refutes this argument and its opposition? How reliable is the evidence?* If it is not possible to check the reliability of the evidence, the critical thinker considers whether its source has been reliable in the past.

Some well-known popular beliefs

have been widely accepted, on the basis of (*a*) poor evidence or even (*b*) no evidence. For example, many people believe that it is psychologically and physically healthy to "ventilate" their anger at the first person, pet, or piece of furniture that gets in their way. Actually, years of research in many different fields suggest that sometimes expressing anger is beneficial, but more often it is not (Tavris 1989). Often it makes the angry person angrier, makes the target of the anger angry back, lowers everybody's self-esteem, and fosters hostility and aggression. Yet the belief persists, despite the lack of evidence to support it.

4. *Analyze assumptions and biases.* Critical thinkers evaluate the assumptions and biases that lie behind arguments—beliefs that are taken for granted and biases about how the world works. They ask how these assumptions and biases influence claims and conclusions in the books they read, the political speeches they hear, the news programs they watch, and the ads that bombard them every day. Here's a real example: The manufacturer of a popular pain reliever advertises that hospitals prefer its product over all others. The natural assumption—the one the advertiser wants you to make—is that this product is better than all others. Actually, hospitals prefer it because it is cheaper than its competitors.

Critical thinkers are also aware of their own assumptions, and when necessary are willing to question them. For example, many people are biased in favor of their parents' ways of doing things. When faced with difficult problems, they usually reach for familiar solutions, saying "If my dad did it this way, that's the way I'll do it," or "I was brought up to believe that the best way to discipline children is to beat them." But critical thinking requires us to examine our biases when the evidence contradicts them.

All of us, of course, carry around a headful of assumptions about how the world works: Do people have free will or are we constrained by biology and upbringing? Is socialism or capitalism the solution to poverty? If we don't make our assumptions explicit, our ability to interpret evidence objectively can be seriously impaired.

5. *Avoid emotional reasoning: "If I feel this way, it must be true."* Emotion has a place in critical thinking. Without it, logic and reason can lead to misguided or destructive decisions and actions. Indeed, some of the most cold-blooded monsters of human history have been above average, even brilliant, thinkers. But when "gut feelings" *replace* clear thinking, the results are equally dangerous. "Persecutions and wars and lynchings," observes Edward de Bono (1985), "are all a result of gut feeling."

Because our feelings seem so right, it is hard to understand that people with opposing viewpoints feel just as strongly. But they do, which means that feelings alone are not a reliable guide to the truth. Students enter the field of psychology with many passionate beliefs about child rearing, drugs, astrology, ideal body weight, the origins of intelligence, the nature of "mental illness," men and women, whites and blacks, Americans and Japanese, heterosexuals and homosexuals. Try to set these feelings aside so they won't interfere with your consideration of evidence bearing on such issues. Keep in mind the words of English poet and essayist Alexander Pope: "What reason weaves, by passion is undone."

6. *Don't oversimplify.* A critical thinker looks beyond the obvious, resists easy generalizations, and rejects either/or thinking. For example, when life serves up a miserable

situation, should you deny your problems ("Everything's fine; let's go to the movies") or face them head-on? Either answer oversimplifies. Research shows, instead, that sometimes denial can keep people from solving their problems, but sometimes it helps them get through painful situations that can't be changed.

Often in an argument someone will generalize from one tiny bit of evidence to the whole world: one paroled ex-convict who commits a crime means the whole parole program is bad; one friend of yours who hates his school means that everybody who goes there has a hard time. Anecdotal generalizations are the source of stereotyping as well: one dishonest welfare mother means they are all dishonest; one bad experience with a New Yorker means that all New Yorkers are difficult. A critical thinker wants more evidence than one or two stories before drawing generalizations.

Many people also oversimplify when thinking about their own lives. For example, they generalize from one negative event to a whole pattern of defeat, creating no end of misery: "I did poorly on this test, and now I'll never get through college or have a job or kids, or anything."

7. *Consider other interpretations.* A critical thinker creatively formulates hypotheses that offer reasonable explanations of characteristics, behavior, and events. The ultimate goal is to find an explanation that accounts for the most evidence with the fewest assumptions. But critical thinkers are careful not to shut out all competing explanations too soon. They generate as many interpretations of the evidence as possible before settling on the most likely one.

A recent study of Swedish couples, for instance, found that those who lived together before marriage were 80 percent more likely to separate or divorce than those who had lived apart (Bennett, Blanc, and Bloom 1988). *Time* magazine promptly concluded that "premarital cohabitation may be hazardous to your marriage" and Dear Abby advised a reader that if she wanted her forthcoming marriage to last she shouldn't cohabit beforehand. But there is another plausible conclusion: that people who cohabit before marriage are less committed to traditional institutions in general and therefore more inclined to leave an unhappy marriage. This was the interpretation the researchers themselves favored.

8. *Tolerate uncertainty.* Ultimately, learning to think critically teaches us one of the hardest lessons of life: how to live with uncertainty. For example, it's important to examine the evidence before drawing conclusions. Sometimes the evidence merely allows us to draw tentative conclusions. But we all encounter situations in which there is little or no evidence on which to base any conclusions. And sometimes, exasperatingly, the evidence seems good enough to draw strong and sturdy conclusions—until new evidence throws our beliefs into disarray. Critical thinkers are willing to accept this state of uncertainty. They are not afraid to say, "I don't know," or "I'm not sure." This admission is not an evasion, but a spur to further creative inquiry.

The desire for certainty often makes people uncomfortable when they go to an expert for *the* answer and the expert cannot give it to them. Some patients demand of their doctors: "What do you mean you don't know what's wrong with me? Find out and fix it!" Some students demand of their professors: "What do you mean it's a controversial issue? Just tell me the answer!"

The need to accept a certain

amount of uncertainty does not mean that we must live without beliefs and convictions. "The fact that today's knowledge may be overturned or at least revised tomorrow," says Ruggiero (1988), "could lead us to the kind of skepticism that refuses to embrace any idea. That would be foolish because, in the practical sense, it is impossible to build a life on that view. Besides, it is not the embracing of an idea that causes problems—it is the refusal to relax that embrace when good sense dictates doing so. It is enough to form convictions with care and carry them lightly, being willing to reconsider them whenever new evidence calls them into question."

Like the man who was delighted to learn he had been speaking prose all his life, many people already know some of these basic guidelines of critical and creative thinking. They do it, we might say, without thinking about it. But educators can make those guidelines more explicit and help students shape up their mental muscles.

Ultimately, however, critical thinking is as much an attitude as it is a skill. All of us are much less open-minded than we think. We take comfort from believing that only *other* people are biased or need to think more clearly. Critical thinking requires that you be willing to submit even your most cherished beliefs to honest analysis. Philosopher Richard W. Paul (1984) observes that without fair-mindedness, reasoning skills tend to be used in the service of one-upmanship. That is why intelligent people are not always critical thinkers. Clever debaters can learn to poke holes in the arguments of others, while twisting facts or conveniently ignoring arguments that might contradict their own position. True critical thinking, according to Paul, is "fair-mindedness brought into the heart of everyday life."

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In addition to collaborating on their textbook Psychology *for Harper & Row, now in its second edition, psychologists Carol Tavris and Carole Wade are coauthors of* The Longest War: Sex Differences in Perspective *(Harcourt Brace Jovanovich) and both have written for popular magazines. Dr. Tavris is author of* Anger: The Misunderstood Emotion *(Touchstone), which debunks many of the pop-psych myths about anger and aggression. Dr. Wade currently teaches at the College of Marin and Dr. Tavris in the Department of Psychology at UCLA.*

Police Pursuit of Satanic Crime

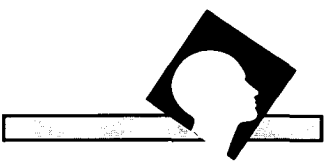
Part II

The Satanic Conspiracy And Urban Legends

ROBERT D. HICKS

Part I, on the law-enforcement model of cult crime, appeared in the Spring 1990 SKEPTICAL INQUIRER.

Cult officers rail at the inhuman philosophies and depredations of the many cults "out there." So how many cults exist? The fact is, no one knows. As the scholar of religion Gordon Melton has done (1986), one may try to survey groups that surface publicly. Yet some groups whose memberships adopt self-identifying labels may not even claim a formal membership roll, much less articulate a commonly held credo. And when trying to identify cult groups labeled as such, the groups themselves may resist the categorization. Nevertheless, cult officers and others make the following assertions:



Police cult-seminars promote fundamentalists' views of satanic conspiracy. The insights of folklore research and the understanding of urban legends and rumor-panics help explain the appeal and spread of satanic-cult stories.

—Occult groups (undefined) are "usually organized into 'covens' consisting of 9 or 13 members." With 10,000 covens in the United States in 1946 growing to 135,000 in 1985, the total national membership may run to 500,000 (Barry 1987: 40).
—Cult members may number up to ten million (Jonsson 1989).
—About 3,000 cults exist in the United States (Griffis n.d.: 51). Griffis also says that only 500 of the total figure for cults deal with "the occult" (Baird 1984: 9).
—"Using the broad definition of the social scientists, one can find some 500-600 cults or alternative religions in the United States. Of these, over 100 are primarily

ethnic bodies confined to first- and second-generation immigrant communities," and total membership may reach 150,000 to 200,000 (Melton 1986: 6).

So the estimates range from 150,000 to 10 million participants in groups tagged as cults.

Notoriously lacking from cult seminars is the voice of "nontraditional belief" or, for that matter, of secular professional behavioral science. Law enforcers appoint themselves experts in interpreting signs and symbols of groups whose members they've never met. Melton, at least, defines cults for his scholarly purposes. First, he notes that to many people "the term 'cult' is a pejorative label used to describe certain religious groups outside of the mainstream of Western religion" (1986: 3), the sense in which cult officers use the term.

Cult officers prefer to identify cults' proselytizing through mind-control, their fraudulent recruitment of members, and their attraction to sociopaths as key criteria for classification, comparison, evaluation. Cult seminars stridently examine in this way level-two satanists, or those with a public image, and take their public rites and symbols as illustrative of the clandestine, undetectable conspiracy of satanists, the final level.

The Satanic Conspiracy

Here is the view of the "satanic conspiracy" widely and uncritically promulgated in cult seminars: Beyond the publicly accessible, organized satanists are the traditional, dangerous ones. Overall, though, traditional satanists belong not to different denominations of the same basic credo but rather to an international mega-cult tightly organized in a clandestine hierarchy. Whole families participate, raising children to a lifetime of human and animal sacrifices, kidnaping, ongoing mental and physical abuse, child pornography, to name the primary activities. D. W. Griffis (n.d.) tags the Ordo Templi Orientis as such a group and believes that their mind-control methods of enforcing slavish participation in cult ceremonies include the use of symbols to trigger criminal responses in members—for example, a black rose, a greeting card with a frog illustration, or cuing devices like the famous card deck in the film *The Manchurian Candidate.*

The seminars' portrayal continues: Fourth-level satanists' belief in magic propels them to sacrifice people. They release some primal energy force through killing, which enriches the participants, say the cult officers. The abuse of children itself is a form of worship. While for most ritual purposes the children of traditional satanists will suffice, sometimes satanists must look elsewhere for sacrificial fodder: usually at day-care centers.

One Virginia investigator related at a seminar that a particular day-care center abused children as a routine.

Once the parents had dropped them off for the day, the day-care staff bussed the children to an airfield, loaded them onto an airplane, and then flew them to a ceremonial site. Day-care staff—while robed—forced the children to lie in open coffins that were then lowered into the earth. Onlookers threw dirt on the children, who cried for help, but no one responded. The high priest retrieved and then sexually assaulted the children. The point of the ritual was to reduce the children's self-esteem. After the rituals, the day-care staff returned the children (by airplane) to the center, where their unsuspecting parents picked them up at the end of the day (Richmond Bureau of Police seminar, Virginia, September 13, 1988).

The Virginia investigator's story expresses a paradigm of day-care center satanism that has appeared in widely publicized cases throughout the country, leading to mass indictments and ruined reputations but very few convictions, none of them related to the occult (Charlier and Downing 1988).

To Griffis (n.d.), "occult cults" go one step farther: ritual murder binds members to the cults. Charles Manson belongs to this variety: his imprisonment apparently has not reduced his involvement. According to Jerry Simandl, a Chicago police investigator, drug use also pervades all levels of satanic activity.

To cult officers, society has much to fear from fourth-level satanists. Exprobation officer Thomas Wedge, active on the cult lecture circuit, says: "It doesn't matter what you and I believe. It's what *they* believe that makes them dangerous. . . . For the first time, we in law enforcement are dealing with something we can't shout at . . . can't handcuff. And it is very dangerous" (Hyer 1989). To Virginia Beach police investigator Don Rimer, the secret fourth-level satanists present an insidious threat. "They will go to any lengths to satisfy their needs," he said (Fouquette 1988). Griffis says, "The most dangerous groups are the ones that we know nothing about. . . . They are the real underground" (Kahaner 1988: 84).

Cult officers say that the ranks of secret satanists boast the intelligentsia of our society, hence the moneyed power behind the rituals. Pat Pulling maintains that satanic ranks include "doctors, lawyers, clergymen, even police" (Briggs 1988). The same source stated that "adherents of this violent religion" number about 300,000 nationally. Apparently, the secret satanists are not new: only through cult seminars do police learn how to recognize their existence. Secret satanists are responsible for the almost 50,000 human sacrifices every year, a figure contradicted by the national homicide figures published by the FBI, which show about half this figure for each of the past few years (1988).

Despite this large-scale conspiracy, police still have uncovered little or no evidence of cults' murderous activities. Police say the lack of evidence is a result of the cults' success: cultists eat bodies or dispose of them without a trace. The only consistent evidence we have of secret satanists' existence comes from two sources: the abuse stories told by children and those of cult survivors. I address here the cult survivors' stories.

Cult Survivors

Cult survivors are often said to be the offspring of satanic parents bred to a life of abuse and witnessed murders. The prototype cult survivor is Michelle Smith, who with her psychiatrist husband, Lawrence Pazder, wrote *Michelle Remembers* (Smith and

Police Can Help Foment Satanic Rumor-Panics

The police have demonstrated susceptibility to cult-seminar hysteria by fomenting rumor-panics. The Allenstown, New Hampshire, Police Department received reports during May 1989 that six cats had been found hanging from a tree not far from a decapitated dog, and the sound of drums was being heard in a state park at night. A woman walking her dog came upon what was described as a makeshift altar supporting a carcass of a mutilated beaver. Another skinned beaver turned up, found upright surrounded by stakes. The police decided to turn to a cult-crime officer for help, who—though in San Francisco and unable to inspect the animals—interpreted the findings as indicating satanic rituals. Since the carcasses were found close to May 1, the cult-crime officer said that the recent *Walpurgisnacht*, a satanic holiday, probably stimulated the sacrifices.

The sergeant in charge of the investigation worried about these events, linking those who sacrificed animals to drug-taking and listening to heavy-metal music, a view confirmed by a local Baptist minister who believed the Devil responsible. The sergeant wanted to find the satanic group behind this. Characteristically, he said, "Their freedom of worship is protected, . . . but we want to monitor them" (Noonan 1989). The next day, the Manchester, New Hampshire, *Union Leader* ran an editorial stating: "We have reached a sorry state of affairs when following the Devil is defined as 'worship' " (May 4, 1989).

Within a few days, the mystery unraveled. In fact, no dead cats had been found in trees. The beavers had been legally trapped in the state park. Other dead animals that had been reported by local residents had been killed on the road and stacked in the forest for later pick-up (Zitner 1989a). But even though the phenomena turned out to be mundane, other law enforcers didn't remember the follow-up story but only the original news report. After all mention of the incident passed from the headlines, the mayor of Manchester tried to ban the appearance of a heavy-metal band in town lest they stimulate other incidents similar to what occurred in Allenstown, forgetting that the Allenstown events had nonsatanic explanations (Zitner 1989b).

—*R.D.H.*

and Pazder 1988). By her own admission, Smith endured a rough, unhappy childhood with a violent, alcoholic father. After years of psychotherapy with Pazder, a new story emerged. Without prompting, Smith entered a trance in which she regressed to a childhood persona. In that persona, she told of ceremonies she had witnessed that were replete with black candles, black drapes, goblets, dismembered bodies, sharing coffins with decomposing bodies, sexual abuse, having dismembered baby

limbs rubbed on her, imprisonment in a snake-infested cage, confrontations with red spiders, and watching satanists rend kittens with their teeth. Rituals occurred in cemeteries, homes, mausoleums, and offices.

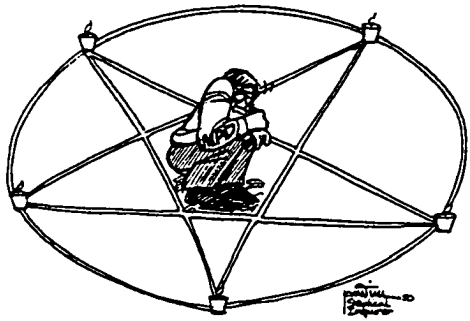
Smith even developed physical symptoms: she said a rash on her neck developed (a photograph of which appears in the book) when Satan appeared and wrapped his tail around it (Smith and Pazder 1980: 184).

How does Pazder react to the lurid stories? "I happen to believe you," he says to Smith, "for many reasons . . . but mostly for what I feel *with* you. It feels real. . . . I think the way you are expressing the experience is very touching. It is authentic as an experience" (193-194). While touched by Smith's experience, Pazder nevertheless doesn't discuss the applicability of Multiple Personality Disorder (MPD) to her story, yet the police frequently dub her an MPD sufferer because they maintain that MPD is the main *symptom* of satanic abuse.

MPD does, in fact, "develop in people who were severely and repeatedly abused as children, apparently as a means to protect themselves against the pain of the abuse" (Goleman 1988). The standard diagnostic tool of the psychiatric profession, known as *DSM III-R* (*Diagnostic and Statistical Manual of Mental Disorders*, third edition, revised, 1987), offers as the "essential feature" of dissociative disorders, of which MPD is one, "a disturbance or alteration in the normally integrative functions of identity, memory, or consciousness" (p. 269). MPD sufferers may exhibit as many as 10 personalities, some more than 200, in which "the personalities and personality states each have unique memories, behavior patterns, and social relationships." As a further symptom, an MPD sufferer may exhibit a belief that he or she is possessed by another person or entity, a feeling that "may also be a delusion in a psychotic disorder, such as schizophrenia. . . ." (p. 270).

The MPD phenomenon is not well understood. The most remarkable find of recent research pertains to the physiological changes that accompany a switch in personalities. Such symptoms accompanying personality changes include rapidly appearing and disappearing "rashes, welts, scars, and other tissue wounds; switches in handwriting and handedness; epilepsy, allergies, and color blindness" (Goleman 1988). These symptoms, coupled with a sufferer's sincerity and conviction, may confuse an investigator with no experience with MPD.

The preoccupation with MPD sufferers presents police with some paradoxes. On the one hand, they cite the growing number of cult-survivor stories and their sameness as evidence of fourth-level satanists (that is, people who have never met telling stories with essentially the same symbols or motifs). Yet most of the cult survivors, young women possibly afflicted with MPD, do not present verifiable stories. First, none has yielded physical evidence of crime other than physiological symptoms like Smith's rash. Second, from the police point of view, MPD sufferers are not particularly credible. MPD sufferers can convincingly relate fantasies as fact and believe the stories they tell. The police themselves say that interviews with MPD victims may consume *years* in order to extract a coherent story. The police point out that even hypnosis for investigative purposes produces no results (but for therapeutic purposes, MPD sufferers become quite loquacious). Third, no one doubts that MPD victims have indeed suffered some form of abuse as children, but not necessarily connected with satanism. Adults may



abuse children under the pretext of a satanic ceremony. Adults may cover up brutal, abusive behavior by intimidating children: "Don't tell or I'll make the devil come and get you!" Or abusive adults may claim that they themselves are demons.

Despite their questionable value as witnesses to alleged satanic crimes, cult survivors' stories still awe police audiences. But another facet of the MPD stories lends credibility to cult-crime officers' claims of conspiracy: the explanation of identical cult-survior stories among people living hundreds or thousands of miles apart. Many law enforcers cite the identical nature of such stories as evidence of their truth despite no other supporting evidence.

The Federal Bureau of Investigation's Ken Lanning, a child-abuse specialist, has pointed out that the cult survivors currently on the talk-show circuit didn't parade their claims until after the publication of Smith's book in 1980. In fact, he couldn't locate any contemporary survivor stories before that year.

Urban Legend

Perhaps MPD sufferers—as uncommon as they are—have borrowed the symbolism of satanic trappings from lurid novels, movies, and television (since the rituals never involve historically accurate, arcane ancient rites) to represent a fear deriving from an abused childhood. Perhaps again, they meld urban legend motifs into their personae. The focus, however, of any scientific inquiry into the spread of satanic stories among MPD sufferers should equally target therapists. Anthropologist Sherrill Mulhern of the University of Paris has studied therapist-patient interactions in the cult survivor cases.

At the National Conference on Child Abuse and Neglect (Salt Lake City, Utah, 1989) Mulhern said:

> When one concentrates the research focus on discovering the specific ways in which therapists come to "believe" in the reality of satanic/ritual abuse, one immediately uncovers a remarkable myth-making network of therapists, patients and investigators blending together specific idiosyncratic data into one a-temporal, analytic grid. I say this because, when one examines specific adult survivor stories, it becomes immediately apparent that initially patients were not saying the same things but came to say similar things over time.

To Mulhern, the satanic model that has emerged at conferences of therapists, police, and cult survivors is the four-tiered homogenization of satanism obtained "through hours of networking" between the various professionals, "the whole thing sustained by deeply held religious beliefs. What they describe bears little resemblance to the kinds of things that an expert in religion . . . might present."

The Matamoros Drug Incident: Where's the Satanism?

The Matamoros drug killings in northern Mexico last spring have fueled cult seminar interest, despite the incident's absence of satanism. In early April 1989, when the news accounts first appeared about the discovery of bodies on a Mexican ranch near the Texas border, the Associated Press dubbed the killings "satanic," an adjective that graced many newspaper headlines for weeks. Information concerning the murders continues to be ambiguous because we have depended on second- and third-hand sources. We do not know much of the backgrounds of the murderers, and their statements had filtered through weeks of interrogation before their Mexican police-contrived public display before the press. In all likelihood, the so-called cult members come from the same background as those recruited for other criminal activities: gun and stolen vehicle running and herding illegal aliens into the U.S.

Where does the satanic label come from? Rex Springston, a reporter for the *Richmond News Leader*, decided to trace the label (personal communication, 1989). In talking to the American investigators cited in the news releases, he learned that two had initially classified the murders as satanic. But as soon as the two investigators visited the site, they both—Oran Neck, a customs official, and Rafael Martinez, an anthropologist—disclaimed the satanism. But the Texas attorney general's assistant responded that the attorney general, Jim Mattox, might have used the label early in the investigation (indeed, the attorney general quite liberally used it, as Pat Pulling documents in her book, *The Devil's Web*, 1989). Officials now think that most of the murders victimized rival drug dealers, not

I suggest that a partial explanation for the spread of satanic cult stories among MPD patients and their therapists can be found in folklore research. In particular, people tell stories, and they tell them under different motivations, to different audiences, with different calculated effects. The relevant folklore terms, all of which have specific meanings and imply specific dynamics at work within populations, include rumor, rumor-panics, urban myths and legends, subversion tales or myths, and mass hysteria. For the remainder of this article I explore how some of these terms apply to the satanic stories.

Stories of ritual abuse (that is, abuse committed incidental to a ritual as a form of propitiation, as cult officers use the term) present no new phenomena, as folklorist Jan Harold Brunvand has described in his popular books about urban legends, *The Choking Doberman* (Brunvand 1984) and *The Mexican Pet* (Brunvand 1986). In fact, stories of abduction and mutila-

innocent people snatched off the street (Applebome 1989).

According to current thinking, the drug-gang leader, Adolfo de Jesus Constanzo, like Charles Manson, gathered whatever symbolism and ritual he could to intimidate rivals and his own lackeys. He invented his own symbology (not a belief system, as mistakenly reported) to offer his workers protection that he was in fact powerless to provide in order to convince them to risk their lives in the drug trade, where the monetary rewards for most are meager. In short, Matamoros represents violence associated with drug dealing. No evidence exists—at least among the details of the incident that have been made public—of any participation by Constanzo or his group in satanic activities, involvement with a satanic conspiracy, or human sacrifice to propitiate the Devil. Nor do Constanzo's rites belong to Afro-Caribbean religions, such as Santeria or Palo Mayombe, from which he contrived his own brand of ritualism. By April 17, almost one week after the first reports of the killings, even most newspapers had begun to focus on the incident as drug-related, not satanic (Applebome 1989).

Although the Matamoros story is far from over, some cult officers still misrepresent the events, thus aiding and abetting urban legends. Virginia Beach police investigator Don Rimer gave a seminar citing the Matamoros killings as satanic. The officer was quoted in the newspapers (Crocker 1989) as saying that the Matamoros killings "prove that human sacrifices by Satanists are not simply 'urban myths.' "

" 'Now, those people who talked about the 'urban myth' and asked, 'Where are the bodies?' are silent," the officer said to a citizens' group. But the Matamoros business displaces nothing about urban myth, proves nothing about satanism, and should be properly viewed in the context of Mexican border drug-running and its associated violence.

R.D.H.

tion or murder of children pervade Euro-American history and mythology. Recent scholarship has produced a study of the phenomenon of child abduction and murder in Reformation Germany, stories identical to those of today, except that the scapegoats were Jews, not shadowy satanists (Hsia 1988).

According to Brunvand (1986: 158), legends "are prose narratives regarded by their tellers as true. . . . They are . . . set in the less-remote past [than myth] in a conventional earthly locale." Satanic legends enter the fray as migratory tales, i.e., stories "widely known in different places," possibly in cyclical fashion (or several narratives similar thematically). Particularly, "urban legends . . . often appear to be 'new' when they begin to spread, but even the newest-sounding stories may have gone the rounds before. A 'new urban legend,' then, may be merely a modern story told in a plausible manner by a credible narrator to someone who hasn't heard the story before, at least not recently

enough to remember it" (Brunvand 1984: 4-5).

Stories of cult activities by satanists have never before entered the experience of police officers and, when related by seemingly credible witnesses, some officers suspend empiricism and *believe.* Brunvand further details the process by noting, "Most urban horror legends, however, combine fully fictional plots with a credible setting and realistic characters to anchor themselves to supposed real-life events" (1984: 73). Shorn of modern settings, the urban legends are reducible to motifs which, "in folklorists' jargon, are traditional narrative units—such as characters, objects, or actions—that serve as the building blocks of folk stories" (p. 31). In fact, the standard guide to older motifs (Thompson 1955) catalogs elements of witches' sabbaths, ritual murder and mutilation of children, children abducted by or sold to the devil, as well as a legion of plots involving the devil, hundreds of motifs that show up in cult seminars, deriving from Europe, America, and even Africa, the Philippines, and Indonesia. Brunvand chronicles many motifs that appear in new urban legends, including attempted abductions of children from shopping mall restrooms; assaults on young boys that result in castration; kidnaping of girls into prostitution rings.

Some police officers perpetuate new legends without taking the time to verify them. For example, a spurious police circular found its way through South Carolina telling of an LSD-impregnated Mickey Mouse decal endangering children (Brunvand 1984: 162). The Pendleton, South Carolina, Police Department even warned the community about the transfers. The same story, with the same anonymous police circular, recently traveled throughout New Jersey, alarming citizens and police (Kolata 1988). Rumor, hysteria, and urban legends are easy: simply combine the right ideological leaning with fear and facile explanations for otherwise unpalatable occurrences.

Police Legends

The police have demonstrated susceptibility to cult-seminar hysteria by fomenting rumor-panics and urban legends. The Allenstown, New Hampshire, incident is an example. (See box on p. 381.)

A similar incident occurred a few years back in Brown County, Indiana. A New Age group called the Elf Lore Family (ELF) arranged to have a public gathering at a public park. ELF posters around town mentioned camping, feasts, dancing, "New Age workshops," "bardic tales and tunes," and other events. Many of the organizers described themselves as witches and even distributed "witchcraft fact sheets" to explain their beliefs (Guinee 1987). So far, no problem. But by the time of the ELF weekend gathering, a local church group had planned a strategy to proselytize the ELFers, and the local sheriff's department became involved through a deputy who had attended a cult seminar given by two Indiana state police officers, both self-proclaimed experts, who had in turn received their information from cult consultant Dale Griffis.

Following the weekend, the local newspaper reported the event under the title, "Satanic Rites Held at Yellowwood Forest," the article discussing animal sacrifice, drinking blood in rituals, nude dancing or dancing by people in "devil-like costumes," and eating raw flesh. The news reporter used only one source for the article: the deputy sheriff. Neither a local Baptist minister nor the park conservation professionals

nor the ELFers could corroborate the sensational claims of the local sheriff's department. The article dutifully noted, though, that the sheriff's department "could not stop the satanic rites because of the Constitutional right to freedom of religion that protected the worshipers."

But the ELFers were not satanic. The seminar-trained police spent considerable time and effort watching the ELFers simply because they were not Christians, thus creating the satanism. The sheriff's department, by feeding information to a gullible journalist, created a new legend; the news article then becomes a cult-seminar handout proving the existence of satanism. An Indiana University folklorist who documented the event noted, "The influence of second-hand opinions proved especially strong among the law enforcement element" (Guinee 1987: 2).

Subversion Myth and Anxiety

But urban legends can be more than twice-told tales. Sociologist David Bromley (1989: 2) extends the urban legend even further: he has described a narrative form, the subversion myth, which responds "to perceived breakdowns in the social order." Subversion myth reflects social tension. These narratives deal with the tales of cult survivors and others who fear satanic cults—but with a purpose. "They function as cautionary tales which in a metaphorical sense sensitize audiences to the perils of raising children in a world filled with dangerous groups and events" (p. 25), in a world over which parents have little control. The stories, then, "constitute a significant cultural form through which social disorder is confronted and symbolically contained."

Coupled with a collective readiness to *believe*, the myths present threats that menace not only people but an entire way of life, our governmental institutions immobilized because of constitutional guarantees of religious liberty, even extending to satanists. Subversion myths include certain ingredients: description of a danger, identification of a group of conspirators and their pernicious motives, a process by which conspirators manipulate the unwary to do their bidding, the actual threat to society, plus the remedy that citizens must pursue (Bromley 1989: 13).

Another sociologist, Jeffrey S. Victor (1989), examined a localized panic that resulted from rumors of satanic cult activities in parts of Pennsylvania, Ohio, and New York, a situation he likened to a "collective nightmare." (See also his article in the Spring 1990 SKEPTICAL INQUIRER.) Throughout this broad territory, rumors of meetings, animal killings, ritual drinking of blood, and an impending sacrifice of a "blond, blue-eyed virgin" culminated "in a peak of hysteria on Friday the thirteenth of May," 1988. In this case, the Jamestown, New York, Police Department acted with remarkable perspicacity and restraint and forestalled potential violence. Among other events, rumors led more than a hundred citizens to show up at a supposed ritual site, armed and ready to confront the (nonexistent) cultists. Another rumored cult site, a warehouse, suffered thousands of dollars' worth of vandalism. Many parents kept their children from attending school.

Victor did not find the rumor-panic a sudden development. Similar to Bromley's explanation of subversion myths, the New York rumors of cults provided "symbolic meaning, however false, to an evolving collective myth. That myth offered a ready-made explanation for ambiguous, unclear sources of collective anxiety" (p. 35).

In particular, as Bromley also suggests, the "rumors can be interpreted as cultural metaphors for the loss of the family function to protect children" (p. 37). In short, the elements of urban legends about satanic doings tell a story of the dissipation of values most Americans describe as "traditional" and therefore cherished.

Conclusion

Certainly the subject of urban legend requires more insightful academic study to identify the satanic metaphors, and their systematic and sometimes predictable usage, and to explore people's readiness and willingness to *believe*. Particularly useful to law enforcement would be an insight into how collective myths become very personalized ones, as in the case of cult survivors.

A cult survivor's story *might* be true. But a police investigator must be an empiricist and not *believe* a survivor's claims, as Pazder does, simply because her (or his) story *sounds* authentic. To be sure, the investigator must consult with physicians and psychologists, but he or she cannot ignore the possibility that cult survivors have other motivations to tell satanic stories. Some have psychiatric disorders that may make borrowing satanic trappings easy and attractive. Others may seek public attention. Officers must reckon with the nature and longevity of the patient's past interaction with a therapist.

It is important, though, for investigators to remember the historical context of such stories: people throughout history have sought scapegoats for misfortune or the banality of living, as a response to stress. The stories invoking satanic cults have *not* changed—apart from the settings—in centuries.

Abuse of children and teenagers does exist. Some people also commit violent crimes while invoking the power of Satan. Such people may not necessarily act alone but in concert with others. But law enforcers cannot demonstrate the existence of a widespread satanic conspiracy: the evidence doesn't exist.

In postulating a self-contradictory model of cults and crime, law enforcers have assumed the role of religious polemicists of recent years:

> The Satanic literature has been carried almost totally by the imaginative literature of non-Satanists—primarily conservative Christians who describe the practices in vivid detail in the process of denouncing them. . . . The Satanic tradition has been created by generation after generation of anti-Satan writers. (Melton 1986: 76)

Law enforcers must not beguile themselves into believing satanic conspiracy theories and conducting surveillance of and records-gathering on people who have shown no criminal involvement. As the FBI's Ken Lanning (1989: 77) has observed:

> What is the justification for law enforcement officers giving presentations on satanism and the occult? . . . Is it public relations, a safety program, or crime prevention? If it is crime prevention, how much crime can be linked to satanic or occult activity and what do such presentations do to prevent the crime? Law enforcement agencies should carefully consider the legal implications and justification for such presentations. Is the fact that satanism or the occult is or can be a negative influence on some people enough justification for such law enforcement efforts?

Law-enforcement investigators must remove the "cult" from cult

crime and do their jobs accordingly. "Bizarre crime and evil can occur without organized satanic activity. The law-enforcement perspective requires that we distinguish between what we know and what we're not sure of" (Lanning 1989: 80).

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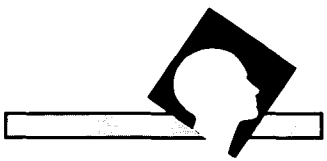
Order Out of Chaos In Survival Research

ARTHUR S. BERGER

A few weeks before Joseph B. Rhine died in 1980, I visited him at his big old house in Durham, North Carolina. As we talked, with his wife, Louisa, silent but attentive in the room, it was plain that in spite of his failing hearing and near blindness his mind was still active. During our conversation, he talked about his desire to see action during World War I and how he tried to enlist in the Army. He was turned down because of his defective hearing and poor eyesight. He applied to the Navy and was again rejected. When the Marine Corps refused him because of his hammertoes, he challenged the Marine doctor to a hike—and a Marine uniform was his.

When I wrote my biography of Rhine (Berger 1988a), I included this story, because to me it illustrates Rhine's enormous determination and his iron will, the very qualities he needed to introduce parapsychology to America. He gave parapsychology its terms, its concepts, its theories, and its test procedures, and he endeavored, against much incredulity and skepticism, to endow his work with scientific status. Because of Rhine, *parapsychology* has become a household word in the United States, and mistakenly and through misunderstanding, has come to be used interchangeably with, or in preference to, the term *psychical research*. This usage implies a failure to realize that each discipline occupies a different investigative area.

To impress scientists, Rhine established parapsychology as an experimental and quantitative inquiry into psi in the laboratory. Psychical research, on the other hand, is a qualitative inquiry and includes the collection and evaluation of reports of spontaneous cases, including mediumship. Today, Rhine's succes-



Research into reincarnation and survival is confused and chaotic. Investigative and judicial bodies made up of respected members of the psychical research and skeptical communities have now been formed to bring some order to the situation.

sors, who share his hope of impressing science with laboratory experiments and statistics, have largely ignored this qualitative side. But it should not be ignored. Spontaneous cases provide a natural field of study of alleged telepathic and related phenomena as compared to the artificial conditions of the laboratory. And only the spontaneous cases—apparitions, dreams, hauntings, out-of-body experiences, mediumship, and claims of reincarnation—bear upon the intriguing, highly emotional, and still absolutely unresolved question of whether human consciousness continues beyond bodily death in discarnate or reincarnated form.

It is important, therefore, that reports of spontaneous cases be investigated and evaluated, but with the proviso that such investigation and evaluation be done in a way that will discover if they give convincing evidence of the survival of the consciousness of, or the reincarnation of, a deceased person. The key word is *convincing*. It is because this essential element has been missing that there is a wide difference of opinion concerning the true worth of previous investigations and evaluations. The vast majority of the most important investigations that seem to have supplied evidence for, or at least that have been suggestive of, survival after death or reincarnation have been mainly one-man shows. The past gives us plenty of examples and they still abound today: Sir William Crookes's investigations of the physical mediums Florence Cook and D. D. Home; Richard Hodgson's investigation of the mental medium Leonora Piper; James H. Hyslop's investigation of the mental mediums Mrs. Chenoweth and Mrs. Smead; the Reverend C. Drayton Thomas's sittings with the mental medium Gladys Osborne Leonard; Gustav Geley's experiments with the physical medium Franz Kluski; Harry Price's investigation of Borley Rectory, which has been called "the most haunted house in England."

The Golden Age of mediumship ended more than 50 years ago, and

haunted houses like Borley Rectory are not much in fashion anymore. Nevertheless, the parade of modern investigators and their different claims of telling evidence continues: L. Stafford Betty wrote of his investigation of a poltergeist case in which he concluded that a deceased person was the agent (Betty 1984); I reported an experiment of the cross-correspondence type that was suggestive of survival (Berger 1987b); Karlis Osis claimed that experiments in out-of-body experiences supported the hypothesis that the human being has an ecsomatic aspect capable of separation from the body and independent operation outside it (Osis and McCormick 1980); George Meek claims to have electronic proof of survival of death based on instrumental communication with the dead (Meek 1982); D. Scott Rogo maintains that phone calls from the dead have been received (Rogo and Bayless 1980). All these claims relate to discarnate survival.

Because of the work of Ian Stevenson, some people think there is proof of another form of survival—reincarnation. Belief in reincarnation is a vital element of Hinduism and is accepted by the great majority of the people of India; and although apparent cases of the phenomenon have been reported in India for centuries, they were never empirically investigated until Stevenson's pioneering efforts. As a result of his studies of young children in India and elsewhere who claim to remember prior lives, Stevenson claims that the most probable explanation of many of these cases is not ESP or possession, but reincarnation.

Now, although each of these investigators differs from the others in the methods he uses and in the kinds of phenomena with which he deals, all have one thing in common. In effect, each asks us to trust in his statements implicitly and to rely on his procedures, observations, and conclusions. But we don't know whether any particular investigator is sane, honest, objective, or competent, or whether he is fraudulent or has been deceived.

The history of parapsychology and psychical research contains several chapters in which the real character of the investigators has been unmasked. In parapsychology, Walter J. Levy, whom Rhine made director of his Institute for Parapsychology, was discovered doctoring data (Rhine 1975). S. G. Soal, a respected mathematician and experienced experimenter, was also shown to have manipulated data (Markwick 1985). In psychical research, Crookes, the eminent scientist, has been accused of using Florence Cook's fraudulent séances in order to cover up and maintain a sexual liaison with her (Hall 1962). Geley, a medical doctor, has been charged with suppressing the medium Eva C.'s fraud (Lambert 1954). Harry Price was taken to task for deliberate fraud in the Borley Rectory investigation (Dingwall, Goldney, and Hall 1956). Even Hodgson, whom I have held up as an excellent example of the critical and careful psychical researcher (Berger 1988a), has been accused of emphasizing evidence that favored his conclusions and underemphasizing that which did not (Thouless 1968). In Stevenson's case, no accusation of wrongdoing has ever been made. Yet some personal bias may have crept into his investigations; there may have been a judicious selection and presentation of positive data in order to support a personal belief in life after death. Other defects in his investigations exist as well (Berger in press).

It seems clear that no marvelous phenomena uncovered through the work of any one investigator are

acceptable unless verification has been received from other independent investigators. Repetition or confirmation of a phenomenon or conclusion can provide the power to convince that has been missing by vastly increasing the chances that it is valid and untainted.

Although Rhine tried with all his might to make ESP and PK acceptable to science, he admitted to me that he had failed. Indeed, the situation is even worse today than when I spoke with him, because attacks against parapsychology have mounted steadily since the founding of the Committee for the Scientific Investigation of Claims of the Paranormal. I have written elsewhere that parapsychology is "an outpost under siege" (Berger 1988a). It is in a confused and chaotic state, as both external critics, such as C. E. M. Hansel (1966; 1980) and Ray Hyman (1986), and internal ones, such as Charles Akers (1984) and Susan J. Blackmore (1986), attack its experiments in extrasensory perception and psychokinesis on grounds ranging from methodological and statistical flaws and failure to preclude sensory cues to the charge that subjects and experimenters have cheated.

They have good reason for suspicion and skepticism. A case in point is Soal's experiments with Basil Shackleton between 1941 and 1943. They were the most famous ever conducted on British soil and were looked on for decades as fraud-proof and the most convincing evidence of ESP ever produced. Yet evidence of Soal's fraudulent manipulation of data has been uncovered. The lesson here is that a fraud-proof experiment in the laboratory or a fraud-proof investigation in the field does not exist, and we have to be skeptical about claims or results unless independent experimenters or investigators are able to confirm them.

Since scientific and academic circles refuse to waste time on survival and reincarnation, little notice has been taken of the fact that in psychical research the situation is no less confused and chaotic than it is in parapsychology. Confusion and endless and pointless disagreement run rampant. In case after case, old as well as new, armchair critics who review them find all sorts of defects in the way investigators have conducted investigations, from poor methodology to poor, distorted, or dishonest reporting.

Even when two researchers are working together to investigate the same facts in the same reincarnation-type case, they cannot agree. For example, Rakesh Gaur was born in 1969 in Rajasthan, India. When he was five years old, he told his parents that he had lived a prior life as a carpenter in a place called Tonk, some 225 kilometers away, that he had been married to a woman named Keshar, and that he had been electrocuted. When the child was taken to Tonk, he recognized the widow and son of Bithal Das, a carpenter who had been electrocuted in 1955. Two investigators interviewed the child, the parents, and interested witnesses, and made a record of all statements and checked and verified them by interviewing all the people who said they had known the dead carpenter. In the end, the two investigators sharply disagreed on how the case should be interpreted (Pasricha and Barker 1971).[1]

Nothing is settled; there is no consensus on any case or on the database for survival and reincarnation. After a hundred years of investigations, the situation is best described by recalling a series carried some years ago by American and English television called "The Long Search." In one of the programs, originating from Jerusalem, a rabbi

was asked whether Jews are argumentative people, he replied, "Where you find two Jews, you'll find three opinions." Similarly, among those psychical researchers who are interested in survival and reincarnation, there are three opinions. One is that the investigations in these areas are all flawed and fall far short of proof; a second is that they furnish clear-cut or at least suggestive evidence; a third opinion, often voiced by Gardner Murphy, is that one cannot believe or disbelieve and that the whole matter rests on dead center.

Order Out of Chaos

In the belief that the time has come for taking steps to try to untangle this web and establish some kind of order, an investigative group and a judicial body, both of which will deal with the question of the cogency of survival and reincarnation cases, have been formed by the International Institute for the Study of Death (IISD), a multidisciplinary and multicultural organization formed to throw light on many aspects of death, including the possibilities of survival and reincarnation (Berger 1987).

Task Force: A task force of investigators will conduct independent and impartial inquiries into all cases "suggesting" or supplying substantial evidence for survival or reincarnation. The IISD will encourage investigators to refer their cases to the task force for either joint investigation or reinvestigation. The IISD may also refer cases coming to its attention and meriting investigation. The purpose of the task force is to determine whether the phenomenon reported actually occurred, if it was correctly reported, and whether it can best be explained by survival or reincarnation or by an alternative normal theory or an alternative paranormal one. An interpretation of a case as suggesting or demonstrating survival or reincarnation can be given only after normal or other paranormal interpretations have been ruled out. Guidelines for such critical evaluations (Berger 1988b) would include the examination of the testimony of witnesses, written documents, and all circumstances surrounding a case and would require cross-examination of witnesses and corroboration from witnesses or other sources. After the conclusion of its investigation, the task force will present its findings to a panel of judges in an evenhanded way with arguments and counterarguments.

Tribunal: After the completion of inquiries and presentation to the tribunal of findings and opinions by the task force with full opportunity being given to an investigator whose case is being examined to present his side, the panel of judges will examine all spontaneous cases of apparent survival or reincarnation brought before it. The tribunal will decide impartially and authoritatively all questions relating to the cases in order to present to the world a just interpretation of the facts. The tribunal consists of independent and eminent scientists and scholars who support the aims of the tribunal and have been invited to serve by the IISD. Some members are from the psychical research community and some, such as Paul Kurtz, are from the community of skeptics and critics outside psychical research.

I would be less than candid if I did not confess that the concept of a tribunal has been challenged by some people. These Doubting Thomases believe that it is a naive delusion that the perennial controversy over the survival hypothesis can ever be re-

solved. This objection brought home to me once again that the subject of survival is highly charged with emotions, hopes, and fears and can cause even rational people to act irrationally and to create a dogma or argument to hide behind in order to avoid it.

I do not see how or why the role or function of the tribunal set up by the IISD to decide the dispute over survival and/or reincarnation is any more difficult or different from the functions of many other types of judicial and nonjudicial bodies that handle and decide every day all kinds of complex matters in criminal and civil courts, administrative agencies, and commercial and labor arbitration.

Suppose that someday in the future a case comes to the court whose evidence for the reality of survival or reincarnation is enough to convince the tribunal. The widely held Western assumption that at death we are extinguished like a candle would be overturned. William James once said: "If you wish to upset the law that all crows are black, you must not seek to show that no crows are; it is enough to prove one single crow to be white." Such a case would be the white crow of survival. But lest there be any misunderstanding, it is not the role of the tribunal to look for such a case in order to support the survival hypothesis. If there are no convincing cases, the tribunal will say so and if all its decisions are negative and do not confirm that hypothesis, one justifiable conclusion would be that such negative data drive additional nails into the coffin of the hypothesis.

Conclusion: After a case has been investigated by the task force, after positive and negative data and criticisms and countercriticisms have been presented by advocates and devil's advocates to the tribunal and the tribunal has ruled on the case, we hope to have the highest standard of evidence that can be applied to a case and to have received the most informed opinion. The determinations made by a panel of judges ought to be regarded with confidence that they are a fair and just exposition of a case and should have a binding authority. They should command more attention and respect than all the reports and findings of individual investigators and all the criticisms of reviewers of their work put together.

A series of such decisions over the next decade should either bring us evidence of survival and reincarnation so convincing that the scientific and academic worlds cannot ignore it or show us plainly that our present methods of investigation have provided no empirical basis for the survival or reincarnation hypothesis. In either case, the investigative and judicial bodies should help bring more order and make more progress in an area where neither exists today.

Note

1. In this case, Pasricha believed that Rakesh Gaur knew a great deal about Bithal Das before going to Tonk and that he probably acquired this information paranormally although it was not necessarily a case of reincarnation. Barker perceived no paranormality at all and thought the case was only a product of the widespread belief in India of reincarnation. Although Rakesh Gaur had made a few general statements about a prior life before going to Tonk, the recognition tests he passed there and what he did and said there could have been the result of being supplied with cues. Apart from this, I believe that the case is extremely weak. It suffers from the defect that the child's parents did not keep a written record of the child's statements about a prior life and the case depended on the ability of witnesses to remember.

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Piltdown, Paradigms, and the Paranormal

KENNETH L. FEDER

Pseudoscience is a polymorphous enterprise; the range of pseudoscientific claims is enormous. The world would be far different from what orthodox science supposes if there were substantive validity to the assertions of psychics, astrologers, clairvoyants, past-life therapists, UFOlogists, ancient-astronaut enthusiasts, dowsers, creationists, pyramidologists, crystal boosters, faith healers, and the holders of myriad other beliefs in the paranormal, occult, and supernatural.

The claims made by the proponents of these various phenomena or perspectives are more than merely extreme. They, to varying degrees, fundamentally challenge existing paradigms—the ways we view the world around us or some specific aspect of the universe or reality. Within the framework of scientific discourse, however, it cannot be said that the claims made by parapsychologists and occultists are impossible simply because they sound improbable or because acceptance would alter the way we view reality. Certainly concerned scientists need to assess individual cases. The pages of this journal have seen many successful attempts to show specifically *why* some of these claims are pseudoscientific.

The Piltdown case provides an excellent model for how science deals with claims that purport to topple existing paradigms.

As Al Seckel (1989) has pointed out, however, refuting or debunking individual claims, though important, is simply not enough. There are always other claims. Refuting the myth of the Bermuda Triangle, for example, does not necessarily lead to a recognition of the pseu-

doscience in UFOlogy or claims of ancient astronauts.

Perhaps it is just as important, for those of us committed to skeptical inquiry, to show how science works, how it handles new, revolutionary claims, paranormal or otherwise. We need to ask: On what basis do our paradigms in science stand or fall? In so doing, we can show that scientists handle the claims made in pseudoscience no differently from the way they treat other claims that challenge current understanding of the universe.

On this topic, the early history of human evolutionary theory provides an excellent model for how science deals with claims that purport to topple our existing paradigms. I present it in the hope that others might find it useful in their discussions of the nature of scientific reasoning, especially when scientists are faced with emotional adherence to particular views, wishful thinking, or outright deception.

Upright Apes or Four-legged Humans?

After the publication of Darwin's *Origin of Species* in 1859, many thinkers applied the idea of natural selection to a species that Darwin did not focus on in that work; they applied Darwin's theory to human beings. With very little fossil evidence to go on, they constructed a plausible scenario.

Biological taxonomists had long recognized the physical similarity between humans and other primates, in particular the apes. What most differentiates humans from other primates is our intelligence, made possible by large and very complex brains. The human brain was the aspect of our species that appeared to be the most changed—the most highly evolved—when compared with some hypothetical species ancestral to us and the apes. Our intelligence, it was argued, must therefore have begun to evolve before other of our uniquely human traits. So, fossil ancestors of our species were expected to show development of a humanlike brain first, with an apelike body lagging behind evolutionarily. As writer Charles Blinderman points out, such researchers as English anatomist Grafton Elliot Smith were quite explicit in predicting the discovery of human ancestors with large brains and primitive bodies (1986:36). Later, Smith went so far as to characterize early man as "merely an Ape with an overgrown brain" (1927:105-106). The paradigm of brain-centered evolution suited the sensibilities of the late nineteenth and early twentieth centuries: if we were indeed cousin to the ape, at least it had been our brains that first distinguished us from our common ancestor.

The fossil record, however, was not sympathetic to this scenario. The Neandertal finds in the second half of the nineteenth century and the discovery of Java Man in 1891 both showed a fossil ancestor virtually modern from the neck *down* and primitive from the neck up—the reverse of the expectation. Needless to say, this caused some confusion among researchers. Some initially tried to explain away these inconvenient data. For a time, Neandertal reconstructions were fudged to make them appear more apelike. As evidence mounted, however, and as committed as some were to the paradigm of brain-centered evolution, many adopted a paradigm in which upright posture significantly predated development of the modern human brain. They didn't like it, but they had little choice; it was what the evidence showed. The view that

humanity began its evolutionary history as an upright ape rather than a four-legged human became increasingly popular at the end of the nineteenth and beginning of the twentieth centuries as more and more fossil evidence seemed to confirm this perspective.

Thus was the stage set for the announcement published in the British journal *Nature* on December 5, 1912, of the discovery of an important human fossil in Sussex at a place called Piltdown, in southern England. (See Weiner 1955, Millar 1972, and Blinderman 1986 for detailed treatments of the Piltdown story; see also, Feder 1990.) The discovery consisted of a skull and lower jaw that seemed to confirm, not the prevailing, but the original paradigm; the cranium itself seemed indistinguishable from that of a modern human but the jaw was quite primitive and apelike (Figure 1). This fossil appeared to date from a geological period earlier than that ascribed to Neandertal, and at least as old as that of Java Man.

Many researchers, some quite well known, seized upon the discovery at Piltdown. They saw Piltdown Man—which was called *Eoanthropous dawsoni*, or Dawson's Dawn Man, after its discoverer, Charles Dawson—as the true human ancestor. The Java and Neandertal specimens with their more primitive brains were viewed, therefore, as extinct offshoots of the main line of human evolution in which *Eoanthropus* stood at the base (Figure 2). Thus, at least for some, the older and preferred paradigm seemed reestablished; in human evolution it had been the brain, after all, that evolved into the modern form first, with the body, virtually from the lower jaw down, playing evolutionary catch-up later on.

Clearly, *Eoanthropus* would overturn the existing paradigm that had

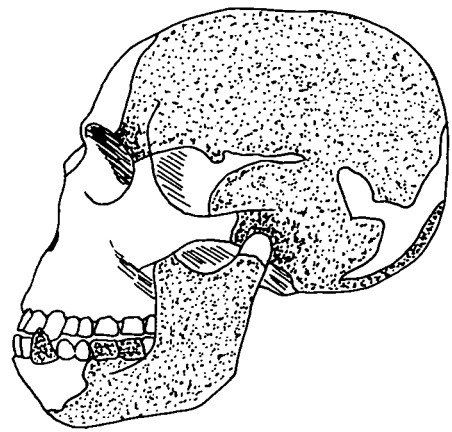

FIGURE 1. Reconstruction of the Piltdown skull. Stippled areas represent fossil fragments actually recovered. The cranium is large, with a round profile and steep forehead, as in modern *Homo sapiens*. The jaw, on the other hand, is quite apelike, with no chin and a shape that required a prognathic (forward thrust), apelike face.

seemed to be so well supported by fossil evidence accumulated over about 50 years, but only if subsequent research provided additional support for the notion of a brain-centered focus for early human evolution. One bit of enigmatic data, no matter how apparently compelling, cannot cause us to abandon well-supported views of human evolution—or, I might add, cosmogeny or human perception.

The years following Dawson's discovery saw many looking for additional evidence in the form of fossils similar to *Eoanthropus*. The famous excavations at the Chinese cave at Zhoukoudian, in which some 40 individuals of "Peking Man" were discovered, were, at least in part, an attempt to validate the discovery at Piltdown (Shapiro 1974). Anatomist Davidson Black, of the Peking Union Medical College, who for a time led the excavations, apparently had been inspired to dig at Zhoukoudian by a

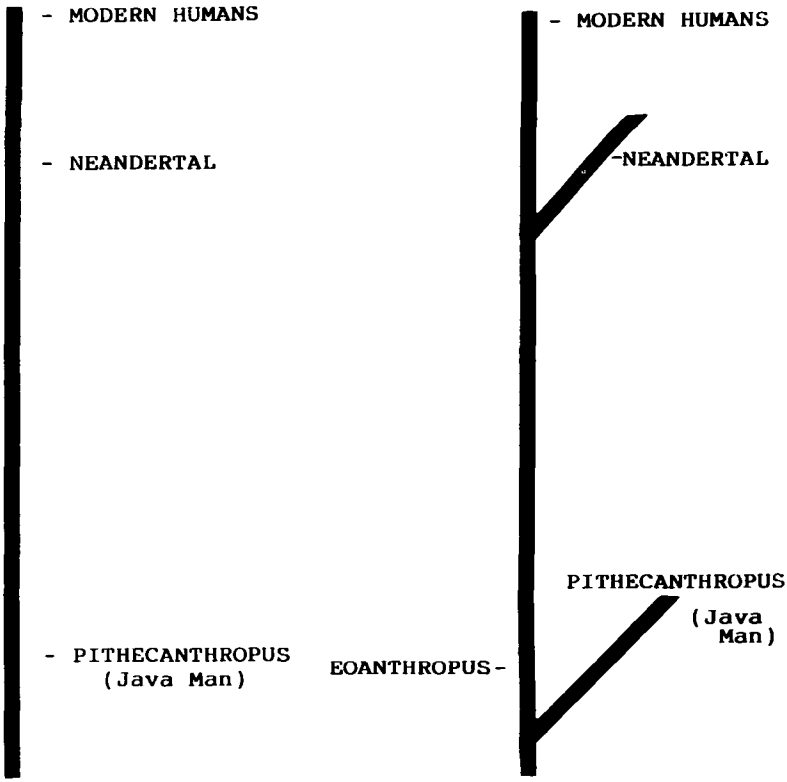

FIGURE 2. Without *Eoanthropus* (Piltdown Man), some placed *Pithecanthropus* (Java Man) and Neandertal in an evolutionary sequence leading directly to modern humanity (*left*). With *Eoanthropus*, many viewed *Pithecanthropus* and *Neandertal* as evolutionary dead ends (*right*). In this view, only *Eoanthropus* was directly ancestral to modern human beings.

visit to the lab of Grafton Elliot Smith, a well-known supporter of *Eoanthropus*. The Jesuit priest and paleontologist Teilhard de Chardin, who had excavated at Piltdown after its initial discovery, also worked at Zhoukoudian. So, when they started excavation there in the 1920s they were looking for the Chinese equivalent of Piltdown Man. They got, instead, fossils with humanlike bodies and brains just two-thirds the mean size of the modern human brain.

Interestingly, with so many looking for confirming evidence, only one researcher was able to find a fossil that seemed to mirror the Piltdown discovery and, therefore, support its interpretation. That researcher was Charles Dawson, the discoverer of the original. It did little to validate the initial discovery. It only raised questions at the same time his apparent incredible luck raised eyebrows.

As the search for anything vaguely resembling *Eoanthropus* progressed, data continued to accumulate supporting the existing paradigm. More Neandertal discoveries were made and more fossils resembling Java Man and Peking Man (now called *Homo erectus*) were found. Beginning in the late 1920s an even older, more primitive and smaller-brained hominid species was discovered in Africa. Called *Australopithecus*, it provided rather

forceful, further validation of the existing paradigm; this oldest of ancestral human fossils, then thought to be a million years old and now known to have varieties dating to more than 3.5 million years ago, possessed a brain less than one-third the modern human mean, but was fully upright. Even the earliest members of the genus are quite similar to modern humans from the neck down.

After the third decade of the twentieth century, *Eoanthropus* went from being a major concern of those interested in human evolutionary history to a cautionary footnote in evolution texts, where it went as an unexplained, enigmatic, anomalistic, and contradictory piece of data. This remained the case until a reexamination of the Piltdown fossil in the late 1940s and early 1950s showed that the modern-looking cranium and the apelike mandible were of entirely different ages, neither was particularly old, and the apelike quality of the lower jaw had a very simple explanation; it was, in fact, that of a modern ape and had been cleverly crafted to appear to fit the skull. Piltdown Man could overturn no paradigms. It was a fraud.

The Meaning of Piltdown

Many perceive the Piltdown story as a black mark against science. In fact, it shows how well science eventually sorts out frauds, mistakes, and wishful thinking. It clearly shows how science does react and must react when existing, well-supported paradigms are challenged by new data.

While lending apparent support for a cherished view of how human evolution had proceeded, Piltdown contradicted notions of human evolution based on a substantial body of data. Nevertheless, it could have been a valid discovery and could have served to overturn the existing, seemingly well-supported paradigm. But, as others have said before, extreme claims require extreme levels of proof or validation.

In the case of Piltdown, the claim challenged merely the existing paradigm of human evolution. This was significant enough and required an extreme level of validation—though, of course, none was forthcoming. In the case of, for example, parapsychology, existing paradigms in human psychology, neurology, anthropology, biology, and even physics are being challenged. So be it. Our paradigms indeed may be wrong, and the parapsychologists and the rest may be right, though it is significant that research conducted over the past hundred years has not shown this to the satisfaction of many scientists.

Moreover, the Piltdown story should put to rest the notion that science is inflexible and scientists closed-minded. Concepts concerning the pathways taken in human evolution changed and continue to change as evidence is collected. The changes in our views are not cyclical or random, but progressive. Though individual scientists may be swayed by personal biases, wishful thinking, or peer pressure, data cannot be explained away for very long. By and large, evolutionary scientists did not want to abandon a brain-centered view of evolution, but they did when evidence indicated that upright posture was much older than brain expansion. Some may have been fooled by Piltdown and returned to the brain-centered view of human evolution. However, with so much subsequent evidence supporting the view that humanity evolved, in a sense, from the ground up, Piltdown became trivial, even before it was finally proved fraudulent.

Paleontological skeptics in the early years of the twentieth century were certainly justified in asking for more than a single, seemingly inexplicable piece of evidence before evolutionary paradigms were rewritten. The scientific skeptics among us are similarly justified in asking for something more than has been provided before we overturn our view of reality. Until then, claimed evidence for ESP, telekinesis, clairvoyance, and the rest will remain the equivalent of *Eoanthropus dawsoni.*

Acknowledgments

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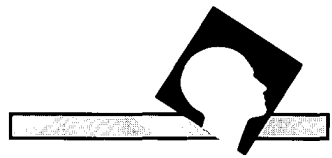
Auras: Searching For the Light

ROBERT W. LOFTIN



An investigation attempts to test the claim that a psychic can see auras around people.

Many people who claim to have psychic powers say they are able to see auras. Auras are said to be fields of light that surround human beings and, possibly, other living things. The standard theory is that these auras are internally generated fields of psychic force, that a person's personality can be identified by the color and form of his or her aura, and that auras change with a person's moods. In some occult literature charts can be found that claim to correlate different colors with different states of mind (Leadbeater 1925). In some cases, those who regard themselves as psychically sensitive advance their ability to see auras as evidence to support their claims (Garrett 1968).

The discovery of "Kirlian" photography was interpreted by many putative psychics as a vindication of their abilities (Ostrander and Schroder 1970). Claims that auras have been photographed are commonplace. One difficulty with interpreting Kirlian photography as evidence for auras was that *inanimate* objects also seem to have auras; therefore it was necessary to shift the claim somewhat. Either one had to maintain that *all* things, including rocks, nuts and bolts, plastic combs, and so on were surrounded by a field of energy or one had to interpret these photographic effects as artifacts, created by the process (Krippner and Rubin 1974).

Given that the Kirlian process is a complex one—an object is placed on a plate of sensitized photographic film, a weak electrical current is passed through the film, and when the film is developed the image appears—it seemed to me

that the effect was likely to result from *induced* electrical energy, not from electrical energy *emitted* by the object. The plausible and accepted explanation is that moisture on the objects modulates the electrical energy, causing the halo of light to appear on the developed film (Pehek, Kyler, and Faust 1976).

Yet it did not seem to me to be implausible that some people can see halos of light around living things. We know that living things *are* surrounded by fields of energy. Instruments can detect both the heat energy that surrounds living bodies and the magnetic field. It seemed at least possible that some people's eyes might be slightly sensitive to infrared (i.e., heat) waves, for example, causing them to see light around other people. We know there is a massive spectrum of electromagnetic waves, of which visible light is only a small band. Research fails to show human vision into the infrared; but since some people, such as the color-blind, are insensitive to frequencies others are sensitive to, it doesn't seem out of the question that a few others might be *more* sensitive than normal. Of course there is nothing in the least "occult" about this. If some people can see auras for this reason, there would be nothing "paranormal" or "supernatural" about it.

The other hypothesis I considered was that auras are not *internally* generated, but are the result of a visual defect in the person "seeing" the aura. To put it rather roughly, it occurred to me that if you can see auras, there may be something wrong with your eyes.

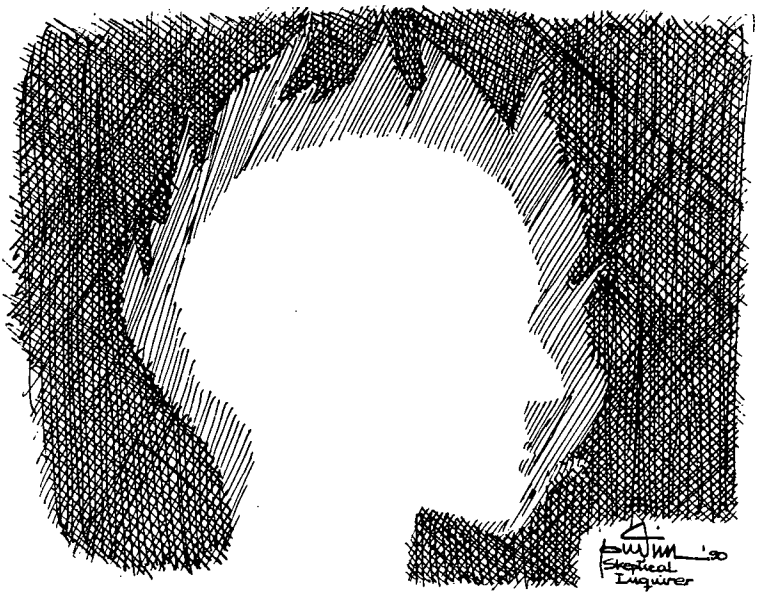
All this is mere speculation unless there are those who can see auras consistently. I devised an experimental test to ascertain if there are people who can. My basic idea was that, if auras are internally generated, they ought to be able to be seen in the dark. If the putative aura reader does not claim to be able to see them in the dark, this undermines the claim that they are internally generated.

I am assuming that those who claim to see auras are telling the truth. I believe that they are. The ones I have talked to have impressed me as entirely sincere. Some of them claimed no other psychic abilities of any kind. At least one person said he did not like the fact that he could see auras, found it quite a nuisance, and was not at all eager to talk about it. Since I think it is important to approach questions of this kind with an open mind, I assumed that the claims were made in good faith.

To test the ability, however, it was necessary to use the strictest scientific method possible. I had no grant money or fancy equipment; therefore I had to make do with what was at hand. The first requirement was a pitch-black room with entrances at each end and a "light lock" or double door at one end. I located a photographic darkroom that seemed ideal.

After finding a "psychic," a woman who agreed to be tested according to strict scientific protocol, I enlisted the services of a group of ten friends who were willing to act as subjects. My greatest fear was that somebody in the subject group would pass information to the psychic; therefore, I took great care to make sure that the subjects were *my* friends, rather than hers. I wanted a large pool of subjects to minimize the chance that a confederate in the subject group would pass information to the psychic.

The test was quite simple. The psychic would be introduced into the darkroom through the double doors, so that no light would enter the room. At the other end, there would be either one or two persons. The psychic would be given up to three minutes



to say how many auras she saw at the other end of the room. Since I wanted to avoid elaborate statistical tests, I did away with "nearly right" answers by stipulating that "one" and "two" were the only possible answers. Each answer, therefore, was completely right or totally wrong. I eliminated the alternative of sometimes having no subject at all to rule out the possibility that subtle cues, such as the sound of breathing, other low level sounds, smells, or any other such clues, might cloud the issue. Perhaps someone with abnormally keen ears might hear the difference between no person and one person. It seemed that it might be harder to discern the difference between one person and two from such cues.

To further cover subtle sounds in the room, I brought in two "white noise generators"—fans that emitted a low steady hum in the background to cover any noise emitted by the subjects.

The distance from one end of the room to the other was about 50 feet. To be sure that the psychic did not simply walk forward in the dark and touch the subjects or get close enough to pick up cues, I erected a low barrier between the psychic and the subjects. This was merely a piece of plywood clamped to heavy lab tables, so that one could easily see over the barrier yet climb it only with difficulty. As an additional precaution, I rested my hand lightly on the shoulder of the psychic during every trial so that I knew exactly where she was at all times.

I warned the psychic that the lights might be turned on unexpectedly in the middle of a trial. This would void that particular trial, but I found the possibility of sudden illumination of the room necessary as a curb to the use of any instruments, confederates, or some other aid. Since there were no other doors to the room I didn't think any such thing was likely; but I was not willing to assume that a clever person could not outwit me and think up something that had not occurred to me.

In order to rule out the possibility of remote radio transmission of information or something of the sort, the location of the experiment was

kept secret from everyone concerned except my trusted assistant. Until the trials actually started, only the two of us knew where they were to take place. The psychic was lightly searched before the experiment—nothing very thorough, merely looking in the ears for receivers, and looking at jewelry for evidence of electrical equipment. None was found.

On the afternoon of the first series of trials, my assistant and I spent several hours light-proofing the darkroom. Working with heavy black paper, black paint, and heavy tape, we carefully covered every possible source of light leaks. I expected that a photographic darkroom would be light-tight, but that was not the case. We found many pin-point sources of light, such as cracks around the doors, and each of them was carefully covered. We had no meters to measure light, but since I have excellent night vision, I was confident that my eyes were probably more sensitive to light than any but the most elaborate and expensive equipment. When I could see no light at all with my naked eye, I was satisfied. I was assuming that if I couldn't see any light, no one else could.

Chance expectation would be 15 hits out of 30 trials. If the psychic got 20 hits out of 30 trials, it would be significant at the 95 percent confidence level. In other words, if we did this experiment 100 times, the psychic would get 20 right answers by pure chance only 5 times. Ninety-five times out of 100, the psychic would get fewer than 20 hits by pure chance. A simple coin-toss by my assistant determined whether one or two subjects were admitted to the far end of the room. After they entered the room, they were told to stand quietly. The subjects were rotated in a regular order so that the same person did not serve as a subject too often, to minimize the effect of a possible confederate in the subject group.

The lab happened to be fitted with an alarm system to warn photography students so they could avoid having their film exposed by stray light. When the back door was opened, the alarm rang loudly and continuously until the door was closed. This sound effectively masked the footsteps of the subjects entering the lab and let the psychic and myself, waiting outside, know when the subjects were in place.

Before the first series of 30 trials, the entire group assembled at a location remote from the lab. The psychic was asked to answer a series of questions, including:

1. How do you feel tonight? Is there any reason that we should not go ahead? If so, we will postpone the series until another night. (I was fully prepared to do so, even though this would have been frustrating to the volunteer subjects.)

2. Do you know any of these subjects? Have you ever communicated with any of them before on any subject whatsoever? (The subjects were asked the same question. Anyone who said "yes" would have been eliminated.)

3. Do these subjects have auras? Can you see them now?

4. Do you intend to receive any information of any kind from these subjects or any other person whatever, other than the instructions I give you during the course of the experiment? (The subjects were asked if they intended to send any information to anyone at all during the experiment.)

5. Do you have about your person any electronic equipment of any kind?

Satisfactory answers to all questions having been recorded, we proceeded to the lab, and I explained the procedures to all concerned. I had a tape recorder going during the entire

series of trials. A wise step, as it turned out. Immediately on seeing that the test was to take place in a photographic laboratory, the psychic indicated that she was allergic to photographic chemicals and hoped this wouldn't interfere with the experiment. This remark was clearly recorded on the tape. I asked if she wished to halt the experiment at this point. She indicated she was willing to continue, so we went ahead.

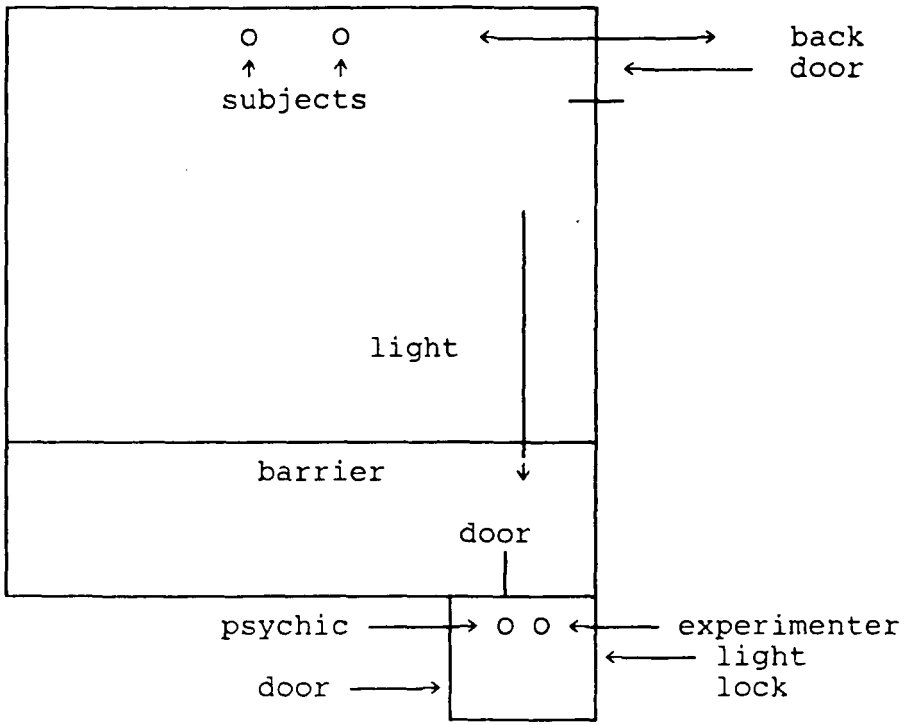
When everyone was being briefed on the procedure, the psychic asked if during the test she could stand at a different point from the one indicated. I refused, on the general principle that the experimenter should retain complete control of all experimental conditions. Well before the experiment began, I had made up my mind not to be led by the psychic in even the slightest detail. While I could see no difference in the two places, I did not assume that I could not be outwitted.

While instructing the subjects on where to stand, not to shuffle, and so forth, I noticed out of the corner of my eye that the psychic had drifted into one of the small cubicles in the room where individual students developed and printed pictures. After the briefing, when everyone was in position to begin, I searched the cubicle. I found a small velvet bag, secreted there by the psychic without my knowledge! At this point, I jumped to the conclusion that she was trying to trick me. I expected to find some sophisticated electronic equipment in the velvet bag, perhaps sensitive to infrared or some such thing. Instead, it contained some innocuous crystals, apparently quartz crystals, which were possibly intended to help her focus her psychic energy. I quietly removed them and put them on the table where the psychic was waiting. I did not accuse her of anything, nor even mention it. As far as I could see, no harm had been done. They were obviously not electronic listening devices, and I no longer thought she was trying to trick me. However, she had managed to smuggle an extraneous object into the experimental setting, which indicated a weakness in the protocol.

At this point the series of trials began. The psychic and I waited in the dark between the double door until we heard the back door alarm go on, and then off again, which meant the subjects were in place. Then we waited ten seconds and entered the darkroom. When the psychic gave her opinion, either "one" or "two," I immediately turned the lights on so that all concerned, including the psychic, could immediately see if it was a *hit* or a *miss*. I considered going through the whole series "blind," so that neither the psychic nor I would know how she was doing. I discarded this idea because I felt she had the right to know, on the spot, if I had scored her correctly.

As it turned out, I didn't! I had a clipboard in my hand and scored each hit or miss on a chart, at the same time calling out in a loud voice "Hit" or "Miss," for the benefit of the tape. After the series, when I compared the tape to the chart, I discovered I had inadvertently entered a "hit" in the "miss" column, shorting the psychic. This was another good reason to have run the tape constantly.

The psychic got hits on the first three trials. Then I noticed that when the back door was opened, admitting light into the room, the light shone under the door of the light lock where the psychic and I were waiting. If one looked down at the bottom of the door, one could see shadows moving back and forth as the subjects entered and left the room. (See diagram on next page.)



On the subsequent trials, I placed a heavy dark cloth across the bottom of the light-lock door so that no light could be seen as subjects entered and left the room. It is possible that the psychic may have been able to discriminate between one shadow entering the room and two shadows entering the room. In any case, the misses began to occur after I blocked this stray light. This too points to a weakness in protocol. This sort of detail is seldom mentioned in published reports of experiments, and would not likely be thought of unless one were present on the scene. A strength of the protocol was that the experimenter was next to the psychic at all times—anything the psychic could see or hear, the experimenter could probably pick up as well.

I tried to devise the best protocol I could, because it would be grotesquely unfair to the psychic if I claimed a flaw in the procedure after she scored better than chance. If she could tell how many people were at the other end of the room by seeing their auras, reading their minds, or whatever, I had to be prepared to admit she passed the best test I could devise.

Before the 30 attempts in this series were completed, the test had to be aborted because the allergies of the psychic were becoming more and more troublesome. Her eyes were swollen almost shut and her skin was flushed. I am satisfied that she did not merely "bail out" because she wasn't doing well. She had mentioned the allergies at the start, the air in the lab was saturated with fumes, she was obviously under stress, and she readily agreed to try another series of tests at another location.

For the second series, I obtained the use of a windowless television studio. The setup was similar in all relevant respects. I used ten new subjects to guard against the possibility that the psychic might have secured the help of any members of the first group between the two trials. The results were not above chance, 13 hits in 30 trials.

At this point, I decided that this type of research is probably not worth the trouble. Since the psychic did not produce any results above chance, those who do not believe that people can see auras would not be surprised. Generally, the reaction would be of the "Ho Hum! So what else is new?" sort. Those who firmly believe that auras do exist and that some people can see them might admit that *this* psychic on *this* occasion couldn't see them, but would remain firm in the conviction that someone else could see them on another occasion.

On the other hand, if the psychic could get it right every time, would skeptics admit she could see auras? Probably not. They would be far more likely to point to possible problems with the protocol. I have already indicated what some of them might be—something smuggled in, light under the door while the subjects entered, an ability to pick up subtle sensory cues. Then, too, how could one rule out subtle passing of information from a confederate in the subject group or a spy on a rooftop with binoculars and a radio transmitter, observing from afar and radioing the psychic on a tiny receiver concealed in the filling of a tooth? There is far too much of a tendency in this area of research to evaluate the protocol of the experiment by the results! If nothing is found, the protocol is considered to be a good one; but if the test is positive for putative psychic abilities, it is assumed that there must be something wrong with the protocol. Then, too, I doubted that I could devise a protocol that would really be good enough to show that a person can see auras. For one thing, I began to worry that if my rather simple procedures became known, someone could invent a rather simple way to get around them!

I remain convinced that this particular psychic was sincere. I think *she* thinks she can see auras. I don't think she can, but I don't think she was trying to trick me. She was cheerful and courteous throughout, submitted to all indignities without protest, and did exactly as she was told.

The possibility remains that auras are not internally generated but that some people see them because they have a different visual apparatus. If this is the case, those who see them are quite sincere, but auras become much less interesting because this would clearly remove them from the area of the paranormal and place them in the category of visual defects.

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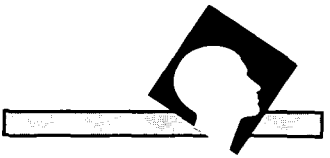
Biorhythms and the Timing of Death

DAVID LESTER

BIORHYTHMS supposedly consist of three cycles—physical, emotional, and intellectual, of 23, 28, and 33 days, respectively. During positive phases (the first half of each cycle) individual energies are supposed to be high, while during negative phases (the latter half of each cycle) energies are supposed to be low. Critical days occur when a cycle crosses the baseline during the switch from a positive to a negative phase, and vice versa. Since there are three cycles, single, double, and triple critical days can occur. In the first 58 years and 68 days of life, there are 4,006 single critical days, 312 double critical days, 8 triple critical days, and 16,926 noncritical days.



In this study, the timing of suicides, homicides, and natural deaths was found to be unrelated to the victims' biorhythm cycles.

Research into the timing of death and biorhythms has not typically supported these ideas. Two recent reviews of the research both concluded that the biorhythm theory appears to be invalid (Bainbridge 1978; Hines 1979). For example Wolcott et al. (1977) found no relationship between accidents and biorhythms, and Khalil and Kurucs (1977) found no relationship between accidents or deaths and biorhythms.

Two studies of suicide have been published, one of which claimed to find an association between biorhythms and suicidal behavior. Dezelsky and Toohey (1978) reported on 19 cases of student suicides, finding no association with biorhythms. D'Andrea et al. (1984), in the *Journal of Nervous & Mental Disease*, reported on a much larger sample of 993 suicides and found that more suicides occurred on critical days than expected. Neither study, however, employed a comparison group of nonsuicidal deaths. The present study attempted to replicate

the results of D'Andrea employing comparison groups of homicide victims and natural deaths.

Method

For the year 1982, every suicide and homicide victim recorded in the Medical Examiner's office in Philadelphia was identified. For each suicide, the next natural death was also taken. The result was 212 suicides (mean age 41.4, SD = 17.3), 207 natural deaths (mean age 59.6, SD = 18.4), and 353 homicide victims (mean age = 33.9, SD = 15.9) for whom files were available.

For each subject, the date of death and the date of birth were noted where given, and the place of the day of death in the physical, emotional, and intellectual cycles calculated (Anon. 1976). Data were available for 201 suicides, 321 homicide victims, and 190 natural deaths.

Results and Discussion

Using the Kolmogorov-Smirnov one-sample chi-square test, the distributions of suicidal deaths did not differ from chance expectations over the physical, emotional, or intellectual cycles: The maximum discrepancies of the distributions from chance expectations were 2.8 percent, 3.1 percent, and 4.8 percent, respectively, with the critical value for significance being 9.6 percent.

Similarly, the distributions of natural deaths did not differ from chance for any of the three cycles (maximum discrepancies 9.6 percent, 8.1 percent, and 5.1 percent, respectively, with the critical value for significance being 9.9 percent), nor did the distributions of homicidal deaths differ from chance expectations (maximum discrepancies 3.5 percent, 3.6 percent, and 4.7 percent, respectively, with the critical value for significance being 7.4 percent).

Overall chi-quare tests comparing the three groups of subjects failed to reach statistical significance: for the physical cycle $X^2 = 31.03$, $df = 44$, for the emotional cycle $X^2 = 59.85$, $df = 54$, or for the intellectual cycle $X^2 = 90.93$, $df = 64$.

Following the procedure of D'Andrea et al., who hypothesized that suicides would be more likely on days when all three cycles were critical, semicritical, or negative, 25.1 percent of the suicides were found to have occurred on such days, 26.1 percent of the natural deaths, and 26.7 percent of the homicidal deaths. These percentages did not differ from the chance expected percentage of 24.7 percent, nor did the three percentages differ from one another ($X^2 = 0.15$, $df = 2$).

The present study failed to find significant associations between the timing of death from suicide and the variation over the biorhythm cycles. The introduction of comparison groups of natural deaths and deaths from homicide did not change this conclusion. It must be concluded that deaths from suicide bear no relation to the position of the individual in his/her biorhythm cycles. Thus the present study failed to find any value in biorhythm theory.

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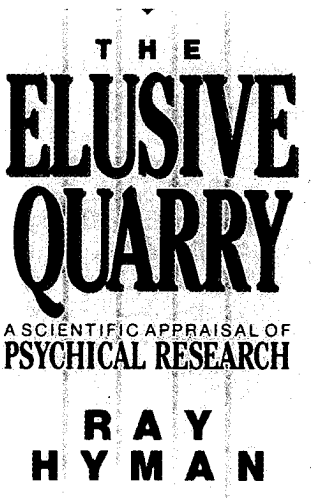
Book Reviews

Comprehensive Commentary, Insightful Criticism

The Elusive Quarry: A Scientific Appraisal of Psychical Research. By Ray Hyman. Prometheus Books, Buffalo, N.Y., 1989. 447 pages. Cloth $24.95.

DAVID F. MARKS

Skeptics and nonskeptics the world over will read *The Elusive Quarry* with great interest. Not only is Ray Hyman a leading authority on psychical research, but this collection provides in unexpurgated form in-depth insights into the mind of the skeptic at its most incisive. This book offers the most comprehensive and fair-minded commentary on parapsychology available. All readers of the SKEPTICAL INQUIRER and all parapsychologists will want to read and reread it. It contains essential, thought-provoking, critical material for all who wish to be better informed about the problems of research in this controversial area.



Hyman is distinguished by his wide-ranging experience and scholarship. Not only has he worked in the field longer than most, but he has a unique combination of expertise as magician, academic researcher (psychologist), consultant, and commentator. In magnificent style, Hyman roundly educates the reader against reacting reflexively to paranormal claims in a way that neglects the evidence and methodology of each particular claimant's formulation. The longstanding critical tradition of presuming that positive evidence of psi results from either fraud or plain incompetence is vigorously challenged. The real possibility of unwitting errors by sincere, self-deceiving investigators operating complex protocols provides an alternative account often overlooked by committed disbelievers. Hyman's review of nineteenth-century scientific research shows how much there is yet to learn from a historical perspective of the field.

The Elusive Quarry consists of 28 articles, essays, and reviews divided into four parts. The 28 pieces are drawn from Hyman's writings on psychical research between 1957 and 1988, although more than half were originally published during the 1980s. The volume begins with an interview with Jeffrey Mishlove at the 1979 convention of the Parapsychological Association. This convention seems to have been a key event in Hyman's thinking about the parapsychological world, and it marks a transition point in his attitude and approach to criticism. Each part of the collection begins with a specially prepared introduction, and the volume ends with an epilogue summarizing Hyman's point of view on major issues.

The collection includes excellent articles on various aspects of the paranormal that could well be regarded as "classics" in the field. All thinking people should be exposed to Hyman's "Cold Reading: How to Convince Strangers That You Know All About Them," and all skeptics will want to study carefully "Proper Criticism," "Water Witching," "The Ganzfeld Psi Experiment: A Critical Appraisal," and "Parapsychological Research: A Tutorial Review and Critical Appraisal." No skeptic or believer should attempt to participate in serious discussion and debate before reading Hyman's work and following his guidelines on how to conduct such interactions in a professional and fair-minded manner.

Critics, like those they critique, must expect criticism themselves. Unless they have adequately prepared themselves by reading primary source materials, studying the relevant methodology, becoming well versed in the relevant procedures, and attempting to understand the scientific context within which a paranormal claim is situated, the would-be critics had better be silent. Hyman provides an excellent role model for any skeptic wishing to be taken seriously in scientific discussions about the paranormal.

Two key themes emerge in Hyman's wide-ranging collection: (1) parapsychology needs to improve its experimental controls if it is to produce evidence of sufficient quality to convince skeptics that there may be a "quarry" to find; (2) a better dialogue between critics and researchers should enable the hunt for the "elusive quarry" to proceed more efficiently, either to its capture or final demise. Ray Hyman's joint communiqué with Charles Honorton on the psi ganzfeld research provides an excellent example of the new dialogue between investigator and critic. Such dialogues, it can be hoped, will lead to the production and publication of crucial, decisive experiments within the next few years.

Hyman's volume has many strengths. It sets the scene for future dialogue and criticism, and it provides a scholarly review of the history of the psi controversy. There appear to have been two phases in Hyman's critical work. From the 1950s to the early 1980s Hyman believed that the evidence for psi was of sufficient quality to conclude that *something* is there but that this *something* probably results from methodological problems. Parapsychologists had also failed to convince scientists of the relevance and theoretical interest of their putative findings. Then from 1981 onward Hyman's detailed study of the ganzfeld area convinced him that the evidence was of poorer quality than most parapsychologists would be willing to admit and that one simply could not judge whether *something* is there or not. This opinion was reinforced by an independent survey

conducted by Charles Akers. This has led Hyman to a new strategy in criticism, to a rapprochement in which critic and investigator cooperate to design methodologically adequate experiments rather than remain forever at loggerheads in counterproductive, adversarial roles.

But *The Elusive Quarry* also brings surprises and disappointments, and these require comment. There are large areas of duplicated material both within and between its different parts. To take one example, Sir William Crookes's research with spirit mediums is described in some detail in no fewer than four separate chapters (pp. 86-93, pp. 193-196, p. 226, and pp. 247-248). Similar redundancy and duplication occurs with respect to Robert Hare, Alfred Russel Wallace, J. C. F. Zoellner, Uri Geller, and Targ and Puthoff's remote-viewing research. Many of the articles and reviews make similar points and such repetition can become an irritation as one searches for new pearls of wisdom among the oyster shells. The organization of the book into its four sections seems at times somewhat chaotic and arbitrary. By careful editing the current volume could have been reduced by perhaps 50 or 100 pages, producing a slimmer more palatable set of readings. Unfortunately the volume contains no index, thus making it much less useful as a reference source than would otherwise be the case. This significant publication deserved better editing and production than Prometheus has on this occasion provided.

Any collection of writing produced over a span of nearly 40 years will naturally reveal the author's changing point of view. As his thinking and opinions are tested and challenged by ever shifting evidence and more sophisticated argumentation, there will inevitably be a corresponding evolution in ideas and approach. This can be seen most clearly by comparing Hyman's 1957 review of *Modern Experiments in Telepathy* (by S. G. Soal and Frederick Bateman), his 1978 review of Wolman's *Handbook of Parapsychology*, and his 1988 article "Psi Experiments: Do the Best Parapsychological Experiments Justify the Claims for Psi?" In 1957 Hyman concluded: "We need many more facts than the parapsychologists have supplied us" (p. 164). In 1978: "The critic will be surprised by both the quantity and quality of the evidence presented" (p. 170). In 1988, reviewing three major areas of psi research—on remote viewing, the ganzfeld, and random-number generators—Hyman wrote: "Parapsychological research falls short of the professed standards of the field" (p. 114). The shift in point of view is entirely consistent with the increasing production of data between the 1950s and 1980s. This data appeared superficially to be of good quality but following detailed inspection were found to be wanting.

However, I detect one problem with Hyman's critical enterprise. Having arrived at the position in the 1980s that the evidence of psi is of insufficient quality "to be placed before the scientific community for judgment" (p. 137) and that furthermore parapsychologists "no longer can safely assume that the typical parapsychologist has the competence to use statistical tools correctly, design appropriate investigations, carry out these investigations correctly, or write them up properly," why should we also agree to indulge in "patience and more patience" (p. 443)? Is it not more rational perhaps for the long-suffering critic now to switch attention to other spheres of scientific activity? Does not any theory of rationality recommend redeployment of resources to other, presumably

more productive, endeavors? Or is the critic's participation in the search for psi so intrinsically enjoyable (or addictive?) that it cannot be ended, however long and fruitless? While being ever more patient, one surely would be well advised to get on with other things. One thing Hyman would recommend that we do is to try to gain a better understanding of how scientific errors arise, how scientists can be misled by their procedures and assumptions. As suggested by Robert Morris, this translates "ESP" into "Error Some Place" and provides plenty of scope for research into the psychology of science, with interdisciplinary links to the sociology, philosophy, and history of science.

The critic's role is always going to be crucial in all areas of scientific work. Criticism is necessary because without it there is a greater risk of error. However, criticism should never become the kind of witch-hunt in which emotional ad hominem attacks replace rational discussion and argumentation. Such extremes should be avoided at all costs. Freedom and dignity are inalienable human rights, no matter how wrong, deluded, incompetent, or fraudulent an individual or group may be. There is a very thin line between the repression of the dissident, deviant, or heretic and the censorship of scientific opinions. CSICOP Fellows and other skeptics need look no further for a set of guidelines than Hyman's article on proper criticism.

My own view of the current status of parapsychology differs slightly from Hyman's. If I can be allowed a personal anecdote, having conducted research on remote viewing for a number of years, discovered serious flaws in the key experimental work, failed to replicate the effects under controlled conditions, and studied attempted replications of other investigators, I reached the conclusion that it is extremely unlikely that humans have the ability to "remote view." This conclusion is consistent with the evidence and therefore, I believe, rational.

In *The Elusive Quarry*, Ray Hyman seems to be telling critics like me to be more patient. However, I believe it would actually be irrational to continue the search for psi or to expend more than a modicum of effort reviewing the works of others, at least in this area at this time. It took a considerable amount of resources over a 12-year period (thankfully, intermeshed with other research activities) to lay to rest the psi claims of Russell Targ, Harold Puthoff, and Charles Tart for the SRI remote-viewing series. Although clearly Hyman is willing to be more patient than I, I question the rationality of continuing the search for psi when the payoff has been so consistently poor over the 140 years of scientific study. Either psi exists or psi does not exist. I argue that the evidence Hyman and others have reviewed points much more strongly to the latter possibility than to the former. I therefore wonder how rational it is for Hyman to state in his Epilogue to *The Elusive Quarry* that he does not have "the faintest idea" whether psi exists. Surely, even the most patient and proper critic must have at least the faintest idea that the simple reason psi is so elusive is that it does not exist. On what evidence is any other conclusion justified? And even if it does exist, how could such an evanescent process possibly have any significant practical applications in the real world?

One disturbing implication of the continued yet more patient dialogue proposed by Hyman is that even though the methodological flaws and fraudulent practices in psychical research have been conscientiously

criticized for at least 137 years, with little significant impact, any scientist willing to enter the arena *even as a critic* lends credibility to what is seen by many to be an intransigently discreditable and irrelevant outpost of science. Given Hyman's conclusions that (1) "the parapsychologists' first order of business should be to get their own house in order" (p. 137) and (2) "psi's existence is not going to be resolved one way or another in our lifetime," is the critic not also continuing to buy into a lifelong mission with no direct scientific payoff? Without disagreeing with Hyman's two conclusions above, I therefore cannot concur with his final proposal about patience. Are there not many considerably more fundamental and practical questions within science, more pressing and worthy of resources and attention, than the continued search for such an elusive quarry? Might the continued cultivation of a failed science not simply lead to yet more wasted effort, resources, creative imagination, and critical dialogue, to yet more scientific failure?

Considering only the psychological sciences, the kindred disciplines of neuroscience, immunology, genetics, psychiatry, and the social, health, and environmental sciences, there are all kinds of problems urgently in need of more and better research: brain-mind relationships, clinical depression, schizophrenia, genetic disorders, cancer, heart disease, alcoholism, drug abuse, psychoneuroimmunology, embryo research, environmental pollution, the Greenhouse Effect, famine, disaster prevention and management, and the social, economic, and political problems of poverty, unemployment, gender, ethnicity, social organizations, institutional and political change, inflation, and international debt. While parapsychologists are busy getting their house in order, other

"Are there not many considerably more fundamental and practical questions within science, more pressing and worthy of resources and attention, than the continued search for such an elusive quarry?"

sciences are busy dealing with less elusive, much more substantive, palpably more significant problems of the planet and its human organizations. Looking at the current agenda for the human sciences, how can further resourcing of psi research for an indefinite period into the future possibly be justified?

The fact is that the major questions of parapsychology could all be resolved one way or another in a period of no longer than three years. In all of the major areas—PK, ganzfeld, and precognition—properly controlled large-scale experiments could be conducted, analyzed, and reported by cooperative teams of disbelievers, skeptics, and believers. Hyman and Honorton have already agreed on a proper ganzfeld protocol, and Honorton and others are engaged in the necessary empirical work. To share the load, other small teams of experts could agree on protocols in the other psi areas. The research could be funded by the usual organizations and benefactors and the results published without unnecessary delay. The search would then be over, either because something had been found or because nothing had been found. If no evidence of psi were obtained (my prediction) it would not make one jot of difference to believers. As Hyman correctly states on page 446, according to parapsychologists' logic, the failure to find psi would in

no way diminish the case for psi in the older data. And there will always be the usual ad hoc accounts of why the experiments failed. Alternatively, real evidence for psi could be found and skeptics would need to adjust their thinking. But there is no valid scientific reason for prolonging the debate indefinitely.

Science, pseudoscience, and antiscience will never die, and therefore neither will the need for proper criticism. There are many other areas of scientific inquiry, equally in need of skeptical, critical thinking, and which are making and will continue to make a greater, more tangible contribution to human knowledge and its application. All areas of science need and gain from proper criticism. In fact one could even say that science is a form of criticism, criticism of what is assumed to be knowledge using reason supported by evidence.

The Elusive Quarry is a superb review for both practicing parapsychologists and skeptics alike. It provides essential reading for college and university courses on parapsychology, pseudoscience, and the paranormal. There cannot be a better text with which to inoculate young scientists against the seductive science of things that might not be so.

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Superstition 55, Science 0

How Superstition Won and Science Lost: Popularizing Science and Health in the United States. By John C. Burnham. Rutgers University Press, New Brunswick, N.J., 1987. 369 pp. Cloth, $35.00. Paper, $16.00.

ROBERT A. BAKER

One of the most depressing as well as one of the more important science books of our time was published a few years ago with little or no fanfare. Skeptics more than most will be deeply appreciative of John C. Burnham's *How Superstition Won and Science Lost.* The book is a sobering account of how the scientific establishment lost the game to the purveyors of superstition and saw the cultural impact of both science and scientists frustrated and reduced.

Difficult as it may be to believe, efforts to explain the work of scientists and findings from the laboratory in ways that the general public could understand and appreciate were more effective and successful in the nineteenth century than in the twentieth. Burnham's thesis is that, collectively, we have done a terrible job of popularizing science over the past several decades. In nearly every medium, supernaturalism and the mystical and occult elements in modern society have dominated the show, stolen the thunder, and grabbed the prize. Scientific reaction has been little more than a whimper.

According to Burnham, when everyone assumed that superstition and mysticism had been relegated to the past and science popularizers turned to other concerns, irrationalism and its agents disguised themselves and continued the fight. The result was a resounding victory for the occult. Not only did the science writers quit, they also isolated the products of research from the spirit and process of doing science. Moreover, the broadly educated and talented synthesizers also deserted and left the field to the public relations (PR) types. The outcome was, in Burnham's words, the abandonment of "interesting science-reporting which fits into a general world view and extends one's vision" for a type of "Gee Whiz science which excites irrelevant emotion and reinforces one's mysticisms."

Like most workers in the scientific laboratories, Burnham is perplexed by the "haunting paradox of how [our] culture ended up so little influenced by science when the products of both the natural and the health sciences so profoundly shaped everyday life and great events alike." Somehow or other science's negative paradigm against error, which proved to be so effective in the last part of the nineteenth century, wound up attenuated and derailed in the twentieth. Why? Perhaps the major reason was that the forms of superstition changed and hardly anyone recognized it for what it was. The new form adopted the standards of the all-powerful *media world*. Not only was this media world non-naturalistic; but like superstition, it was actually competitive with the traditional world of popularized science. Furthermore, in the media world "the elements of sensationalism and disjointed segmentation of information were exactly the elements of superstition that early popularizers of science had attacked with skepticism and naturalism." Unfortunately, so completely did this new obscurantism—made up of sensationalism and isolated fact—dominate the media that magical thinking, suspension of incredulity, and belief in mystic miracles were widely accepted. During the twentieth century those scientists who saw science as a calling (with few exceptions) withdrew from all popularizing and left the task to the PR types and consumer economists. This is the major reason we find *The Globe*, *The Star*, the *Weekly World News*, and the *National Enquirer* on the check-out counters instead of *Discover* or *Scientific American*.

In the first two chapters, Burnham does a careful, scholarly job of tracing the popularization of science, health, and hygiene over the past two centuries. In the third chapter, he looks at the popularizing of psychology, which differed somewhat from that of other disciplines. For example, psychology did not formally begin as a science separate from philosophy until the 1880s and did not become a viable presence until early in the twentieth century. Even then, despite the young science's attacks on telepathy, spiritualism, and faith-healing, psychology failed to dissociate itself from other aspects of mysticism. The term *psychology* soon came to be used as "a code word for the mysterious." Psychologists had—or claimed to have—knowledge that common folk did not possess. Psychologists, by identifying themselves as researchers privy to the laws of nature, were ironically bringing on themselves not only the prestige they coveted as scientists but an association with the mystery they were trying to dispell. Despite the gains made by psychology in World War II, the birth of the popular magazine *Psychology Today* in 1967, and the Bob Newhart television show from 1977 to 1978, the public

impression was still that psychology is a semi-science made up of "unconnected conclusions."

While some psychologists attempted to protect the public from exploitation, others wound up taking advantage of those their fellow professionals were trying to protect. Distressingly, psychology became not only an incoherent science but in Sigmund Koch's phrase "crowded with pieces of pseudo-knowledge largely unrelated to each other." Ironically, by the mid-1970s even the editors of *Psychology Today* were publishing papers debunking science and objectivity. Burnham wisely selected psychology as "a paradigm for all the sciences"; and his choice was well made, because this discipline closely followed the four-stage pattern of decline leading to victory by superstition:

1. Diffusion: the condensation, simplification, and translation of science, which is not only unnecessary but causes a loss of its most valuable qualities;
2. Popularization: the attempt on the part of scientists to share their vision of the religion and spirit of science;
3. Dilution: which occurs when popularization passes into the hands of educators and journalists and PR personnel;
4. Trivialization: which occurs when science consists of nothing but isolated news items and reports of products by authority figures.

The operation of this cultural pattern has, indeed, produced some truly remarkable discoveries. The first is that "consumers like being deceived . . . they enjoyed the fantasy involved in the world of commercials, in which advertisers emphasized illusion, not product. . . . People who relied on the world of advertising did not need charms when they could obtain consumer goods that would protect them from various real and imaginary evils."

Burnham notes on another front that specialization and narrowness within the scientific disciplines and in the colleges and universities became so extreme that the scientist Conway Zirkle sarcastically suggested that the student's diploma should read:

> The Johns Hopkins University
> certifies that:
> JOHN WENTWORTH DOE
> Does not know anything but:
> BIOCHEMISTRY
>
> Please pay no attention to any pronouncement he may make on any other subject, particularly when he joins with others of his kind to save the world from something or the other. However, he worked hard for his degree and is potentially a most valuable citizen. Please treat him kindly.

Also noted was that among scientists themselves one finds the most curious mixture of modernism in a specialized field coupled with an intense adherence to medieval or primitive superstitions that are unworthy of them. A recent example is the flood of interest on the part of many psychiatrists in reincarnation, spirit possession, and alien abductions.

As the twentieth century wore on, according to Burnham, not only did scientists suffer from a loss of passion and identity but, even more disturbing, what was most critically missing from popularization was skepticism. This, Burnham notes, was the one casualty in the war that proved to be decisive. Years earlier the popularizers managed to connect science's progress in solving nature's mysteries with traditional skepticism. In 1902 Joseph

Jastrow, for example, described the scientific habit of mind "that makes one keen-scented for right beliefs and secure, not from error indeed, but from rash credulity." By contrast, the more recent science writers have not been able to convey even the most routine doubts of the investigations. By stressing only scientific products, they actually promote an a-skeptical way of thinking. What little skepticism there was, Burnham tells us, was often directed against science and medicine rather than against either folk or commercial error.

Burnham's message is that we need to devote more time and attention to scientific popularizing and that the best scientists need to devote more time and effort to the tasks of communication and education. They need to be aroused and motivated to enter the battle again. The war for the public mind is not yet over; there are many battles ahead, and if skeptics properly prepare and pool their resources they will not lose them all. We also need to know our enemy as well as ourselves and our shortcomings. Burnham's book can be of great help with the latter, and skeptics, particularly, should read it carefully. Perhaps the following quote from Burnham's final chapter will provide an impetus in this direction (pp. 261-262):

> Even in the 1980s there were still a few men and women of science who had a sense of identification with science as a way of truth, civilization, morality and other constructive values and a high contempt for commercialism of any kind, much less mysticism, irrationalism and occultism. Many represent their generation's quota of irrepressible skeptics, hardheaded naysayers deviant enough to speak out in both the lab and a public forum to enlighten one part or another of the public. . . . But these surviving men and women of science were swamped numerically by other scientists who at most counted some sort of political or professional association work, that is, bureaucratic activity, as their service to science. Most likely, these "scientists" were in fact narrow technicians who did a job without a calling. In either case, such professionals did not struggle with other population elements for possession of the public mantle of science. Nor do they feel personally the obligation to pick a fight with other superstitions, pseudosciences or advertising. The chances were that they did not even know what civilization was or perhaps science as such. Few Americans of that era did. . . . Nowhere had the technical training, the education or the milieu of the technicians prepared them for an obligation to summarize, simplify or translate science for any non-specialist audiences. Indeed, in functional terms, science probably did not exist any longer on the popular level. Superstition did.

Burnham's closing words are bitter words indeed, but they are words we are forced to swallow because they are, for the most part, true. Saddest of all is the fact that books like Burnham's treatise never become very popular and are much too often generally ignored. Although published in 1987, *How Superstition Won . . .* has clearly not received the media attention that a book of such exemplary scholarship and importance to all of us fully deserves. Perhaps such neglect, ironically, proves his point!

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How to Understand Numbers in the News

News & Numbers: A Guide to Reporting Statistical Claims and Controversies in Health and Other Fields. By Victor Cohn. Iowa State University Press, Ames, Ia., 1989. 178 pp. Paper, $9.95.

ROGER KLARE

A few years ago, the Associated Press carried a story with an arresting headline: "Parents Spank More in U.S. than Sweden." A curious reader would naturally want to know more about the study behind the headline. The news story said spanking occurred in 58 percent of American families in 1976 and in only 27 percent of Swedish families in 1980.

The study's first problem was its use of different years for comparison. Other problems were the self-reporting by participants and the presence of an anti-spanking law in Sweden. These flaws make it impossible to draw a valid comparison between the two countries.

Scientific studies may have problems that are not as obvious. How can journalists learn to spot the good and the bad in these and in other news stories containing numbers? *News & Numbers* shows the way.

In this excellent book, science reporter Victor Cohn highlights the importance of numbers in the everyday world of journalism. In his words, "We journalists like to think we deal mainly in facts and ideas, but much of what we report is based on numbers." Journalists will find this book a helpful guide to the proper use of statistics. While the book mainly deals with health and environment reporting, the principles described apply to political, business, and sports reporting as well.

Even though the book is aimed at working journalists, the general reader can gain much from it. This is a how-to book. A background in statistics is not required—what's needed is a desire to understand what numbers can and cannot tell us.

The author leads us through basic principles of statistics, with plenty of help from experts. Along the way, he uses many examples that apply these principles in the real world of public controversy and debate.

Cohn examines the public concern with unknown risks, such as certain chemicals in the food supply, as opposed to known risks, such as automobile driving and smoking. Some of these unknown risks may pose far less of a threat than the known ones. He explains this contradiction: "The public is not entirely illogical. It is easier to cope with the known than the unknown and mysteriously threatening." He adds that while we voluntarily accept the known risk of driving, we don't like the idea that the unknown risks of chemicals are being imposed on us.

The average risk of dying in a car crash is 1 in 5,000. This compares with a 1-in-26,000 chance of being killed while crossing a street or a 1-in-450,000 chance of dying at the hands of a tornado. The average risk of getting cancer from chemicals in food is difficult to calculate. We're dealing

with many chemicals. Some pose greater risks than others. But, as the book points out, feeding large doses of any chemical to laboratory animals does not automatically result in cancer. ("Apple pie causes cancer," said a cartoon character a few years ago, reflecting public misconceptions and frustrations about chemical testing.)

Reporters try to provide the public with all the information it needs for estimating risks. Cohn explains how the limitations of data, data analysis, risk assessment, scientists, and science itself all create uncertainties that cloud the issues. How can we get some answers amid this unavoidable uncertainty? It begins with what good reporters do best: ask questions. Some questions to be answered for readers: How large or small is the risk? Under what conditions? What is the evidence and how believable is it? What can be done to lessen the risk?

One of the many strengths in this book is the emphasis on questions reporters can ask. By stressing what reporters can do, the author affirms the important job they have in conveying scientific information to the public. Although this book will not turn reporters into statisticians, it does provide some of the language and shows how to use it effectively.

Armed with this knowledge, journalists will be in a better position to spot some of the bad science. "But bad science," Cohn points out, "is no excuse for bad journalism." He sums up a major problem: "We tend to oversimplify. We may report, 'A study showed that black is white' or 'So-and-so announced that . . . ,' when a study merely suggested that there was some evidence that such might be the case." The guidelines in this book should help journalists avoid oversimplifying complex issues.

The author cautions us that describing reality will not be easy—such is the imperfect nature of science and its applications in the real world. A good reporter operates as a skeptic, striving to avoid both the Type 1 error—"believing an untruth"—and the Type 2 error—"disbelieving the truth." This is difficult, but it's also worthwhile.

Roger Klare is a freelance science writer.

Some Recent Books

A listing here does not preclude a more detailed review in a future issue.

Dictionary of Science & Creationism. Donald L. Ecker. Of the many excellent books about the science/creationism controversy, this one is unique: it is organized in dictionary form to provide ready access to the topic of interest. Each topic (e.g., "Design Argument," "Geomagnetism," "Radioactive Dating," "Transitional Form") is given typically one or two pages of clear, thoughtful discussion together with full references to the scholarly literature and cross-references to other topics in the book. A handy and valuable guide to all the major areas that relate to evolutionary theory and how that information shows the pseudoscientific nature of "scientific" creationism. Foreword by Martin Gardner. Prometheus Books, Buffalo, N.Y., 1990, 263 pages (Index), $32.95 cloth.

Frauds, Myths, and Mysteries: Science and Pseudoscience in Archaeology. Kenneth L. Feder. A welcome and readable examination of popular claims in archaeology. The author, an archaeologist and teacher, aims to put the analysis of claims "firmly within the perspective of the scientific method as it relates to archaeology." After chapters on science and pseudoscience and on how we know what we know, Feder explores virtually all the popular and bizarre claims that have dogged archaeology over the decades. Mayfield Publishing Company, 1240 Villa St., Mountain View, CA 94041, 1990, 246 pp. $12.95 paper.

How Superstition Won and Science Lost: Popularizing Science and Health in the United States. John C. Burnham. Historian argues that although science itself may be progressive, the cultural impact of science and scientists has been greatly reduced because the fight of science against superstition has not been won by the forces of rationality and naturalism—indeed, at many levels superstition has won. See review, this issue. Rutgers University Press, 109 Church St., New Brunswick, NJ 08901, 1987, 369 pp. $35.00 cloth, $16.00 paper.

101 Ways to Avoid Reincarnation. Hester Mundis. Humorous parody of the New Age movement. 101 short sections on such topics as Decorating Your Own Inner Space, Making the Right Impression on Your Higher Self, How to Rolf Yourself, Astro-Buck Astrology, the Sayings of Confusion, and Astral Projection—Dolby Sound Connection. Workman Publishing, New York, 1989, 144 pp., $5.95 paper.

Science: Good, Bad, and Bogus. Martin Gardner. A new paperback printing of what has become a classic work on science and pseudoscience (first published in 1981). Prometheus Books, Buffalo, N.Y., 1989, 412 pp., $15.95 paper.

Science and Supernature: A Critical Appraisal of Parapsychology. James E. Alcock. A prominent critic of parapsychology here publishes two lengthy recent appraisals. The first is a

detailed examination of parapsychology first published in a special issue of *Behavioral and Brain Sciences* (followed by his reply to numerous solicited comments published in the same issue). The second is adapted from his commissioned paper comprehensively reviewing for the National Research Council's Committee on Techniques for the Enhancement of Human Performance (see *SI*, Fall 1988) the major empirical studies involving random-event generators or remote viewing. This is an excellent and up-to-date examination of the current status of the best laboratory parapsychology experiments by a well-informed psychologist-critic. Prometheus Books. Buffalo, N.Y., 1990, 186 pp., $24.95 cloth.

Teach Your Child Science: Making Science Fun for Both of You. Michael Shermer. An excellent and entertaining primer that is effective in addressing its three main goals: to help parents and children understand the methods and benefits of science, to stem the tide of pseudoscience, and to convey the joys of science. Divided into two parts, "Getting Excited About Science" and "Doing Science" (including many examples of science that can be done at home). Lowell House, 1875 Century Park East, Los Angeles, CA 90067, 1989, 149 pp., $9.95 paper.

Voices for Evolution. Betty McCollister, editor. An extremely useful publication reprinting resolutions, statements, and position papers from organizations—scientific, educational, and religious/philosophical—in support of science and evolution in the creationism controversy. More than 75 statements are published, including those from most of the major scientific societies and bodies in the United States. National Center for Science Education, P.O. Box 9477, Berkeley, CA 94709, 1990, 141 pp., $5.90 paper.

—*Kendrick Frazier*

Articles Of Note

Cowley, Geoffrey, "Not Just for Nerds," and Sharon Begley, "Rx for Learning." *Newsweek*, April 9, 1990, pp. 52-64. Main articles in newsmagazine's excellent cover-story about science education. Subtitled, "How to Teach Science to Our Kids," the articles are refreshing for their positive approach and examples of creative teachers now at work and innovative programs now being established. One of the themes is to teach kids by having them *do* science, based on simple observations of the everyday world around them.

De Jager, Cornelis. "Science, Fringe Science, and Pseudoscience." *Quarterly Journal of the Royal Astronomical Society*, 31:31-45, 1990. Essay by Dutch space scientist has sections on the Scientific Method, Externally Imposed Limits to Science, Fraud in Science, Pseudoscience and Fringe Science, Doubtful Science and Non-Science (Homeopathy), and Astrology. The latter section has an up-to-date and responsible discussion of evidence for and against the so-called Mars Effect.

Falk, Ruma. "Judgment of Coincidences: Mine versus Yours." *American Journal of Psychology*, 102(4):477-495, Winter 1989. Psychologist (and author of "On Coincidences," *SI*, vol. 6, no. 2) interested in why coincidences often result in unwarranted surprise conducts study to learn whether people find their own coincidences more surprising than those of others. She conducted two experiments, one controlling for a story's objective surprisingness, the other controlling for self-selection of subjectively surprising stories. The study found that self-coincidences indeed were judged more surprising than those of others in both experiments. The results suggest that the more personally meaningful the self-coincidence, the more surprising it is. Furthermore, "the finding that *meaningless* coincidences, constructed of randomly determined elements, turned out more surprising than others' coincidences once they were attached to the self is quite remarkable," says Falk. "This suggests that the 'egocentric touch' must be powerful."

Gleick, James. "Oh-oh, Here Comes the Mailman." *New York Times Book Review*, March 4, 1990, pp. 1, 32. Former *Times* science reporter (and author of the bestselling science book *Chaos*) discourses on the correspondence he receives that seems to totally misunderstand what science is about. "So many of my correspondents these days have conceived completely new cosmologies. It seems that when you write about science, you quickly get onto an international mailing list for psychic discoveries, mathematical proofs, stock market strategies, and grand theories of everything. It's amazing how many people have figured out the secrets of the universe." Gleick decides that "whether they are sadly crackpot or wholesomely curious, some people seem to need something different." And "real science is hard. . . . People find it easier to absorb weird ideas from science than to understand the process that leads to the ideas. The grand theories and themes sound magical, sometimes; but real scientists have to sweat through piles of real data from . . . a day in the laboratory. . . . When they make a theory, they can't afford to indulge a taste for voodoo. They're about to be proved right or wrong. Another pile of data is on its way."

Hansen, George P. "Deception by Subjects in Psi Research." *Journal of the American Society for Psychical Research*, vol. 84, January 1990, pp. 25-80. Discusses two major safeguards against cheating by subjects in parapsychology experiments. Includes a section on special security problems with telepathy experiments. Points out correctly that designing sufficient controls requires some knowledge of magic and discusses the role of the magician. Nevertheless, Hansen would clearly limit the roles of magicians in psi research and, ironically, although it has been James Randi who has championed the need for magicians to be consulted, Randi is named by Hansen as one magician "especially unsuited" as a consultant. The attitudes here tarnish an otherwise fairly worthwhile discussion.

Kolata, Gina. "1-in-a-Trillion Coincidence, You Say? Not Really, Experts Find." *New York Times*, February 27, 1990, C1 (Science Times section). Good report showing why "coincidences, those surprising and often eerie events that add spice to everyday life, may not be so unusual after all." Focuses on the research of Harvard statisticians Persi Diaconis and Frederick Mosteller showing that virtually all coincidences can be explained by some simple rules. Some of the findings are published in the December 1989 *Journal of the American Statistical Association*. A woman won the New Jersey lottery twice in a four-month period, and this was reported as a 1-in-17-trillion longshot. One in 17 trillion *is* the odds that a *given* person who buys a single ticket for exactly two New Jersey lotteries will win both times. But the chance that *some* person, out of the many millions who buy lottery tickets in the U.S., will win twice in his or her lifetime is far higher: better than 50-50 over a 7-year period; 1-in-30 for a 4-month period. By such examples and analyses, "amazing" coincidences are being demystified.

Miyaoka, Etsuo. "Application of Mixed Poisson-process Models to Some Canadian Birth Data." *Canadian Journal of Statistics*, 17(2):123-140, 1989. Study of Canadian birth data included examining whether birth rates are associated with phases of the moon. "We found no evidence for any association of births with phases of the moon, except possibly with one of the many cases examined."

Suplee, Curt. "Apocalypse Now: The Coming Doom Boom." *Washington Post*, Dec. 17, 1989, B1 (Outlook section). Feature anticipating a 1990s "spate of doomsday prophecies, end-of-the-world cults, Second Coming announcements, and a score of sects proclaiming that apocalypse—sacred, profane, or à la mode—is just around the chronological corner."

Talent, John A. "The Peripatetic Fossils: Part 5." *Nature*, 343:405-406, February 1, 1990. Scientist replies to letters in previous week's issue ("The Peripatetic Fossils: Part 4," 343:305-308) and reasserts his charges that Indian scientist V. J. Gupta is responsible for corrupting the paleontological literature on the Himalayas. "My conclusion remains as before—that all contributions authored or co-authored by Gupta should be ignored, and syntheses that have taken his 'data' to be reliable should be used with extreme caution."

Teresi, Dick, and Judith Hooper. "The Last Laugh?" *Omni*, January 1990, pp. 43ff. Gives examples of the latest wave of apocalyptic thinking (end-of-the-world predictions, etc.) and follows each with some factual information and scientific perspective.

—*Kendrick Frazier*

Center for Inquiry Brings Skepticism to Radio, TV

A new organization, the Center for Inquiry, has been formed to bring skepticism, critical thinking, and the scientific point of view more prominently onto the electronic media. Tom Flynn, an experienced visual communications professional, has been named director of the Center for Inquiry.

Until now CSICOP has depended on the SKEPTICAL INQUIRER and on conferences, seminars, and public relations to spread the skeptical message. The Center for Inquiry will expand that outreach with radio programming, video productions, and other electronic media projects. A radio public service announcement on Critical Thinking featuring author-entertainer Steve Allen is already in national release. Now in production is "The Voice of Inquiry," a radio program that will cover topics of interest to skeptics and other proponents of critical thinking.

Included in the program are interviews with Tom MacDonough on SETI, Joe Nickell on Spontaneous Human Combustion, Ray Hyman on why he is a skeptic, and Susan Blackmore on ESP, near-death experiences, and out-of-body experiences.

The Center for Inquiry can be reached at Box 229, Buffalo, NY 14215, FAX (716) 834-0841.

Forum

Written In the Stars

Several years ago a blue-ribbon panel of scientists, including Carl Sagan and Isaac Asimov, issued a bold statement saying they could find absolutely no connection between one's birth day and the so-called behavior traits associated with one's astrology sign.

I beg to differ. Astrology has had a pronounced effect on my existence, both in the ebb and flow of daily activity and in the larger, deeper currents shaping my life's decades. My feelings about astrology are not based on a scientist's dry statistics, but on personal experiences.

When I was growing up, my parents (who were blithely unaware of astrology lore) nevertheless were forever commenting on their May-child's evident qualities, namely, my determined, practical nature, my down-to-earth attitude, and my tendency toward, well, pigheadedness. Boy, could I be stubborn, as befits one of the Taurean clan. Not knowing much about the mythical quality of bulls, I still had an appreciation for their strength and power. I liked identifying with a mighty animal.

Please bear in mind, I didn't worship astrology or follow it on a day-to-day basis; I was more content to know I was a Bull and let that fact color my existence. In tenth grade, however, I was forced to re-examine my basic tenets and world-view. Somehow I got hold of an astrology chart one day in the school lunchroom and scanned the signs looking for mine. Pisces. Aries. Ah, Taurus. I found my column and, please believe me, for the first time in my life actually looked at the dates consigned to the Bull: April 21 to May 21.

I couldn't believe the chart's mistake. It thought Taurus started in April, when everyone knew how each sign exactly matched up to our months. Taurus was May, May was Taurus. (See how stubborn I was?)

"This chart is screwed up," I said to a nearby friend.

"What do you mean?" she asked.

"It s. ys Taurus starts in mid-April."

"It does."

I began feeling uncomfortably warm as she explained the relationship between the signs and the sky's star patterns. Taurus did indeed end on May 21, followed by Gemini, which ran well into June.

My birthday was and always had been May 27.

"What's your sign?" my friend asked. It was an innocent question, one I would hesitate to answer from that moment on.

"I don't believe in that stuff," I said, in a gruffer voice than my friend deserved.

Later that day in the privacy of my bedroom, I took stock of the situation. According to the rules of the game, I was a Gemini, a sign I had previously looked down upon. The Twins. What pansies. Indecisive. Fickle. Sensitive. How could I be a Gemini when I was so stubborn, so bullheaded, so Taurean.

Still, I was curious to know more about the sign I was supposed to be. Further investigation told me Geminis were indeed unpredictable, high strung, and inconsistent, all opposite traits of the noble Taurus. But Geminis, I discovered in a basic astrology book, were also versatile, artistic, witty, intelligent, enthusiastic. That didn't sound bad. Then I read about the Gemini's twin-nature, the two selves forever at war with each other. That gave me pause. As a Taurus I would never have had that problem, for the Bull was known for its single-mindedness. On the other hand, if I became a Gemini, look at all the illustrious company I'd have as fellow Geminiers: Dashiell Hammett, Isadora Duncan, Bob Dylan, John F. Kennedy.

I was ready to switch.

Feeling both guilty and excited I turned in my horns and tail, split myself down the middle, and said goodbye to life as a Taurus. The changes were subtle at first, but just as spring eases into summer, so too did I metamorphose into a Gemini. Although sporadic Taurean traits surfaced periodically, more and more I was moody, playful, even witty. My parents blamed the change on the pressures of adolescence, but I knew better.

I changed career goals, trading in an interest in the hard sciences for an urge to write and study English. I made jokes in class. I wavered back and forth between exultation and depression. It was like starting over.

Now, years later, looking back on that early life I feel like an ex-lover wondering what I ever saw in that Taurus of a Bull. Lately, though, I've been attracted to Aries: imaginative, intelligent, incisive, impatient. That'd be fun to be for a while. The only problem is that the sign is clear on the other side of Taurus, running from March 19 through April 19. Would any Aries be interested in a house trade, so to speak, for the rest of the year? Please respond quickly, however—before I change my mind—for as we all know those Geminis are frustratingly mercurial. It's written in the stars.

—*Martin Perlman*

Martin Perlman is a writer in Santa Barbara, California.

Letters to the Editor

The new catastrophism

I commend you warmly on your "new, expanded effort to devote more attention to science, critical inquiry, and science education" (Winter 1990). Sophistication of writing and appearance of the magazine have improved steadily and dramatically over the years. I find *SI* increasingly useful in teaching (trying to teach) skepticism and critical thinking to biology and nursing students.

David Morrison and Clark Chapman's article in the Winter 1990 issue is an excellent summary of the history of the idea of catastrophism: compact, clearly written, and informative. Some of their references to geology and biology, however, embody misunderstandings that have recently become widespread. As several of these misunderstandings originated in the biological literature, I would like to offer a biologist's constructively skeptical comments on them.

1. The oft-repeated claim (reported on p. 141) that orthodox geological uniformitarianism insists on slow and steady change is simply a false characterization, a straw man. The point of uniformitarianism is that it rejects untestable hypotheses; it does not deny sudden changes or rare events. Geologists have always known of floods, volcanoes, and earthquakes. A popular 1951 geology text (Gilluly et al.) explicitly cautioned that although "geologic processes have always operated in the same way, they have not necessarily always operated at their present rate or intensity." Many scientists abandoned uniformity of rate long ago; many more never asserted it. Nor does geology reject extraterrestrial influences; impact craters (p. 142) on the earth and the moon were recognized long before the 1960s. I was taught in the 1940s that an early collision could have blasted the moon out of the forming earth. Catastrophic change is not a revolutionary and new idea. It has long been all right in geology.

There must, however, be evidence for it. It is easy to construct untestable hypotheses, or easily falsifiable ones. Extraordinary claims must be supported by extraordinary evidence, and we must be skeptical of extreme scientific hypotheses and "wishful science" as well as of pseudoscience. The bandwagon effect is powerful among scientists, particularly in matters outside their own fields.

(Similar comments apply to the punctuated-equilibrium model [mentioned in passing on p. 151], which incorrectly claims that orthodox biology does not recognize changes in evolutionary rate. Darwin discussed several cases, and Simpson [1944] wrote an entire book on the subject.)

2. Most paleontologists are not convinced that the Cretaceous/Tertiary extinctions of dinosaurs, ammonites, etc., were caused by asteroid impact (the Alvarez hypothesis, pp. 142, 143). The media continually and uncritically repeat this story, confusing the impact with the extinctions. . . .

The astronomers and physicists have very good (though not yet absolutely convincing) evidence that an asteroid hit the earth at the end of the Cretaceous. Even if there was an impact, much biological evidence shows that it could not have caused the extinctions. The Alvarez scenario does not account for the timing or the selectivity of extinctions.

Scientists who support the Alvarez scenario of extinction of the dinosaurs are usually physical scientists. Those who are familiar with the fossil record

are generally forced by the evidence to reject the asteroid's role in extinctions, . . .

Catastrophic extinctions, even if of extraterrestrial origin, do not affect Darwinian evolution at all (p. 144). They merely impose another set of selective pressures. Such events differ in degree but not in kind from such familiar local catastrophes as landslide, flood, fire, and glaciation. . . .

Again, I enjoyed the article greatly and hope that your physicist and astronomer authors will not take offense at my comments on geological and biological matters that are probably peripheral to the main intent of their contribution.

James F. Waters
Professor of Zoology
Department of Biology
Humboldt State University
Arcata, Calif.

There are several items in the article by Morrison and Chapman with which I take issue. The authors seem to give unqualified acceptance to the theory that an asteroid or comet hit the earth and caused a mass extinction at the end of the Cretaceous period. It is my understanding the cause of this dieout is still being vigorously argued and that the original Alvarez theory is far from being universally accepted by evolutionary biologists.

There are several other points in the article that I question; however, my main disagreement is philosophical. The authors too often make little or no distinction between a relatively unsure, even highly speculative, scientific theory and those theories about which we can be nearly sure. This failing is a common one among those writing for the general public about cosmology, evolution, and astrophysics.

A scientist writing for a general audience should make clear when a theory is speculative, with only meager indirect evidence supporting it; when a theory is more sure, with direct evidence behind it; and when one is nearly sure with considerable and wide-ranging direct evidence supporting it. Failure to make these distinctions confuses the public and erodes its confidence in science and scientists, with the accompanying embrace by the public of pseudoscience, magic, and mysticism.

Henry E. Heatherly
Lafayette, La.

David Morrison and Clark Chapman respond:

Skepticism is essential to science, and the ideas of the new catastrophism are sufficiently novel that a healthy skepticism is appropriate. But, as Heatherly says, it is important to distinguish between very speculative hypotheses and ideas that are "nearly sure." A major point that we perhaps failed to articulate as well as we might have done is that the impact of asteroids and comets with the earth is one of those scientific ideas that is "nearly sure, with considerable and wide-ranging direct evidence supporting it." The basic facts about the frequency of such impacts and the energy they release are robust. Waters to the contrary, there is nothing "extraordinary" or "extreme" in the hypothesis that extraterrestrial projectiles have episodically played havoc with the fragile ecosystems on our planet. Indeed it would be extraordinary, in view of the lunar cratering history and the known distributions of earth-approaching asteroids, if the earth had not *been hit by several 10-km or larger objects since the Cambrian, and extraordinary to imagine that such events would* not *have caused mass extinctions. If mass extinctions were not already known in the fossil record, our current knowledge of the earth's cosmic environment would compel us to look for them.*

The mechanisms by which an impact produces extinctions are less certain, and the scientific debate on these subjects is currently lively. But it strains credulity to state, as does Waters, that the Cretaceous impact could not have caused the extinctions. We assert that the burden of proof must lie with those who advocate such a remarkable coincidence. For an analogy, consider the 1906 earthquake in San Francisco. Tech-

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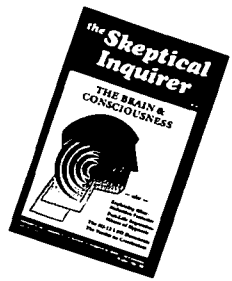

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nically, it is true that most of the loss of buildings was due to fire and even some intentional dynamiting of structures, but who would deny the relationship of these events to the massive earthquake that struck the preceding day?

We do not accept the view that the certainty of scientific truth should be determined by a poll of scientists. The "new catastrophism" is, indeed, fairly new, and it draws upon evidence from disciplines rather far removed from traditional paleontology. But the fact that many paleontologists are uncomfortable with some of these ideas does not make them wrong. One of us (CRC) was told by a colleague in the Harvard Geology Department that a majority of the members of that department had still not accepted plate tectonics as of the mid-70s, even though history will record the plate-tectonic revolution as having occurred a decade earlier. It takes a while before new ideas achieve wide acceptance. We also question Waters's concern that the "media" have created a "bandwagon" effect in support of impact-triggered extinctions. In our experience, the media usually bend over backward to present opposing sides in any controversy, since conflict makes for a more interesting story. A good reporter will always find a dissenting voice. Thus the media tend to prolong controversy even when a true consensus has already appeared.

We wish that Waters were correct that we have falsely characterized mid-twentieth-century geology as prejudiced against catastrophism. We agree that geologists have long recognized variations in the rates and intensity of observable processes and in the roles of what some have termed "minor catastrophes" (e.g., hurricanes, earthquakes, volcanic eruptions) in geological history. Similarly, as Waters says, biologists have long known that evolutionary change is not constant. But the textbooks are replete with testimonies to the predominance of uniformitarianism over catastrophism, and many professional scientists have been resistant to theories that invoke catastrophes as anything more than a sideshow. Very few scientists had considered the implications of catastrophes of the magnitude of the larger cosmic impacts prior to the Alvarez paper in 1980.

As an example, consider the 1962 text by E. W. Spencer (Basic Concepts of Historical Geology, Crowell, New York), which after listing a variety of catastrophes, such as volcanic eruptions, concludes:

> The cumulative effects of the constant downslope creep of the soil, the gradual decay of the rocks under the atmosphere, and the gradual removal of material by streams hour after hour, day in and day out, over millions of years are probably much greater than the effects of these minor catastrophes.

A more current comment appears in a lead article on mass extinctions in the June 1989 National Geographic. Author Rick Gore writes: "Many scientists refuse to accept that [impact] catastrophes have caused the great dyings. 'We don't need an impact,' I have heard over and over from paleontologists. 'We can explain mass extinctions with earthly causes.' " We suspect that these paleontologists have never raised their eyes to look at the face of the moon and ponder the implications of its cratered surface.

Modern, secure knowledge from exploring the earth as a planet in space tells us that the effects of the impact catastrophes may have dominated our whole planet in the first hundred million years of its history, dominated the earth's surface geology during the first half-billion years, and episodically dominated the ecosphere ever since. Large impact catastrophes must affect Darwinian evolution. If catastrophic impacts occur only every 50 or 100 million years, the Darwinian struggle for survival during intervening epochs can do little—except by accident—to prepare species for surviving the rare but terrible environmental calamities wrought by the impacts. Being global, these effects are different in kind from local landslide, flood, etc. Stephen Jay Gould has been very eloquent on this issue. This idea does not violate fundamental Darwinian principles, but it does cast evolutionary processes in a different light (cf. David Raup's chapter in Origins and Extinctions, ed. by D. E. Osterbrock and P. H. Raven, Yale Univ. Press, 1988).

These are all complex issues, many of them on the cutting edge of current research. Some of the ideas in our article may well be incorrect, but most will stand the test of time. In any case, time and the scientific process will ultimately decide.

Cold fusion and wishful thinking

Milton A. Rothman's incomplete, biased, and, yes, unscientific article on cold fusion (*SI*, Winter 1990) did *not* include all of the evidence. Specifically: he failed to mention the *very* crucial experiment of Robert Huggins of Stanford, in which Huggins carried out two electrolysis operations, one with ordinary water, one with D_2O. The latter gave *significantly* more heat. Then we find out that Rothman was one of the group that spent "many millions of dollars" on high-temperature fusion research. Therefore he has a high stake in finding that claims for cold fusion are not true and is therefore prone to self-deception.

R. Thomas Myers
Prof. of Chemistry
Emeritus
Kent State University
Kent, Ohio

I enjoyed the article on cold fusion by Milton Rothman. From the start it was clear that the incident would call for a good book: if true, part physics text and part explanation of why discovery took so long; if false, about how a mistaken claim came to be made and its setting in wider sociological contexts. Now that it seems clearly to be false, one hopes that the latter book will not comprise another bible of the anti-science movement. For the truth is that scientific procedure operated exemplarily throughout: replication was attempted and failure reported within months (a minute timescale by research standards), and the initial publication was *not* subjected to the usual scrutiny of peer review.

While there is never room for complacency, scientists may be pleased at the operation of their procedures on this occasion.

Anthony Garrett
Dept. of Physics & Astronomy
University of Glasgow
Glasgow, Scotland, U.K.

Is it coincidence that "cold fusion" was "discovered" in Utah? Rothman analyzes the "Cold Fusion" fiasco as if Pons and Fleischmann were operating out of a laboratory on the moon.

The facts are that Utah is the rump state of a more grandiose scheme, the independent religious/communist state of Deseret, which includes the State of Nevada, and a corridor to the sea through Southern California. The State of Deseret is about as buried within the United States as the state of Lithuania is in the Soviet Union.

My point is this: In Utah, you have a large body of people who control the political and economic apparatus of the state, and who also believe in such things as that the Native Americans (Amerinds) are Jews; it is a state where radio stations advertise tours through the "Land of the Bible," and you find the guests are headed for Cancun and the Yucatan peninsula.

Combine that kind of credulity with the church/state desire to make a buck through business investments and you begin to understand why no one in Utah would be willing to apply brakes to Pons and Fleischmann's runaway train, and in fact would be clamoring to get on it.

Rod Goff
Reno, Nev.

Milton Rothman replies:

Re the comment of R. Thomas Myers, I used all the data I had at the time of writing. Undoubtedly, it was not complete. However, some new data has been published that tends to support my point of view. A group from Caltech has analyzed the thermal measurements of Pons and Fleischmann and has concluded that errors in these measurements could account for their results (Science, *Nov. 10, 1989, p. 793). Experiments in "fracto-fusion"—fusion caused by electric fields generated in tiny fractures within the beryllium—have been reported. The experimenters report that these electric fields do occur, but they have not yet verified fusion in the cracks.*

I have not denied that anomalous small

effects may have occurred. We are going to learn a lot about the gas-absorbing powers of palladium. We will perhaps learn that oxidation of the hydrogen liberated by electrolysis of water could produce sporadic bursts of heat. But there is no doubt that the initial claim of large-scale power-generating fusion is dead. And that is the main point of the story.

Rod Goff raises an interesting conjecture. I confess that similar thoughts crossed my mind. However, it would have been inappropriate for me to include speculation on religious motivation in an article that I was trying to keep reasonably scientific. Without knowing the religious orientation of the particular scientists involved, it would have been nothing more than an exercise in stereotypical thinking. If there are any history of science students out there looking for a dissertation, it would be interesting to study the relationship between religious belief and attitudes toward scientific research. There is much historical data available, and it is not a simple subject. Many very religious individuals have been good scientists.

Urantia Book

It's my *guess* that very few of the 100,000-plus readers of the *Urantia Book* are also SKEPTICAL INQUIRER subscribers. I am, and must respond to Martin Gardner (Notes of a Fringe-Watcher, *SI*, Winter 1990). I've always held Gardner in high esteem, and had I not been a *Urantia Book* reader these past 20 years, I might have simply accepted his article at face value, placing the book on my list of cosmologies to ignore. In that case, Gardner would have done me a great disservice, as he has for any who might otherwise have judged the book by its text rather than by his opinion—highly respected though that opinion may be.

Gardner's description of the book's content is for the most part accurate, if sketchy. "Nothing could persuade me to read every line of this . . ." is a commendable admission of incomplete study. His sins of omission and his flippant paraphraseology demand exposure.

His reference to X-rays and the sun's core fails to mention the book's proton-proton and Carbon-catalyzed fusion reactions, leaving the impression that its data on this subject are silly. . . .

Flashing past the electron's supposed hundred "ultimatons" without considering how twistors, spinors, and superstring theory might apply may be forgivable, since the article was not written to explore possible resonances between the book and ten-dimensional geometries or recent advances in theoretical physics, but rather to debunk.

Most unfortunate is Gardner's wave-of-the-pen dismissal of "huge sections" of the book as "phony science." These *moderate* sections deal with stellar evolution, "dark gravity bodies" (black holes), atomic structure, solar system formation, continental drift, and other items whose "science" is not "phony," but confirmed by physics. He misses [neutrinos] (before their discovery) in the book's discussion of radioactive decay, or, in nuclear cohesion, a "force as yet undiscovered, . . ." that is obviously the then-unknown strong nuclear force.

John Brawley
Eureka, Mo.

"It is a fact that religion does not grow unless it is disciplined by constructive criticism, amplified by philosophy, purified by science, and nourished by loyal fellowship" (*Urantia Book*, p. 1088). Just as skepticism is a healthy antidote to religion without truth, religion is an antidote to skepticism without truth. Gardner does a fairly good hatchet job of lampooning a treatise that since the mid-1930s has explored black holes, the curvature of space, the origins of evolutionary life on earth, positive eugenics, the phenomena of mind, personality, time, space, and dozens of other major scientific, philosophic, and religious concepts.

Notwithstanding the disclaimer "within a few short years many of our statements regarding the physical sciences will stand in need of revision," *UB*

accurately specifies that the Milky Way, representing the central nucleus of Orvonton (the larger galaxy we are just now discovering), moves through space. A *Scientific American* article (September 1987) says: "First claim that the Milky Way is moving through space was made in 1975 by Vera C. Rubin and W. Kent Ford, Jr." Is this the phony science Gardner prophesied? The very same article, on "The Great Attractor," contains a chart that is essentially a drawing based on the *Urantia Book*'s concept of the multiple rotations of space systems, and is practically a bootleg of some half-dozen *UB* cosmological concepts. Is this the moonshine, Guru Gardner?

Mathematician Roger Penrose's theory of a twistor universe is identical in concept to *UB*'s description of organized space. As late as 1963 magnetic reversals and sea floor spreading were not taken seriously, and not until November 1965 did three separate theories actually confirm what the Urantia papers had continuously upheld: plate tectonics. Incidentally, the sun's outer atmosphere indeed contains calcium and the region between the sun and the earth is filled with fragments of the sun itself.

The *Urantia Book* (p. 29): "The existence of God can never be proved by scientific experiment or by the pure reason of logical deduction. God can be realized only in the realms of human experience; nevertheless, the true concept of the reality of God is reasonable to logic, plausible to philosophy, essential to religion, and indispensable to any hope of personality survival." Einstein wrote: "Concepts can only acquire content when they are connected, however indirectly, with sensible experience. But no logical investigation can reveal this connection; it can only be experienced." While *UB* illuminates this connection, only man's voluntary partnership with the indwelling fragment of God can create the experience that actually validates it.

D. Julio Edwards
Denver, Colo.

When a work of such unprecedented nature and scope as the *Urantia Book* is encountered, one might reasonably expect an approach of journalistic integrity or objectivity; at least personal honesty. Readers who expect those qualities from your essayists have been betrayed; Martin Gardner abandoned all three.

Intent on solving the "total enigma" of the book's origin, Gardner, at the expense of gross distortion of the true nature of the *Urantia Book* and the "quietly growing *cult*" that reads it, slams the deceased William Sadler into a preconceived notion that ". . . one of the strangest characters in our nation's religious history" was a disgruntled Seventh Day Adventist who "channeled" a "mishmash of claptrap."

What is this trait of the animal in man that leads him to insult and assault that which he cannot spiritually attain or intellectually achieve?

Terry Kruger, Editor
Urantian Sojourner Magazine
Boulder, Colo.

Martin Gardner, in his article on "The Great Urantia Mystery," tentatively concluded that the unknown writer of that large tome might have been William Sadler or his wife. I would like to propose another possibility.

Several years ago I bought a copy of *Urantia* for a dollar at a book sale. The former owner turned out to be the curator of the rare books collection at the university where I taught psychology. We got together and decided to track down the author. He talked to people in his profession and corresponded with the president of the Urantia Foundation, to no avail.

I took a different tack. I figured the writer was probably a member of the circle of mystics in Chicago, was a fluent writer, and had to be extremely well versed in the religious writings from which much of the book is derived. I think the influences of Gnostic Christianity, Christianity, Judaism, Hindu Cosmology, the kabbala, Egyptian mys-

tery religions, and modern writings in this area, e.g., Theosophy, are evident in the book. Sadler did not seem to fit the bill. However, when I began looking into the Chicago mystics I quickly came across a star who fit the requirements.

The most prominent member of that group was an editor of a magazine devoted to Christian mysticism, and the writer of a number of books on that topic, of which the most popular was *Mystic Christianity*. That man was William Walker Atkinson (1862-1932). I found a copy of *Mystic Christianity*, and found striking similarities with *Urantia*. It was as if *Urantia* was a playful creation that went beyond where present knowledge takes us, to present one possible reality that incorporates aspects of all the religious views listed above. Perhaps the reason there were no further releases of his work, if he was Atkinson, was that Atkinson died in 1932.

Sam Fulkerson
Louisville, Ky.

Martin Gardner replies:

I have no desire to reply at length to the many furious letters I have been receiving from true believers in the UB *(*Urantia Book*). I considered the book fair game for a Mencken-type attack because of the angry attacks that Urantians make on anyone who dares to criticize the* UB.

As for the book's scientific merit, its enthusiasts are like the early Velikovskians. They pick out statements that reflect the common knowledge of the day, imagine anticipations of new science in vague remarks, and rationalize passages that have turned out to be false on the grounds that the extraterrestrials were forced to phrase their revelations within the limited knowledge of the channeler. The UB, *to any objective reader, has no more scientific merit than the "science" in recent books channeled by J. Z. Knight's Ramtha. I find it sad that intelligent people take the* UB *seriously.*

Let me add that I now have good evidence that the channeler of the UB *was neither William Sadler nor his wife, but one of the adopted sons of J. H. Kellogg, the ex-Seventh-Day-Adventist Cornflake King. Perhaps more on this later. I would welcome hearing from anyone who knows the whereabouts of Christy Sadler, Dr. Sadler's adopted daughter, who may still be living in the Chicago area.*

Alcoholism a myth?

A review of a controversial book called Heavy Drinking: The Myth of Alcoholism *in our Winter 1990 issue has brought more reader mail, most of it critical, than anything else we have published in recent memory. Following are excerpts from a representative sampling of letters.*—THE EDITOR.

Jeffrey A. Schaler's review of Herbert Fingarette's *Heavy Drinking: The Myth of Alcoholism* shows an amazing gullibility for a piece published in a usually reliable source with the title of SKEPTICAL INQUIRER. Fingarette's work is one of the worst pieces of academic publishing I have ever seen. It is totally biased, uses research that has been labeled "fraud," describes experiments that failed as "highly successful," and ignores all of the massive valid research that has proved his moralistic stance a farce.

Your readers may be interested in my monograph evaluating Fingarette's work (*Defending the Disease of Alcoholism*, Wilson, Brown & Co., 153 E. Tallmadge Ave., Akron, OH 44310), and my article "Thinking About Heavy Drinking" in the *Public Interest*, (no. 95, Spring 1989), which also publishes Fingarette's response. My reply to that response will be published in another journal.

I hope the SKEPTICAL INQUIRER will look a bit more skeptically on Schaler's review and perhaps balance it with an objective one.

William Madsen
Dept. of Anthroplogy
University of California
Santa Barbara, Calif.

The latest references quoted by Jeffrey Schaler date only to the 1960s. Where has Schaler been during the explosion of medical science in the last 20 to 30 years?

First, if one goes even as far as to define the terms Schaler is discussing, his argument crumbles. A disease is "any deviation from or interruption of the normal structure or function of any part, organ, or system (or combination thereof) of the body that is manifested by a characteristic set of symptoms and signs and whose etiology, pathology, and prognosis may be known or unknown" (*Dorland's Medical Dictionary*, 1988). Because alcoholism (*Cecil Textbook of Medicine*, 1988) is a drug-dependence syndrome (a set of symptoms) characterized by specific complications and effects—including a neuropharmacologic action on neuronal cell membranes, metabolic tolerance due to increased efficacy of hepatic enzymes, numerous structural and functional changes in multiple organ systems (alcohol affects the liver, heart, and brain), self-perpetuating mechanisms producing addiction (including physical tolerance and withdrawal as well as psychological conditioning)—alcoholism seems to fit the definition of disease. Schaler's support of Fingarette's statement that "clearly it is each drinker's perception . . . and not an uncontrollable abnormal chemical-physiological reaction, that decisively affects the choice to drink" illustrates his lack of knowledge in the areas of tolerance, withdrawal, and neuronal adaptation.

Although there is a fourfold greater incidence of alcoholism in the adopted-away children of alcoholic biologic parents when they reach adulthood (*Cecil Textbook of Medicine*, 1988), Schaler argues that "the unaccounted for variance between those genetically predisposed individuals who do not get the disease and those not genetically predisposed who do become alcoholics can only be attributed to a strength in will." Schaler is obviously unaware of some basic mechanisms of genetics, including incomplete penetrance, recombination, mutation, and the interaction of dominant and recessive genotypes. Schaler says: "There is no clear definition of what the mind is, let alone an understanding of the relationship between the mind and brain/body. To a neurologist there is no such thing as the mind." The psychologic definition (*Random House College Dictionary*, 1980) of the mind is "the totality of conscious and unconscious mental activities of the organism." As board eligible in neurology and psychiatry, I agree with this definition and disagree with Schaler's comments about neurologists.

Schaler says that "a disease is a dysfunction of the body" and that since "the relationship between the mind and the body is unknown, it is inaccurate to state with certainty that a behavior like alcoholism is a disease." . . .

The relationship between the mind and body is complex but far from unknown. When you see a gun pointed your way your brain causes you to feel fear, your heart to race, and the blood vessels in your muscles to dilate. Secretion of adrenalin by the brain's neuroendocrine system mediates the effects in this simple example.

Schaler's statement that "the mind can't be sick" and that "mental illness" is a "contradiction in terms" has absolutely no logical basis in fact. Parkinson's disease is a lack of the neurotransmitter dopamine in certain areas of the brain; seizures are caused by abnormal electrical neuronal discharges; schizophrenia, manic-depression, and major depression have been shown to have genetic components, have abnormal chemical profiles in the cerebrospinal fluid, blood, or urine, have abnormal findings on brain imaging, and show improvement to specific pharmacologic approaches compared to placebo (Kandel and Schwartz, *Principles of Neural Science*, 1982).

Douglas Berger, M.D.
Instructor of Clinical
Psychiatry
Einstein College of Medicine
Bronx, N.Y.

As an alcoholism professional and a charter subscriber, I am shocked and chagrined that a generally favorable review of Fingarette's ill-conceived volume has found its way into the pages of the SKEPTICAL INQUIRER.

At the outset, due consideration must be given to the fact that the true causes and conditions of alcoholism are very difficult to analyze, and much information about it is still missing. Alcoholism certainly is not one of the subjects of pure science.

Nevertheless, a substantial amount of viable research has been disseminated, and an important body of knowledge has been accumulated on the subject. But further progress will only come through the application of the scientific method and by the exclusive acceptance of verifiable evidence.

Yet in this volume, seemingly without real justification, Fingarette simply proclaims the opposite of what the best existing evidence would indicate and what the most rational thinking professionals in the field of alcoholism have written.

Fingarette wants us to believe that his opinions are supported by "what science knows," but his writing is quite unscientific; and far from giving us the "real truth" on alcoholism, he offers little more than a rehash of previously published opinions.

Fingarette once again trots out the infamous 16-year-old "behavior treatment" research report by Mark and Linda Sobell. Incredibly, Fingarette still calls it a "groundbreaking report detailing the successful results of their . . . program of controlled drinking." The author ignores the fact that these experiments were dismissed years ago as incomplete, too small-sampled, too short-lived, lacking even in minimal follow-up, and totally inconclusive. However, in the end he hedges again, and he finds that "the question of what constitutes controlled drinking . . . remains a point of controversy" after all. . . .

Felix R. Bremy, Ph.D.
Wayne, N.J.

Schaler's review brings together in one place just about all the confusions that attend discussion of this issue.

Most serious are the conceptual confusions about heredity. Dismissing the overwhelming evidence that risk of alcoholism is heritable, the review points to the "unaccounted for variance" presented by those genetically at risk who do not become alcoholic. In fact, since any statement about heritability is a statement about probabilities, this would not be a problem even were we to argue that alcoholism itself is inherited. But no one argues that. What is heritable, here as always, is variation along some physiological variable(s). Let these variables assume certain values, and you have a person more likely to develop the syndrome if the "right" environmental conditions obtain—and only then. To say that the variance "can only be attributed to a strength in will" is simply false. . . .

Douglas G. Mook
Charlottesville, Va.

Teachers and evolution

Michael Zimmerman's article implicitly takes newspaper editors to task for believing that "creation science" should be taught in the public schools ("Newspaper Editors and the Creation-Evolution Controversy," *SI*, Winter 1990). Indeed, Zimmerman argues that such a belief correlates closely with ignorance of both evolution and "creation science." Judging by earlier letters and articles in *SI*, I assume that most of your readers also argue that creationism should be banned from the curriculum.

I disagree.

A year or so ago, I called Boulder High School and verified that science teachers cover at least two theories universally regarded as wrong: Lamarck's heritability of acquired characteristics, and Ptolemy's geocentric universe. That is, they teach these as theories that are known to be wrong but are still historically or intellectually important.

As scientists, we should not try to hide creationism—nor hide from it—but rather should teach it as we teach Lamarck's and Ptolemy's theories: as something that is politically and sociologically important—right now!—even though scientists regard it as dead wrong. We should not ban creationism from the schools but should expose and refute it there. Anything less demeans the students, shirks our responsibility, and allows creationism to prosper.

Matt Young
Boulder, Colo.

A classroom lesson

I am a high school science teacher with more than 30 years in the classroom. In the early 1970s it occurred to me to save the *National Enquirer* centerfold predictions for the coming year. I have found this to be a highly productive way of engaging my classes in a lot of spontaneous discussions. Particularly, normally passive students become very interested and participate actively in the lesson. I then post all the centerfolds on the bulletin board for the rest of the week. On each is recorded the number of predictions, the number correct, and the percent correct.

For the years 1973 through 1989 we have 889 predictions, of which 21 were more or less correct (I had to give a number of them 1/2 correct credit in the total) or approximately 2 percent. None of the correct predictions were startling—they tended to be vague ("there will be severe storms this winter") but occasionally very accurate (concerning divorce and marriage of Hollywood stars). They never predict anything that most people would consider important.

Looking at the predictions for 1990 we note the following:

—"Florida psychic Jack Gillen, who foresaw the crash of a DC-8 that killed 256 people. . . ." Here they are referring to an event that occurred in 1985, but when you look at the centerfold there is no such reference.

—"Lou Wright, the Denver psychic who accurately predicted the attempted assassination of Pope John Paul II. . . ." There were two attempts, in 1981 and 1982, but when checking both of the corresponding centerfolds we find no such predictions.

—"John Monti, the New York psychic who foresaw the shooting of President Reagan. . . ." Checking the 1981 centerfold we find that there is a photo of Mr. Reagan; but it predicts an era of prosperity and patriotism, not a shooting.

—"Florence Vaty, the Los Angeles psychic who predicted Richard Nixon's resignation. . . ."—not in the 1974 *Enquirer*.

When I point out to the students that apparently these predictions somehow failed to make it to the printer, the lesson is clear to all. I would recommend this idea to teachers from elementary through high school as an effective springboard for a solid debunking of pseudoscience.

John Lister
Exeter High School
Exeter, Calif.

Central Park UFO

Robert Sheaffer refers in his Psychic Vibrations column (Winter 1990) to the flying saucer that reportedly crashed in Central Park in New York City. It turns out that there was such an incident. I heard the details from a fellow skeptic here in New York.

The "saucer" was not an extraterrestrial spacecraft, but an inflatable plastic tent of experimental design that had been set up on an outdoor terrace of a Fifth Avenue apartment near Central Park. In the morning, the owner woke up late and left his apartment in a hurry without dismantling the tent.

The wind picked up the tent and blew it across the street, where it landed in the park and skidded across the ground until it came to a halt when it bumped against a stone wall.

The police—not the military—cordoned off the area. But the excitement

came to an end when the building's doorman appeared, deflated the tent, rolled it up, and walked off with it under his arm.

I thought you might be interested in learning that the most implausible UFO story to come down the pike actually contained a grain of truth.

Richard Morrock
Bay Terrace, N.Y.

Growing up skeptical

A letter from T. M. Hennig (Winter 1990) asks for help in raising children to be skeptical of seductive doctrines and rationally selective of theories.

Several effective habits to be developed are: Read both sides of any controversy. Be alert when considering any religious, scientific, or economic propaganda that pleases you, as the wish to believe is a powerful force against rationality. Compare evidences, but consider whether evidence of one idea may be evidence for something entirely different. If evidences offered seem invalid, ask propagandists to ask themselves: "Why have I adopted this belief?" Hold on to a bit of cynicism about the testimony of "experts"; they may turn out to be wrong.

Harry E. Mongold
Manhattan, Ill.

More on Murphy's Law

Re Robert M. Price's "The Metaphysics of Murphy's Law," (*SI*, Fall 1989), it seems necessary to call attention to the fact that Murphy's Law did not start out as the tongue-in-cheek amalgamation of more or less funny theorems that is so popular now.

As far as I know, Murphy's Law was first expressed around World War II in the aviation industry in approximately this form: "If you design part of a machine so that it can be assembled wrong, then somebody, somewhere, sometime will assemble it wrong."

Metaphysics hardly enters into this, and this form of the Law has long since been applied in all parts of industry. For example, many loudspeakers have been blown up because they had to be connected with a plug similar to a European electrical mains plug. We now use DIN, RCA, or other quite different connections for loudspeakers.

Harrie Verstappen
Curacao
Netherlands Antilles

Double Nobelists

Henry Heatherly himself (Letters, Winter 1990) commits an error of omission in pointing out the error of Phillips Stevens's assertion that Pauling and Curie were the only two individuals to have received two Nobel Prizes. He rightly credits John Bardeen with two Nobels in Physics (1956 and 1972) but is apparently unaware that Frederick Sanger of Great Britain won the Nobel Prize for Chemistry in 1958 and again in 1980.

Picayune errors aside, I've been an enthusiastic reader of your excellent periodical for the past ten years. May you continue to flourish.

Tony Johnson
La Grange College
La Grange, Ga.

Penn-itence

It was way cool to see a review of our book *Penn & Teller's Cruel Tricks for Dear Friends* in the Winter 1990 *SI*. It did, however, force me to choose between two of my personal vows. One vow was never to read anything in the press with my name in it, and the other was to read every word of every issue of SKEPTICAL INQUIRER. So, I read it.

I liked Mary Beth Gehrman's saying we were practicing "metacondescension at its best." I'm not sure what it means, but we'll swear by it from

now on.

There's just one thing I'd like to point out before someone beats me to it. The excerpt from the book, the one that really jumps out, indented and professionally typeset and everything, is from a story of mine called "Kamus, King of Cards," and the chosen paragraph was actually written by Albert Camus. The joke of the bit was that Camus was a close-up magician and one of his card tricks is described using quotes from his essays as "patter." I'm sure everyone recognized the difference in writing style between Albert and me, but—just in case someone missed it—I wanted to make it crystal clear. Old Camus was a bitchin' writer, but when he trashes rationalism I don't want it attributed to my name.

I respect rationalism as much as the next guy, even if the next guy is James Randi.

Penn Jillette
Penn & Teller
New York, N.Y.

Gremlins

A production gremlin, of the decidedly nonparanormal variety, marred a statement by Milton Rothman in a reply to his critics in the Spring 1990 Letters to the Editor column (p. 323). A dropped line in the second paragraph of his response had him seemingly referring to positively charged electrons. The phrase in question was supposed to read, "The fact that in our part of the universe all atoms consist of positively charged nuclei surrounded by negatively charged electrons is also perfect knowledge. . . ."—ED.

The letters column is a forum for views on matters raised in previous issues. Brief letters (less than 250 words) are welcome. We reserve the right to edit longer ones. They should be typed double-spaced. Due to the volume of letters, not all can be published. Address them to Letters to the Editor, SKEPTICAL INQUIRER, 3025 Palo Alto Dr. NE, Albuquerque, NM 87111.

Thinking About the Mind and the Universe

Physicists influenced by New Age nonsense, and by what they fancy certain Eastern religions say, find the strongest support for antirealism in the "measurement problem" of quantum mechanics. A particle's property seems not to be out there until the particle interacts with a measuring apparatus that collapses its wave packet and allows the property to become "definite."

Does it follow fromthe fact that an electron is not there until observed that the universe is not there until observed? It does not. There is nothing new about the fact that many things that seem to be out there are not. The image in a mirror is not behind the mirror, as baby chimps suppose. No two persons in front of a looking glass see the same reflection. A mirror does not look like anything in an empty room. It does not follow that a well-defined structure of room, mirror, and bouncing light rays is not there. A rainbow is observer dependent. No two people see the same bow. No arc of colors is out there. It does not follow that a well-defined structure of sun, sunlight, and raindrops is not there. Moreover, neither rainbow nor mirror images require human observation. Unmanned cameras photograph them admirably.

It is true that an electron is somehow—no one knows exactly how—not there . . . until measured even though the measurer can be mindless. It does not follow that the macroscopic records of measuring instruments are not there until a human mind sees them. It does not follow that quantum fields, interacting in enormously complex ways, are not there. Because the sound of a falling tree is a sensation in your brain, it does not follow that the tree and the compression waves are inside your brain. Quantum mechanics raises not a single fresh metaphysical problem. It has nothing to say about such ancient unanswerable questions as whether the universe was created or exploded all by itself, whether it would go on running if all minds vanished, or why quantum fields exist rather than nothing.

If you are compelled to think, for emotional reasons or because some guru said so, that you are essential to the universe, that the moon would not be there without minds to see it, you are welcome to such self-centered insanity. Don't imagine that it follows from quantum mechanics.

Realism is not a dirty word.

—*Martin Gardner*

Excerpted by permission from "Guest Comment: Is Realism a Dirty Word?" *American Journal of Physics*, American Association of Physics Teachers, 57(3), March 1989.

Local, Regional, and National Organizations

The organizations listed below have aims similar to those of CSICOP and work in cooperation with CSICOP but are independent and autonomous. They are not affiliated with CSICOP, and representatives of these organizations cannot speak on behalf of CSICOP.

UNITED STATES

ALABAMA. Alabama Skeptics, Emory Kimbrough, 3550 Watermelon Road, Apt. 29A, Northport, AL 35476.

ARIZONA. Tucson Skeptical Society (TUSKS), James McGaha, Chairman, 2509 N. Campbell Ave., Suite #16, Tucson, AZ 85719. **Phoenix Skeptics,** Michael Stackpole, Chairman, P.O. Box 62792, Phoenix, AZ 85082-2792.

CALIFORNIA. Bay Area Skeptics, Rick Moen, Secretary, 4030 Moraga, San Francisco, CA 94122-3928. **Berkeley Skeptics,** Daniel Bain, Contact, U.C. Berkeley, 300 Eshleman Hall, Berkeley, CA 94720. **East Bay Skeptics Society,** Daniel Sabsay, President, P.O. Box 20989, Oakland, CA 94620. **Society for Rational Inquiry,** Bob Lee, President, 1457 57th St., Sacramento, CA 95819. **Southern California Skeptics,** Susan Shaw, Secretary, P.O. Box 5523, Pasadena, CA 91107; San Diego Coordinator, Ernie Ernissee, 5025 Mount Hay Drive, San Diego, CA 92117.

COLORADO and WYOMING. Rocky Mountain Skeptics, Béla Scheiber, President, P.O. Box 7277, Boulder, CO 80306.

DISTRICT OF COLUMBIA, DELAWARE, MARYLAND, and VIRGINIA. National Capital Area Skeptics, c/o D. W. "Chip" Denman, 8006 Valley Street, Silver Spring, MD 20910.

FLORIDA. Tampa Bay Skeptics, Gary Posner, 6219 Palma Blvd., #210, St. Petersburg, FL 33715.

GEORGIA. Georgia Skeptics, Keith Blanton, Vice Pres., 150 South Falcon Bluff, Alpharetta, GA 30201.

ILLINOIS. Midwest Committee for Rational Inquiry, Ralph Blasko, Chairman, P.O. Box 2792, Des Plaines, IL 60017-2792.

INDIANA. Indiana Skeptics, Robert Craig, Chairperson, 5401 Hedgerow Drive, Indianapolis, IN 46226.

KENTUCKY. Kentucky Assn. of Science Educators and Skeptics (KASES), Chairman, Prof. Robert A. Baker, 3495 Castleton Way North, Lexington, KY 40502.

LOUISIANA. Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM), Henry Murry, Chairman, P.O. Box 15594, Baton Rouge, LA 70895.

MASSACHUSETTS. Skeptical Inquirers of New England, Laurence Moss, Chairman, c/o Ho & Moss, Attorneys, 72 Kneeland St., Boston, MA 02111.

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TEXAS. Austin Society to Oppose Pseudoscience (ASTOP), Lawrence Cranberg, President, P.O. Box 3446, Austin, TX 78764. **Houston Association for Scientific Thinking** (HAST), Darrell Kachilla, P.O. Box 541314, Houston, TX 77254. **North Texas Skeptics,** John Blanton, President, P.O. Box 111794, Carrollton, TX 75011-1794. **West Texas Society to Advance Rational Thought,** Co-Chairmen: George Robertson, 516 N Loop 250 W #801,

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SPAIN. Alternativa Racional a las Pseudosciencias (ARP), Luis Miguel Ortega, Executive Director, P.O. Box 6.112, Bilbao.

SWEDEN. Vetenskap och folkbildning (Science and People's Education), Sven Ove Hansson, Secretary, Sulite Imavägen 15, S-161 33 Bromma.

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The Committee for the Scientific Investigation of Claims of the Paranormal

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- Does not reject claims on a priori grounds, antecedent to inquiry, but rather examines them objectively and carefully.

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