

Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON

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FANTASY PRONENESS
in John Mack's *Abduction*

The Enigmatic
'Battery of Baghdad'

What's That I Smell?
The Claims of Aromatherapy

The Delights and Dangers of
SENSORY ILLUSIONS



**Fun and Fallacies
with Numbers**
by Marilyn vos Savant



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ON THE COVER:
A photo of a San Francisco city street taken with the camera tilted to the angle of the incline.
(photo: Oliver Langan)

EDITOR'S NOTE

Inevitable Illusions, and CSICOP at Twenty

The marvelous human brain, even while working quite *properly*, can deceive us and lead us astray. Biophysicist Rainer Wolf, in "Believing What We See, Hear, and Touch: The Delights and Dangers of Sensory Illusions" (p. 23), presents a variety of fascinating sensory illusions. Such illusions intrigue and perplex; they also instruct. They are a powerful demonstration of how, as Wolf reminds us, our perception of the external world is a process of active construction, not passive recording, and illusions are sometimes the natural and inevitable result.

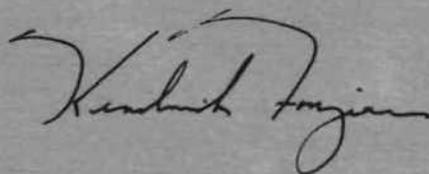
We can never eliminate misperceptions, but as Wolf says, by understanding the workings of our brain, we can avoid some of the misinterpretations construed from them. The CSICOP Human Error Workshop, the subject of a report by Nancy Shelton (p. 21), expanded on that theme, showing how errors of all sorts are a part of the human condition. We are *all* subject to them, and only humility and awareness in the face of that knowledge can save us from compounding them.

* * *

Twenty years ago, April 30-May 1, 1976, an extraordinary conference took place at the then brand-new Amherst campus of the State University of New York at Buffalo. It was called "The New Irrationalisms: Antiscience and Pseudoscience." This was the conference at which the Committee for the Scientific Investigation of Claims of the Paranormal was established. (Later that year, the first issue of the SKEPTICAL INQUIRER—at first called *The Zetetic*—was published.)

Philosopher Paul Kurtz, the founding force behind CSICOP, spoke passionately on the increase in irrationalism, the need for an appreciation of a scientific attitude as a part of culture, and the goal of education to develop "reflective persons—skeptical, yet receptive to new ideas; always willing to examine new departures in thought, yet insisting that they be tested before they are accepted." Thus began two decades of CSICOP, and now its twentieth anniversary will be marked by another, even more ambitious conference, the First World Skeptics Congress, "Science in the Age of (Mis)information," June 20-23, also in Amherst. There will undoubtedly be some looking back over CSICOP's many contributions, but the emphasis will be on important issues of today (see pages 12-14) and the many challenges ahead.

If we are in the information age, we are likewise in the *misinformation* age. The means and the media for spreading misinformation—and the cultural and economic dynamics that encourage that spread—have expanded dramatically over the twenty years since CSICOP's founding. The issues are fascinating; the challenges are formidable. It should prove an interesting time.



Skeptical Inquirer

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Gardnerfest: Admirers 'Gather for Gardner' to Fete the Modest Genius

Over a four-day weekend in January, Martin Gardner, SKEPTICAL INQUIRER "Notes of a Fringe-Watcher" columnist, former *Scientific American* columnist, and book author, was wined, dined, and entertained by his fans at a conference held in his honor in Atlanta.

The second such event (the first was in 1993), it was titled the "Gathering for Gardner II." If the title was unimaginative, nothing else was, as an impressive assortment of the honoree's admirers came to pay homage to the multitalented author from Hendersonville, North Carolina. From scheduled daily presentations and formal banquet performances to myriad impromptu sessions, attendees encountered a parade of varied entertainers, puzzle aficionados, and other clever folk.

Not surprisingly, since Gardner is author of several magic books, magicians were there in profusion, including the inventive Max Maven, the clever Meir Yedid, and the irrepressible James "The Amazing" Randi, who was master of ceremonies for one banquet. Another evening's entertainment was emceed by the legendary Jay Marshall, who closed with his famous ventriloquistic act featuring his smart-aleck hand puppet "Lefty."

Puzzle and game buffs—inventors, collectors, and intrepid solvers—dominated the lectures. Here, the influence of Gardner's "Mathematical Games" column, which appeared in *Scientific American* for 25 years, was obvious. Several of the puzzle and game presenters began with testimonials to Gardner and his incomparable contribution to this field.

Mathematicians also gave several presentations. These included Frank Harary, who spoke on "The Math of Human Decisions," Persi Diaconis, who discussed "Mathematics and Magic Tricks," and Stan Isaacs, who lectured on "Exploring Math through Puzzles."

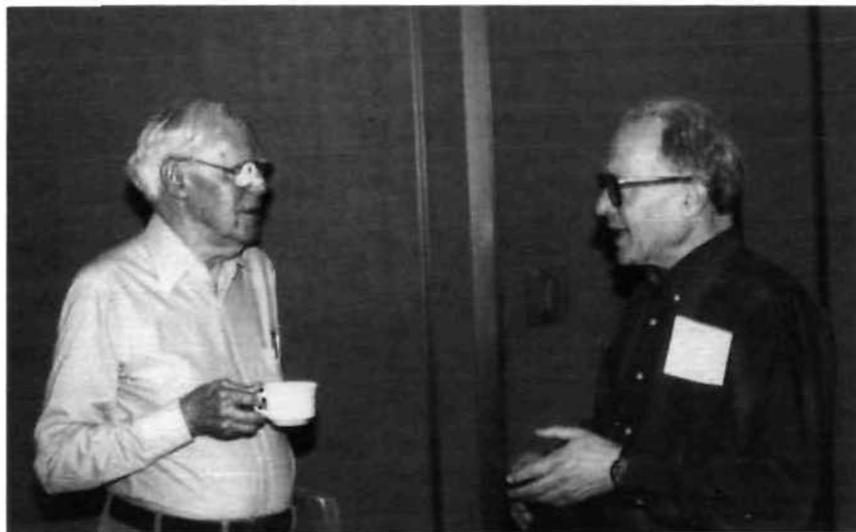
Arthur Benjamin, who is a math professor by day, gave an impressive banquet performance as a "lightning calculator" (or, as Jay Marshall quipped in introducing him, "a savant who is not an idiot").

Other presentations focused on origami and other paper art, knots, and the *trompe-l'oeil* artworks of M. C. Escher. Adrian Fisher came all the way from England to provide a slide-photo tour of that country's "Mazes and Tessellations." These included brick-pavement mazes in school courtyards and shopping center lots, various giant hedge mazes, and even indoor mirror mazes. (Fisher designed the unique Evolution Maze for the Darwin Centre at the Edinburgh Zoo in Scotland and also the world's largest maze: Created in a Pennsylvania cornfield consisting of a great stegosaurus covering 126,000 square feet, it is dubbed "Amazing

when he took a sheet of paper emblazoned with a picture of a yellow sphere, rolled it into a cone, and poured out a yellow ball! *Omni* magazine's Scot Morris gave an entertaining slide presentation titled "What Is It?" that drew guess after guess until he revealed in turn a corncob butterer, or better mousetrap, or bottle opener that counts the number of times it is used.

At breaks and other unstructured times, attendees saw additional surprising marvels: close-up magic tricks and novelties of all sorts. Not the least of these were Harry Eng's challenging creations: narrow-necked bottles containing not the expected ship, but other impossible assemblages like one that included large dice and a full deck of playing cards pierced by a pencil. Then there was Scott Kim who penned his ingenious "Inversions"—he did one for Martin Gardner which turned upside down *still* reads "Martin Gardner" (see Figure 1).

Unfortunately, despite Gardner's contributions to them, many other fields went



Martin Gardner talks with one of his fans, Ray Hyman, a CSICOP Executive Council member.

Maize Maze.")

Committee for the Scientific Investigation of Claims of the Paranormal Fellow Jerry Andrus gave a well-received performance that combined magic with some of the optical illusions he is famous for. There were audible gasps

all but neglected. CSICOP Executive Council member Ray Hyman did represent the subject of paranormal investigation with his enlightening talk on "Stargate"—the U.S. government's secret project that attempted to use extrasensory perception ("remote viewing") to gather

Figure 1.

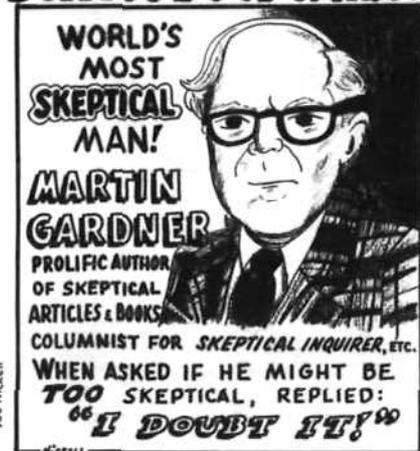
intelligence information. Hyman coauthored a study for the Central Intelligence Agency that evaluated the ineffective project (as reported in the March-April 1996 *SKEPTICAL INQUIRER*). Other fields that were neglected, although Gardner has written books on the topics, were cryptography, science experiments, and pseudo-

the head of a pin, complete with the inscription, "To Martin Gardner, from Allan Boardman, January 1996."

One accomplishment of the conference was persuading Gardner to attend, his modesty being well known. The main accomplishment was bringing deserved accolades to Gardner, an admired genius of our time.

—Joe Nickell

Believe It or What?



Joe Nickell

science (his *Fads and Fallacies in the Name of Science* being a great classic on the subject).

However, Prometheus Books had his novel (*The Flight of Peter Fromm*) for sale along with many of his other titles; and Binary Arts Corporation recalled his authoritative work on *Annotated Alice: Alice's Adventures in Wonderland and Through the Looking-Glass* by producing a special puzzle: It features five of Alice's Cheshire Cats, one of which, when the pieces are rearranged, disappears—leaving behind only its grin. This and dozens of other puzzles and diversions were included in a conference kit that each attendee contributed to and received. Another item: a 5000× enlargement of the "world's smallest puzzle," a crossword puzzle etched on

Debunking the Mystical in India

"Indian Guru Busters Debunk All That's Mystical," reported John F. Burns in a *New York Times* article (October 18, 1995). Pictured was Prahbir Ghosh holding a fake human skull, saying it was typical of tricksters' props. The article described Hindu believers who were flocking to temples in order to witness the "miracle" of religious idols that appeared to be drinking milk.

Ghosh, president of the Indian Science and Rationalists' Association, was described by Burns as a 50-year-old who has spent his lifetime battling the belief in the supernatural. By his own account, Ghosh has exposed 150 gurus and swamis as frauds, effectively putting them out of business.

He showed that because of capillary attraction any liquid, including milk, can be made to rise from a spoon through the porous ceramics the idols are made from. The Science and Rationalists' Association is said to have started in 1949 and to have 86,000 members in 300 branches across India.

In 1993, Calcutta rationalists held a weeks-long vigil outside the home where the body of a prominent guru, Balak Brahmachari, was laid out. His disciples

claimed he was in a deep trance, not dead. But after 55 days, when the body had badly decomposed, police carried the body away for cremation, setting off street battles in which scores were hurt.

Similarly, Ghosh's rationalists have exposed Christian evangelists. One evangelist claimed to have made a 10-year-old child, presumed to be unable to hear or talk since birth, speak during a rally in Calcutta. Ghosh, confronting the boy in front of the audience, persuaded him to confess to the crowd that he had grown up speaking Bengali. "We created a counter-mass-hysteria that night," Ghosh said. "Now, the trick is to repeat that everywhere in India, wherever these youngsters appear."

Burns provided more examples of how unscientific claims made by India's mystics were exposed. Prime Minister P. V. Narasimha Rao's contacts with swamis have brought him embarrassment more than once. The governmental leader is said to consult a New Delhi-based guru, Chandraswamy. And in 1993 the prime minister reportedly was impressed when Sai Baba produced a gold watch out of thin air. However, when the televised event was played back in slow motion, it was obvious that Baba had employed sleight-of-hand techniques commonly used by magicians. The Indian rationalists, Burns concluded, have successfully exposed "fraudulent 'godmen' who whisk gold watches out of thin air, levitate, give off electric charges, and even claim to have conducted erudite discourses with tigers in the wild." As for Mother Teresa, said one Indian rationalist, "We believe that Mother Teresa is not at all any better than all the other godmen and godwomen because she helps to place a more kindly mask on the overall exploitation in our society."

The Burns article was shown to B. Premanand, convener of the Indian Committee for the Scientific Investigation of Claims of the Paranormal (10 Chettipalayam Road, Podanur-641 023, Tamilnadu, India) and editor of the *Indian Skeptic*, who had some different

observations. He said that incorrect membership figures were given in the *New York Times* article and several factual errors were made. Premanand also pointed out that the largest group involved in skeptical work was the Dravidian Self-Respect movement, which has about 2 million adherents in the state of Tamil Nadu.

Premanand then observed that the idols were not only of porous ceramics but also of stones and metals. "The trick of the gods drinking milk," he said, "is explained in the *Indian Skeptic* of November 1995. The milk simply flows down under the idol and is collected at the back side."

Premanand added that it was August 29, 1992, not in 1993, that Baba "produced a gold chain for presenting to the architect who built the hall where the prime minister, the speaker, two state chief ministers, two governors, and two union ministers were present. This episode," he continued, "was to be incorporated with the propaganda film on Sai Baba made by a Dutch film company at an expense of \$400,000 to show to people that even our prime minister was a witness to the creation of a gold necklace. But somehow the trick got exposed in the film, and the government suppressed the video film produced by the central government corporation, Doordarshan. But before it was suppressed, I got a copy of the same and hundreds of copies of this are now around India, being shown to the people. A copy of the same was given by me to the BBC for their documentary, 'Guru Busters,' shown on October 9, 1995."

Premanand also said, "I have given thousands of lectures all over India and demonstrated miracles. It was I who started my investigations on miracles since 1949. Dharendra Brahmachari did not show any miracles. He only taught yoga. It was one Balti Baba who showed the trick of any question one wrote on a piece of paper and kept in a pocket, [mater-

ial] which would appear on another paper when it is immersed in milk. Answers did not appear on the paper, only questions. It was not Dharendra Brahmachari," he continued, "but Sadachari Sai Baba who, in the guise of raising or activating your sexual power (Kundalini power), gave electric shocks. He was exposed at Bombay as I had demonstrated the equipment to our members there, wherein 6 volts are transformed into 10,000 volts. He is now in jail for murdering his first wife and for running a prostitute den in the guise of training people in Tantra yoga (Kundalini Yoga)."

Premanand has a book, *Science Versus Miracles*, in which he explains 150 or so tricks of the godmen. In his letter, he expressed interest in writing nine more volumes "so that I can explain about 1,500 tricks of the godmen which I have been able to explain since I started investigating them." The *Indian Skeptic* he edits is a monthly, in English. In a *New Humanist* (June 1992) interview with British editor Jim Herrick, Premanand smiled upon hearing that, in the West, European psychics and spiritualists are thought of as fraudulent whereas Indian gurus are believed to be basically honest. "They want something new and they think that new powers come from these gurus," he explained. "In India, you can take action against people who make false advertisements."

Although Ghosh and Premanand appear to be tackling "religious trickery" in different Randilike [James Randi, magician] ways and with differing claims, both appear to be enjoying the challenge of debunking mysticism in India, reputedly the most resistant nation to the appeal of rationalism and skepticism.

—Warren Allen Smith

Warren Allen Smith is associate editor of FREE INQUIRY.

Good Question

UPN-TV's new series "Paranormal BorderLine," introduced in March, provoked this comment by the *Albuquerque Tribune's* "TV Queen," M. J. Wilde: "Paranormal BorderLine' goes over the edge of believability with 'Star Trek: The Next Generation's' Jonathan 'Riker' Frakes at the helm. It will explore unexplained phenomena, like how shows like this GET ON THE AIR!"

Tsar Peter the First and Weeping Icons

The book by A. Vadimov and M. Trivas *From the Ancient Magicians to the Modern Conjurers* (Moscow, publishing house Iskustvo, 1979) describes the following fragment of the history of Russia:

In relation to various historical events many icons of the Virgin were easily moved to tears. For instance, when the clergy of St. Petersburg wasn't satisfied with the reforms of Peter the First, a "wonder" happened in the Troitski Cathedral. The large icon of the Virgin began to shed tears. Peter came to the cathedral, turned the icon, tore the framework away and discovered in the Virgin's eyes the smallest holes, and behind them a depression filled with thick lamp oil. The warmth coming from a lamp and candles softened the lamp oil and it dripped out of the Virgin's eyes. Peter punished the culprits of this hoax and wrote a letter to the cathedral's dean: "My order is that the Virgin icons should not weep anymore. If they weep with lamp oil, the priests' backs will weep with blood."

And the icons did not weep anymore—until Peter's death.

Submitted by S. Efimov (Kazakhstan, former USSR).



The Great Egg-Balancing Mystery

There is not the slightest doubt that one's mind can exert strong, totally subconscious influences on tasks that involve the hands. It is the secret of the Ouija board. It is the secret behind the sudden turning of dowsing rods whenever the dowser crosses a certain spot on the ground. Novelty stores used to sell what they called a "sex indicator." It consisted of nothing more than a small weight attached to the end of a string. You can make one in a jiffy. Hold the string's free end, allowing the weight to hang. When the weight is held above a man's hand, it will swing back and forth in a straight line. Held over a woman's hand, it will swing in an elliptical orbit. This works, of course, only if the person holding the string knows what to expect. Subconscious hand movements cause the device to fulfill expectations.

A recent scandal based on the Ouija-board effect is the claim that some autistic children while aided by a "facilitator" will type long documents far beyond the children's capacities to communicate by speaking. It has been shown by ingenious tests that a facilitator subconsciously guides the autistic child's hands as the child hits the keys. There have even been cases when autistic children in the hands of neurotic facilitators have typed fake condemnations of horrible sexual abuse by their loving parents!

For more than a century magicians have located hidden objects by what in

the trade is called "muscle reading." A person who knows where the object is concealed grasps the magician's wrist. Subconscious pressures by the person's hand guide the magician to the correct spot. (Some magicians, I should add, unwilling to take chances with an uncooperative spectator, will have a "stooge" in the audience send electronic signals by a reed switch in a shoe. A tiny receiving device on the magician's body produces pulses that tell him or her which way to go.)

One of the funniest examples of mind control over the body is the annual ritual in China of balancing fresh chicken eggs on their broad end on the first day of spring. The notion that the position of the sun or planets on a certain day can influence gravitational forces acting on the egg is so preposterous that physicists laugh at the theory. Yet intelligent people, unknowledgeable about science and inclined toward paranormal beliefs, actually think that at certain times of the year a fresh egg is more easily balanced than at any other time!

This egg-balancing ritual seems to trace back to ancient China. Tradition has it that on Li Chun, China's first day of spring (the name means "spring begins") eggs will balance on a smooth surface with greater ease than on other days. Old Chinese books of uncertain date, such as *Secret Kaleidoscope* and *Know What Heaven Knows*, are sources of this legend.

The legend reached the United States in 1945 when an article by Annalee Jacoby, describing the Chinese ritual, appeared in *Life's* March 19 issue. Like our Thanksgiving, Li Chun is a variable date. It usually falls on February 4 or 5. In 1945 it was February 4, the twenty-second day of the twelfth Chinese lunar month. Some years have no Li Chun. These are called "blind" lunar years because they fail to "see" the first day of spring. Other lunar years can have two adjacent Li Chuns.

According to the *Life* article, in 1945 most of the population in Chungking turned out on Li Chun to balance eggs. All over the city one could see fresh eggs, shells unbroken, balancing on pavement, tables, and other surfaces. Correspondents for the United Press wired back stories about the mania. Albert Einstein was reported to have said he doubted that the date had any influence on egg balancing. Chungking was divided between believers and skeptics. Someone proposed balancing a large number of eggs to spell "Einstein is nuts," but nothing came of it.

For reasons that reflect popular ignorance of science, combined with a love of miracles, the notion that fresh eggs balance more easily on the first day of spring caught fire in the United States. However, the first day of spring here is the day of the vernal equinox when the sun crosses the equator and day and night are of equal length. This occurs

about March 21, more than a month after China's first spring day. But this discrepancy did not trouble American believers.

Life's article touched off a small epidemic of egg balancing in the United States, not on Li Chun, but on the vernal equinox. The mania crested nearly forty years later, in Manhattan in 1983. According to a three-page report in *The New Yorker* (April 4, 1983), a believer named Donna Henes organized her sixth annual egg-balancing ceremony in the Ralph J. Bunche Park at First Avenue and Forty-second Street, across from the United Nations building. On March 20 the sun crossed the equator at precisely 21 minutes before midnight. At that instant, Henes believed, eggs would balance easily on their wide end.

Henes was then a 37-year-old artist strongly committed to working for world peace. Her egg-balancing ritual was intended to promote international harmony. The event was heralded by setting off 52 highway emergency flares, one for each week of the year. While the flares burned, Henes distributed from a laundry basket 360 fresh eggs donated by the Jersey Coast Egg Producers. Why 360? Because, Henes explained, there are 360 degrees in the Earth's circumference.

"When I first did this," Henes told *The New Yorker*, "I thought you had to use organic eggs. But it turned out you don't." She said she had no idea why eggs balanced on the equinox. "They just do, is all. I've had friends tell me you can even use eggs right out of the fridge. They don't even have to be at room temperature."

Several hundred peaceniks turned out for the 1983 ritual. Music was provided, said *The New Yorker*, by "two ocarinas, two saxophones, one sleigh bell, one harmonica, four tin whistles, and one tambourine." Peace messages written on several hundred orange streamers were tied to the iron railings surrounding the park. They bore such slogans as "World Friendship! Let's Have It Now!," "The Universe Spreads Out Before Us, Ineffably Profound," and "If Peace Comes to the Earth, Donna Will Be Largely Responsible."

For several minutes before the

equinox, Henes chanted a peace slogan, then carefully balanced an egg on the concrete base of an abstract sculpture called "Peace Form One." All over the small park eggs were balanced on the pavement, even on the iron railings. One man balanced an egg on the First Avenue median strip where it stayed until it was bashed by a Checker cab. Henes moved through the crowd, rubber-stamping eggs with "This Egg Stood Up, 3/20/83."

The New Yorker reporter was impressed. None of the physicists contacted by the magazine had heard about equinox egg balancing, nor could they think of any reason why they would balance. Magician James Randi told the magazine that eggs balanced just as easily on any other day, but *The New Yorker* reporter didn't buy it. Two days later the reporter took a dozen eggs to Ralph J. Bunche Park and for 20 minutes was unable to balance a single egg.

Such self-deception is not hard to understand. If you are convinced that an egg will balance more easily on a certain

egg at just that moment," she had said, "I feel as if the whole universe were in the palm of my hand. And when it balances, when it stands there, it's very calming. I feel so protected. It's as if the whole universe were working fine."

Whether an egg will balance or not depends on many conditions other than steady hands. The main factors are roughness of the egg's end and the roughness of the surface upon which the egg is placed. A concrete surface, for example, is so extremely uneven that it is not difficult to find a spot where any egg will balance. Moreover, because of slight surface irregularities on the eggshell itself, it sometimes will balance even on a smooth tabletop. If, however, you sandpaper the egg's end until it is perfectly smooth, balancing it on glass or formica is impossible.

Henes's annual egg-balancing ceremony continued for many more years. In 1984 five thousand people participated in the event when it was held at the plaza of the World Trade Center.



An 1892 Columbus Egg from Jerry Slocum's collection. The tiny lead ball must be guided through the open tube to the base where it stabilizes the egg.

day you will try a little harder, be more patient, and use steadier hands. If you believe that eggs won't balance on other days, this belief is transmitted subconsciously to your hands. It's the old Ouija-board phenomenon.

Even *The New Yorker* admitted this possibility:

The trouble may have been that we didn't want the egg to balance—that we wished to see Donna Henes proved right. Something she had said to us shortly after the equinox kept running through our mind. "When I hold an

Scot Morris, in his monthly column in *Omni* (March 1987), covered Henes's tenth annual ritual. "I don't know why it works," Henes told Morris, "but it does. Maybe it's because for a time surrounding the exact moment of the equinox the sun is directly over the equator and the Earth is balanced within the universe."

No one asked Henes why it works so well in China on February 4 and 5. Astrology buffs have a similar difficulty explaining why astrology works so well in China and India where it bears no resemblance to Western astrology. All



COLUMBUS'S BREAKING THE EGG.

three astrologies can't be right!

Some believers claim that eggs also balance easily on the autumnal equinox, about September 23, but the vernal equinox continues to be the most popular date. I do not know if this is still an annual event in Manhattan. The most recent report about it I could find in the *New York Times* was in 1988. An editorial of March 19 was headed, "It's Spring, Go Balance an Egg." Next day's *Times* said scores of people planned to gather on

"The notion that the position of the sun or planets . . . can influence gravitational forces acting on the egg is so preposterous that physicists laugh at the theory."

March 21 at the World Trade Center to start standing eggs on end at precisely the start of the equinox. A photograph of the event ran in the *Times's* March 21 issue. Robert Novick, a Columbia University physicist, is quoted as saying that gravitational forces are far too weak to have any influence on the eggs. I am told by Morris that Henes has moved to San Francisco. My letter to her was not answered.

Magicians have a way of balancing eggs on hard, white surfaces by cheating. Make a tiny pile of salt. Balance an egg on the pile—you can even use its sharp end—then gently blow away the

salt. A few undetectable grains remain to keep the egg upright.

The story of how Christopher Columbus balanced an egg was first told by Girolamo Benzoni in his 1565 *History of the New World*. Columbus was said to have attended a party where someone told him that even if he had not found the Indies someone else from Spain subsequently would have. Columbus asked for an egg. He challenged those present to balance it. After they failed, he bal-

anced the egg by crushing an end. His point was that once a deed is done, it is easy to see how to do it.

Fifteen years earlier a similar story had been told by Giorgio Vasari in his 1550 *Lives of the Most Eminent Painters, Sculptors, and Architects*. The Italian architect Filippo Brunelleschi had designed a dome for a cathedral in Florence named the Santa Maria del Fiore. The city fathers demanded to see his model, but he refused. Instead, he challenged a group of architects to make an egg stand on end. Whoever succeeded, he told them, would be allowed

to build the dome. After they all failed, he demonstrated how it could be done by tapping the egg on a marble table to flatten one end. "The craftsmen protested that they could have done the same, but Filippo answered laughing that they could also have raised the cupola if they had seen his model. And so it was resolved that he should be commissioned to carry out this work." When the church was finally built, years before Columbus made his voyage, it had the shape of half an egg slightly flattened at the top.

A popular type of mechanical puzzle is an egg that can be balanced only if you discover its secret. Jerry Slocum, of Beverly Hills, California, who owns the world's largest collection of mechanical puzzles, provided me with a history of balancing eggs. He sent seventeen pages from old catalogs advertising such eggs, beginning with Montgomery Ward's "Columbus Egg" of 1894. He also sent the first pages of eighteen U.S. patents, starting in 1891, for balancing eggs. Their internal mechanisms vary widely. They include weights to be manipulated, mercury to be maneuvered through tubes, steel balls to be rolled up spiral paths to the egg's center or guided through a maze.

"Professor Hoffmann," in *Puzzles Old and New* (London, 1893) describes a Columbus Egg containing a hollow cone with a hole at the top. The puzzle is solved by rolling a ball up a groove until it drops into the cone and falls to its base. You'll find a color photo of this egg in L. E. Hordern's privately published edition of Hoffmann's book (London, 1993), richly illustrated with photographs of puzzles in Hordern's collection. Puzzle collector Robert Darling, of Johnson City, Tennessee, gave me an ingenious egg currently sold in Germany by a firm named Pussycat. It balances only if you hold it with its pointed end upright for 25 seconds, then quickly invert it. It will then balance on its pointed end for 15 seconds before it topples over.

Finally, I must mention Piet Hein's celebrated superegg, discussed in Chapter 18 of my book *Mathematical Carnival* (1977, Random House). It legitimately balances on either end without any trickery. □



Fund for the Future

C S I C O P A T T H E C E N T E R F O R I N Q U I R Y

With the completion of its headquarters campus, The Committee for the Scientific Investigation of Claims of the Paranormal is poised for an explosion of growth. We appeal for your help in assuring adequate funding—now and in the future—for the bold initiatives that will shape the outreach of science and reason in the years to come.

To carry out its objectives in the second half of this decade, CSICOP has formulated specific program and project goals.

1) Critical Thinking / Science Education

The Committee proposes to develop new materials—ranging from publications to audio and video cassettes and instructional courseware—to disseminate broader and more accurate knowledge about scientific methods and to teach improved critical thinking skills.



2) Media Watch / Rapid Response

The Committee proposes to equip itself to be able to monitor major media on a continuing basis, and to be able to respond to claims quickly. This will entail additional staffing for continuous media monitoring, establishment of an e-mail network to permit rapid formulation of responses by qualified experts, and development of e-mail, FAX broadcast, and other capabilities to assure instantaneous dissemination of our statements to local, national, and world media.

In addition, the Committee plans to step up its production of audio and video materials through Inquiry Media Productions. Targets include sequels to the successful public education video *Beyond Belief*, talking books, a radio op-ed series, and a new public affairs series for public radio. Full implementation will require additional staffing and significant investments in production and distribution equipment.

3) The Institute for Inquiry

The Committee proposes to complete the development of its Institute for Inquiry adult education program. The Institute for Inquiry is already the nation's foremost provider of education on the subjects of skepticism, the scientific method, and the critical evaluation of paranormal and fringe science claims. Hundreds of persons have attended Institute for Inquiry courses at scores of locations.

4) The Library of Skepticism

With the establishment of the John and Mary Frantz Skeptics' Library in memory of Margaret Frantz at the Center for Inquiry, CSICOP has created a permanent repository to house and maintain the world's literature about the scientific analysis of paranormal claims—and to make it accessible to scholars and other qualified users.



CSICOP at the Center for Inquiry,
Box 703, Amherst, N.Y. 14226
(716) 636-1425

Science in the Age of (Mis)Information

The First WORLD SKEPTICS CONGRESS • 20th Anniversary of CSICOP • An International Organization
JUNE 20-23, 1996 • STATE UNIVERSITY OF NEW YORK AT BUFFALO AMHERST CAMPUS AND THE CENTER FOR INQUIRY

THURSDAY, June 20, 1996

11:00 a.m.-12:30 p.m. Press Conference—Center for the Arts, Screening Room, SUNY Buffalo-Amherst

1:45 p.m.-3 p.m. Opening Ceremony and Welcoming Remarks—Slee Hall, Amherst Campus

Paul Kurtz, Prof. Emeritus of Philosophy, SUNY at Buffalo; Chairman CSICOP

Buffalo Philharmonic Ensemble

Kendrick Frazier, Editor, *Skeptical Inquirer*; Science writer

William R. Greiner, President, University at Buffalo

Buffalo Philharmonic Ensemble

3 p.m.-5:45 p.m. "The Role of the Mass Media in (Mis)Informing the Public"

—Slee Hall, Amherst Campus

Moderator: **Milton Rosenberg**, Prof. of Psychology, University of Chicago;
radio moderator, WGN Chicago; PBS, "American Reader"

George Gerbner, Prof. of Communications, University of Pennsylvania

Leon Jaroff, Senior Editor, *Time Magazine*; founder, *Discover* magazine

Piero Angela, Journalist, TV moderator, author, Italy

Phillip Adams, Columnist, TV moderator, Australia

John Paulos, Prof. of Mathematics, Temple University

Dean Edell, National Radio Medical Commentator (Radio Feed)

6 p.m.-8 p.m. Dinner (on your own)

8 p.m.-10 p.m. Conference Address: **LEON LEDERMAN**, Emeritus Director of

Fermilab, and Nobel Laureate in Physics—Slee Hall, Amherst Campus



Paul Kurtz
Chairman, CSICOP



Leon Lederman
Emeritus Director of
Fermilab and Nobel
Laureate in Physics

FRIDAY, June 21, 1996

9 a.m.-11:45 a.m. "The Growth of Anti-Science"—Slee Hall, Amherst Campus

Moderator: **John Maddox**, Former Editor, *Nature*, Great Britain

Paul R. Gross, Director of the Center for Advanced Studies, Prof. of Sociology,
University of Virginia

Norman Levitt, Prof. of Mathematics, Rutgers University

Susan Haack, Prof. of Philosophy, Univ. of Miami

Victor Stenger, Prof. of Physics, Univ. of Hawaii

12 noon-1:50 p.m. Luncheon—Atrium, Center for the Arts,
Amherst Campus

Moderator: **Gene Emery**, Science Writer, *Providence Journal-Bulletin*

CHRIS CARTER, Creator of "The X-Files" Television Program

2 p.m.-3:30 p.m. Concurrent Sessions—Knox Lecture Hall, Amherst Campus

UFOLOGY—109 Knox Hall, Amherst Campus

Philip J. Klass, Senior Editor, *Aviation Week and Space Technology*, Wash., D.C.

James McGaha, Major, USAF, Tucson, Arizona

ASTROLOGY—110 Knox Hall, Amherst Campus

Moderator: **Cornelis de Jager**, Prof. of Astrophysics, Univ. of Utrecht, Netherlands

J. W. Nienhuys, Asso. Prof. of Mathematics, Technical University, Eindhoven, Netherlands

Ivan Kelly, Prof. of Psychology, Univ. of Saskatchewan

HOMEOPATHY—20 Knox Hall, Amherst Campus

Wim Betz, Prof. Academisch Centrum voor Huisartsgeneeskunde VUB, Belgium

James Randi, Conjuror, Author, Plantation, Florida

3:30 p.m.-5 p.m. Concurrent Sessions—Knox Lecture Hall, Amherst Campus

THERAPEUTIC TOUCH—109 Knox Hall, Amherst Campus

Moderator: **Vern Bullough**, Prof. of History, California State Univ. at Northridge

Béla Scheiber, System Analyst, Boulder, Colorado; Exec. Dir., Center for Inquiry Rockies

Bonnie Bullough, Prof. of Nursing, Univ. of Southern California

Dale Beyerstein, Prof. of Philosophy, Langara College, Vancouver, Canada

CHIROPRACTIC—110 Knox Hall, Amherst Campus

Stephen Barrett, Psychiatrist, Allentown, Pa.

CREATION/EVOLUTION—20 Knox Hall, Amherst Campus

Eugenie C. Scott, Anthropologist, Exec. Dir., NCSE

H. James Bix, Prof. of Anthropology, Canisius College

5 p.m.-8 p.m. Dinner (on your own)

8 p.m.-10 p.m. Keynote Address: **STEPHEN JAY GOULD**, PhD

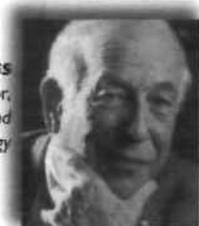
Museum of Comparative Zoology, Harvard University

—Alumni Area, Amherst Campus



Chris Carter

Creator of
"The X-Files"
Television Program



Phil Klass

Senior Editor,
*Aviation Week and
Space Technology*



James Randi

Conjuror, Author



Stephen Jay Gould

Museum of Comparative
Zoology, Harvard University

SATURDAY, June 22, 1996

9 a.m.—12 noon "Parapsychology: Recent Developments"—Slee Hall, Amherst Campus

Moderator: **James Alcock**, Prof. of Psychology, York University, Toronto, Canada
Ray Hyman, Prof. of Psychology, University of Oregon
Richard Wiseman, Prof. of Psychology, Univ. of Hertfordshire, U.K.
Susan Blackmore, Prof. of Psychology, Univ. of the West of England, Bristol, U.K.
Jessica Utts, Prof. of Statistics, Univ. of California at Davis
Stanley Jeffers, Prof. of Physics and Astronomy, York University, Toronto



Eugenie C. Scott,
Anthropologist,
Exec. Dir., NCSE

12 noon—1:45 p.m. Lunch at Center for Inquiry—**JOHN MADDOX**, Editor Emeritus, *Nature* magazine

2 p.m.—3:30 p.m. Concurrent Sessions—Knox Lecture Hall, Amherst Campus

MECHANISMS OF SELF-DECEPTION: HOW WE MISINFORM OURSELVES—109 Knox Hall, Amherst Campus

Barry Beyerstein, Assoc. Prof. of Psychology, Simon Fraser University, Canada
Thomas Gilovich, Prof. of Psychology, Cornell University
John Schumaker, Senior Lecturer in Psychology, University of Newcastle, Australia

ALTERNATIVE HEALTH CURES—110 Knox Hall, Amherst Campus

Jack Raso, Board Member, National Council Against Health Fraud; Editor, *Nutrition Forum*
Wallace Sampson, Clinical Prof. of Medicine, Stanford Univ.

PHILOSOPHY AND PSEUDOSCIENCE—20 Knox Hall, Amherst Campus

Moderator: **Paul Kurtz**, Prof. Emeritus of Philosophy, SUNY at Buffalo
Daisie M. Radner, Associate Prof. of Philosophy, SUNY at Buffalo
Lewis Vaughn, author
Theodore Schick, Prof. of Philosophy, Muhlenberg College
Tim Trachet, Exec. Dir., SKEPP; journalist, Belgium

3:30 p.m.—5 p.m. Concurrent Sessions—Knox Lecture Hall, Amherst Campus

PSYCHOANALYTIC THEORY AND THERAPY AFTER 100 YEARS—109 Knox Hall, Amherst Campus

Adolf Grünbaum, Andrew Mellon Prof. of Philosophy, University of Pittsburgh

CRITICAL THINKING IN EDUCATION—110 Knox Hall, Amherst Campus

Moderator: **John Kearns**, Prof. of Philosophy, SUNY at Buffalo
Clyde Herreid, Prof. of Biology, SUNY at Buffalo
Lee Nisbet, Prof. of Philosophy, Medaille College, Buffalo
Carol Tavis, Psychologist, Author, Los Angeles
John Corcoran, Prof. of Philosophy, SUNY at Buffalo

SPIRITUALISM AND THE UNIVERSITY AT BUFFALO EXPOSE—20 Knox Hall, Amherst Campus

Joe Nickell, Senior Research Fellow, CSICOP, formerly University of Kentucky
Gordon Stein, Director, Center for Inquiry Library

THE PARANORMAL IN CHINA—4 Knox Hall, Amherst Campus

Shen Zhenyu, China Association for Science and Technology
Lin Zixin, former editor, *Science and Technology Daily*, China
Sima Nan, known as the Chinese James Randi
Zu Shuding, Prof., Au Hui Medical University
Zhang Tongling, Prof., Beijing Medical University
Guo Zhenyi



John Maddox
Editor Emeritus,
Nature magazine



Lin Zixin
former editor, *Science and
Technology Daily*, China



Susan Blackmore
Prof. of Psychology,
Univ. of the West of England



Steve Allen
Author and entertainer



Kendrick Frazier
Editor, *Skeptical Inquirer*



Ray Hyman
Prof. of Psychology,
University of Oregon

7 p.m.—10 p.m. Awards Banquet, Cash Bar, Reception, Hyatt Regency, downtown Buffalo —Featuring a special performance by Steve Allen

ISAAC ASIMOV AWARD: **Stephen Jay Gould**
IN PRAISE OF REASON AWARD: **Leon Lederman**
PUBLIC EDUCATION IN SCIENCE AWARD: **Dean Edell**
DISTINGUISHED SKEPTIC AWARD: **James Randi**
DISTINGUISHED SKEPTIC LIFETIME ACHIEVEMENT AWARD: **Steve Allen**
RESPONSIBILITY IN JOURNALISM AWARD: **Phillip Adams**,
Piero Angela, and **Pierre Berton**

SUNDAY, June 23, 1996

9 a.m.—12 noon World Skeptics Update—Slee Hall, Amherst Campus

Moderator: **Barry Karr**, Executive Director, CSICOP
Tim Trachet, SKEPP, Belgium
Mario Mendez Acosta, Mexican Association for Skeptical Research, Mexico
Amardeo Sarma, Society for the Scientific Investigation of Para-Science, Germany
Michael Hutchinson, *Skeptical Inquirer* representative, United Kingdom
Miguel Angel Sabadel, Astronomer, *Alternativa Racional*, Spain
Henry Gordon, Ontario Skeptics, Canada
Stephen Basser, Australian Skeptics, Australia
Lin Zixin, former editor, *Science and Technology Daily*, China
Massimo Polidoro, editor *Scienza & Paranormale*, CICAP, Italy
Cornelis de Jager, Prof. of Astrophysics, Univ. of Utrecht, Netherlands
Valery Kuvakin, Prof. of Philosophy, Moscow State University, Russia

Post-Congress Tour

Bus excursion to see Niagara Falls (U.S. and Canadian sides).
Sunday, June 23, 1996 • 2:00 p.m. - 9:00 p.m.

Science in the Age of (Mis)Information

JUNE 20-23, 1996 • STATE UNIVERSITY OF NEW YORK AT BUFFALO AMHERST CAMPUS AND THE CENTER FOR INQUIRY

REGISTRATION INFORMATION • PLEASE TEAR OFF AND MAIL

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Please make my reservations for ___ person(s). _____
- Yes, I would like to attend the **Luncheon** on Friday, June 21 (\$22 per person).
Please make my reservations for ___ person(s). _____
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Please make my reservations for ___ person(s). _____
- (FOR NON-REGISTERED GUESTS) Yes, I would like to attend the **Leon Lederman** Congress Address on Thursday, June 20 (\$10 per person). Please make my reservations for ___ person(s) _____
- (FOR NON-REGISTERED GUESTS) Yes, I would like to attend the **Stephen Jay Gould** Keynote Address on Friday, June 21 (\$10 per person). Please make my reservations for ___ person(s) _____
- Yes, I would like to join the special bus tour to **Niagara Falls** on Sunday, June 23 after the Congress. (\$50 per person. 2:00 p.m. - 9:00 p.m.) Please make my reservations for ___ person(s). _____

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HOTEL INFORMATION—Mention CSICOP Congress for these special Congress Rates

- **Buffalo Marriott Hotel**, 1340 Millersport Highway, Amherst, NY. 1-800-334-4040 or (716) 689-6900. \$89 Single/Double. Main Conference Hotel. Complimentary Airport Shuttle.
- **Hampton Inn**, 10 Flint Rd., Amherst, NY. (716) 689-4414. \$68 Single, \$78 Double. Complimentary Airport Shuttle and Continental Breakfast.
- **Red Roof Inn**, I-290 and Millersport Hwy N, Amherst, NY. 1-800-874-9000 or (614) 876-3345 (ask for room block #B104000298) \$54.99 Single (1 person) or \$63.99 Single (2 people). \$64.99 King (1 person) or \$73.99 (2 people).
- **Super 8 Motel of Amherst**, 1 Flint Road, Amherst, NY. (716) 688-0811. \$44.00 Single or Double.
- **Motel 6**, 4400 Maple Road, Amherst, NY. (716) 834-2231. \$39.99 Single, \$45.99 Double.

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NOVA's Alien Abduction Program Shows Questionable Techniques

There's a maxim in journalism that showing is better than telling. Instead of stating that someone is a crook or a saint, showing them doing crooked or saintly things will leave a far more lasting impression.

PBS's February 27, 1996, NOVA program on alien abductions ("Kidnapped by UFOs?" written, produced, and directed by Denise DiLanni) tried to follow that rule, and the result was one of the best, most authoritative television programs on alien abductions produced to date.

The idea that regular folks have been held captive by space aliens, used as guinea pigs, and served as involuntary donors of eggs and sperm to produce a hybrid of human and extraterrestrial is a compelling piece of folklore.

And because the human brain seems programmed to give more weight to one well-told story than to piles of data suggesting that the story is false, the similar-sounding tales told by UFO abductees have compelled a lot of people to believe that investigators like psychiatrist John Mack or artist Bud Hopkins really are dealing with the victims of alien kidnappings.

Unfortunately for skeptics trying to lend a credible counterpoint to this scenario, the science behind the examination of UFO claims can be subtle and sensitive, as delicate as pointing out that a therapist may be the suggesting to hypnotized persons that they might want to interpret their dream as an abduction experience.

But ours is not an age of subtlety. The tabloid talk and news shows, where this phenomenon has largely played itself out, want issues cast in the harsh contrast of black and white, right and wrong. They want tales of legendary journeys, shocking victimization, coverup or ineptitude by authority figures. The UFO abduction tales have all the right ingredients.

On these television programs, if a skeptic gets the opportunity to raise the possibility that the hypnotist was shaping the recollections, the hypnotist and the subject roundly deny such influence. If the skeptic (and there's seldom more than one on these shows) questions whether the experiences are real, the UFO proponents brandish research suggesting that abductees suffer from no mental illness and argue, in effect, that because these people are not crazy, their experiences are real.

NOVA tried to explore those delicate issues by taking viewers to hypnosis sessions held by Hopkins, showing Hopkins interviewing two children for the first time; and letting the public hear what happens when an abductee claims to have been aboard a UFO with John Kennedy and Nikita Khrushchev at the height of the Cuban missile crisis.

Hopkins's visit with the two children was particularly revealing, showing how the man who popularized current UFO abduction folklore won't take no for an answer.

When he shows 4-year-old Ryan a stereotypical drawing of a big-eyed

space alien and asks if he recognizes the picture, the boy shakes his head. Nonetheless, Hopkins asks him to make up a story about the creature in the drawing, in which Hopkins finds elements that suggest a kidnapping.

When he turns to Ryan's younger sister, toddler Paula, with the same picture, Hopkins asks, "Is he a nice guy or a bad guy?"

"Bad guy," Paula answers.

"Do you like him?" Hopkins asks.

"Yea," Paula answers.

"You do?" Hopkins responds, apparently surprised by the response. "You said he was a bad guy."

"Yea," Paula says again.

"Do you like bad guys?"

"Yea," says the toddler.

For viewers who failed to pick up the nuances, NOVA asks Elizabeth Loftus, professor of psychology at the University of Washington, to comment on Hopkins's interviewing techniques. Loftus suggests that viewers could be watching a UFO-abduction memory in the making.

Much of the ground covered by NOVA is familiar to SKEPTICAL INQUIRER readers. The program explained how kidnappings by strange creatures has been a common theme in history, with the creatures depending on the culture at the time. It used Committee for the Scientific Investigation of Claims of the Paranormal Fellow Robert Baker to



'John,' one of the thousands of Americans who report being victims of alien abductions, sketches the alien kidnapers who he claims took him aboard a spaceship for sexual experiments. He and other 'abductees' discussed their experiences on the recent NOVA program, 'Kidnapped by UFOs?' (Photo: copyright Stephanie Berger.)

show how false memories can be implanted through hypnosis. It highlighted Loftus's research (she's also a CSICOP Fellow) in which she has found that about one-quarter of the population can be led to embrace memories of events that never happened.

Some of it offered new details.

NOVA played portions of the infamous "Khrushchev-Kennedy" tape in which Donna Bassett, who infiltrated Mack's group by posing as an abductee, tearfully recalled being aboard a UFO

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when the two world leaders needed to resolve the unfolding Cuban missile crisis.

In Mack's technique, "there was no skepticism," Bassett now says. "He would believe the most far-fetched things, or at least he seemed to."

At the very least, the tape of that hypnosis session suggests that Mack was anxious to pursue the Khrushchev angle when as the sometimes-sobbing Bassett insisted that the Soviet leader couldn't possibly be on board the UFO with her.

BASSETT: He looks like Khrushchev. That can't be.

MACK: Was it Khrushchev?

BASSETT: It's stupid.

MACK: Drop down (the) 35-year-old

critical mind for a moment. Did he look like Khrushchev?

BASSETT: Yes.

MACK: Okay. Was anyone else?

BASSETT: There are other people there.

MACK: Anyone else with responsibility like Khrushchev?

BASSETT: Yes . . . They're happy. They're kissing.

MACK: Who's the other one? What's the other one's name?

BASSETT: The other one. Kennedy. Kennedy. Kennedy.

MACK: You see him?

BASSETT: Yes.

Bassett now says, "The only time he got critical was when I tried to find alternative explanations for some of these experiences myself."

Mack, still puzzled by why Bassett would pose as an abductee, says, "People I know in the experiencer community think she did not hoax. She's an experiencer who never came to terms with her experiences."

Left unspoken is the curious question of why Mack would quote other abductees as the authorities on whether Bassett's story is real. Mack is supposed to be the professional here.

Particularly sobering was the scene where Hopkins was helping a man with a "Comedy Central" T-shirt relive an abduction experience. It helped viewers appreciate how powerful and how disturbingly wrenching these "recollections" can be.

If alien beings aren't kidnapping these folks and these patients would be best treated with reassurances that they are the victims of unusually vivid dreams or hallucinations, the work of people like Mack and Hopkins, who allegedly encourage people to interpret their experiences in the framework of UFO mythology, takes on extraordinarily ominous overtones.

People who claim they are UFO abductees are probably not crazy. By showing far-more-plausible alternatives and revealing how UFO investigators may be a little too anxious to guide people toward believing they've had an encounter with space creatures, NOVA has set the standard against which other programs on alien abductions should be measured. □



The Weird World Web

Now that computer scientists have worked their miracle encircling our globe in a World Wide Web, pseudoscience is, as usual, following right at their heels. One of the more curious Web sites is at <http://www.CyberGate.com/~ufonline>, called "Abductees Anonymous," "dedicated to helping other experiencers like ourselves better understand what has happened to them." Filled with beautiful New Age cosmic art, the site contains people's accounts of their UFO abduction experiences (with a provision for readers to add their own). One such account is headlined, "Hypnotherapist reports cases of Spontaneous Involuntary Invisibility." It begins: "Santa Barbara, Calif.—A woman recently disappeared while standing in line at the post office, and it happened to another woman while waiting to check out at a grocery store. What's going on here?" Another intriguing Web site story is a news account supposedly from the *Cleveland Plain Dealer* (November 8, 1995) telling how an unnamed surgeon in Ventura, California, allegedly removed an alien implant from a woman's big toe, and another from the back of a man's hand. Curiously, there has thus far been no follow-up story to these remarkable claims, so whatever may have happened to this indisputable "proof" of alien intervention is unfortunately not known. We may surmise that the alien "Men in Black" have likely paid the surgeon a visit and confiscated his evidence.

If you are intrigued by gossip about flying saucers, and especially the "saucerers," check the on-line issues of James Moseley's *Saucer Smear* magazine at <http://www.mcs.com/~kvg/smear.htm>. Read accounts of "Puerto Rican blood-sucking alien predators" that are "shockingly close to the truth!" In one recent issue of *Saucer Smear*, we find an ad from Malibu UFOlogist and Bigfootologist Jon Erik Beckjord (Psychic Vibrations, *SI*, Winter 1980-81, p. 15) offering for sale "Nicole Simpson ghost photos on videotape." Beckjord claims that his VHS video shows "ghost images of Nicole Simpson, Ron Goldman, plus psychic images of living persons, O.J. and A.C., all taken at the Nicole Simpson condo Jan. 28 [1995], and enlarged from master prints." It costs \$19, the money allegedly going to assist the opening of the UFO Museum in Los Angeles. Apparently not enough tapes were sold because in February 1996 Beckjord published a letter in the newsletter of the San Francisco region's Mensa, announcing his migration from Southern to Northern California, describing his exploits and interests, but somehow neglecting to mention UFOs, Bigfoot, and ghosts. *Saucer Smear* is the indispensable guide to who is feuding with whom in the field of UFOlogy: who has recently called whom a liar, who is accusing whom of getting drunk and assaulting, or worse (Moseley publishes both sides of disputes submitted to him, no matter how scurrilous or puerile the

charges may be).

Practicing astrologers/psychotherapists are eligible to join the Psychological Astrology Mailing List, a "moderated discussion list for those who are practicing astrologers/psychotherapists. It is a low-volume, high-quality list. Those who are familiar with the works of Liz Greene, Howard Sasportas or Stephen Arroyo will know the territory. The moderator attends the Centre for Psychological Astrology in London, England." Interested parties should contact the moderator, Dermot Moore, who can be reached as psych-admin@astrologer.com.

If, however, you are a social worker, you might want to check out the Home Page for "Demon Possession Handbook" for Human Service Workers at <http://www.opendoor.com/Higher.Ground/hs.html>. It explains, for the benefit of those professionals, how to distinguish which clients are in need of counseling and which need exorcism. Among the telltale signs indicating demon possession are "violence, lust, greed" and "an unnatural power of persuasion," which in this election year sound uncomfortably like qualities of a few of the candidates. Further complicating the situation is the matter of "time-sharing," a problem that arises from "a fixed number of demons and an exploding population." This new computer-age conceptual breakthrough in demon-

Web continued on page 54



A Study of Fantasy Proneness in the Thirteen Cases of Alleged Encounters in John Mack's *Abduction*

Introduction

Since Robert A. Baker's pioneering article appeared in the *SKEPTICAL INQUIRER* (Baker 1987-1988), a controversy has raged over his suggestion that self-proclaimed "alien abductees" exhibited an array of unusual traits that indicated they had fantasy-prone personalities. Baker cited the "important but much neglected" work of Wilson and Barber (1983), who listed certain identifying characteristics of people who fantasize profoundly. Baker applied Wilson and Barber's findings to the alien-abduction phenomenon and found a strong correlation. Baker explained how a cursory examination by a psychologist or psychiatrist might find an "abductee" to be perfectly normal, while more detailed knowledge about the person's background and habits would reveal to such a trained observer a pattern of fantasy proneness.

For example, Baker found Whitley Strieber—author of *Communion*, which tells the "true story" of Strieber's own alleged abduction—to be "a classic example of the [fantasy-prone personality] genre." Baker noted that Strieber exhibited such symptoms as being easily hypnotized, having vivid memories, and experiencing hypnopompic hallucinations (i.e. "waking dreams"), as well as being "a writer of occult and highly imaginative novels" and exhibiting other characteristics of fantasy proneness. A subse-

quent, but apparently independent, study by Bartholomew and Basterfield (1988) drew similar conclusions.

Wilson and Barber's study did not deal with the abduction phenomenon (which at the time consisted of only a handful of reported cases), and some of their criteria seem less applicable to abduction cases than to other types of reported phenomena, such as psychic experiences. Nevertheless, although the criteria for fantasy proneness have not been exactly codified, they generally include such features as having a rich fantasy life, showing high hypnotic susceptibility, claiming psychic abilities and healing powers, reporting out-of-body experiences and vivid or "waking" dreams, having apparitional experiences and religious visions, and exhibiting automatic writing. In one study, Bartholomew, Basterfield, and Howard (1991) found that, of 152 otherwise normal, functional individuals who reported they had been abducted or had persistent contacts with extraterrestrials, 132 had one or more major characteristics of fantasy-prone personality.

Somewhat equivocal results were obtained by Spanos et al. (1993), although their "findings suggest that intense UFO experiences are more likely to occur in individuals who are predisposed toward esoteric beliefs in general and alien beliefs in particular and who interpret unusual sensory and imagined experiences in terms of the alien

hypothesis. Among UFO believers, those with stronger propensities toward fantasy production were particularly likely to generate such experiences" (Spanos et al. 1993, p. 631).

A totally dismissive view of these attempts to find conventional psychological explanations for the abduction experience is found in the introduction to psychiatrist John Mack's *Abduction: Human Encounters with Aliens* (1994). Mack states unequivocally: "The effort to discover a personality type associated with abductions has also not been successful." According to Mack, since some alleged abductions have reportedly taken place in infancy or early childhood, "Cause and effect in the relationship of abduction experiences to building of personality are thus virtually impossible to sort out" (Mack 1994, p. 5). But surely it is Mack's burden to prove his own thesis that the alien hypothesis does have a basis in fact beyond mere allegation. Otherwise the evidence may well be explained by a simpler hypothesis, such as the possibility that most "abductees" are fantasy-prone personality types. (Such people have traits that cut across many different personality dimensions; thus conventional personality tests are useless for identifying easily hypnotizable people. Some "abductees" who are not fantasy prone may be hoaxers, for example, or exhibit other distinctive personality traits or psychological problems.) Mack's approach to the diag-

nosis and treatment of his "abductee" patients has been criticized by many of his colleagues (e.g., Cone 1994).

Methodology

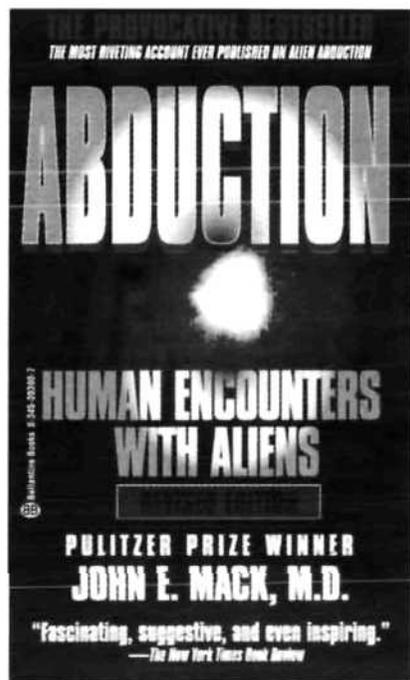
To test the fantasy-proneness hypothesis, I carefully reviewed the thirteen chapter-length cases in Mack's *Abduction* (Chapters 3–15), selected from the forty-nine patients he most carefully studied out of seventy-six "abductees." Since his presentation was not intended to include fantasy proneness, certain potential indicators of that personality type—like a subject's having an imaginary playmate—would not be expected to be present. Nevertheless, Mack's rendering of each personality in light of the person's alleged abduction experiences was sufficiently detailed to allow the extraction of data pertaining to several indicators of fantasy proneness. They are the following:

1. *Susceptibility to hypnosis.* Wilson and Barber rated "hypnotizability" as one of the main indicators of fantasy proneness. In all cases, Mack repeatedly hypnotized the subjects without reporting the least difficulty in doing so. Also, under hypnosis the subjects did not merely "recall" their alleged abduction experiences but all of them *reexperienced* and *relived* them in a manner typical of fantasy proneness (Wilson and Barber 1983, pp. 373–379). For example, Mack's patient "Scott" (No. 3) was so alarmed at "remembering" his first abduction (in a pre-Mack hypnosis session with another psychiatrist) that, he said, "I jumped clear off the couch" (Mack 1994, p. 81); "Jerry" (No. 4) "expressed shock over how vividly she had relived the abduction," said Mack (1994, p. 112); similarly, "Catherine" (No. 5) "began to relive" a feeling of numbness and began "to sob and pant" (Mack 1994, p. 140).

2. *Paraidentity.* I have used this term to refer to a subject's having had imaginary companions as a child (Wilson and Barber 1983, pp. 346–347) and/or by extension to claiming to have lived past lives or to have a dual identity of some type. Of their fantasy-prone subjects, Wilson and Barber stated: "In fantasy

they can do anything—experience a previous lifetime, experience their own birth, go off into the future, go into space, and so on." As well, "While they are pretending, they become totally absorbed in the character and tend to lose awareness of their true identity" (Wilson and Barber 1983, pp. 353, 354).

Thus, as a child, "Ed" (No. 1) stated: "Things talked to me. The animals, the spirits . . . I can sense the earth" (Mack 1994, p. 47); "Jerry" (No. 4) said he has had a relationship with a tall extraterrestrial being since age five (Mack 1994, p. 113). At least four of Mack's subjects (Nos. 5, 7, 9, and 10) said they have had past-life experiences (pp. 160–162, 200, 248, 259), and seven (Nos. 3, 6, 7, 8, 9, 11, and 12) said they have some sort of



dual identity (pp. 92–93, 173, 200, 209, 243, 297, and 355–356). For example "Dave" (No. 10) said he considers himself "a modern-day Indian"; while "Peter" (No. 11) under hypnosis said he *becomes* an alien and speaks in robotic tones (Mack 1994, pp. 275, 277, 297). In all, eleven of Mack's thirteen featured subjects exhibited paraidentity.

3. *Psychic experiences.* Another strong characteristic of fantasy proneness according to Wilson and Barber (1983, pp. 359–360) is that of having telepathic, precognitive, or other types of

psychic experience.

One hundred percent of Mack's thirteen subjects claimed to have experienced one or more types of alleged psychical phenomena, most reporting telepathic contact with extraterrestrials. "Catherine" (No. 5) also claimed she can "feel people's auras"; "Eva" (No. 9) said she is able to perceive beyond the range of the five senses; and "Carlos" (No. 12) said he has had "a history of what he calls 'visionary' experiences" (Mack 1994, pp. 157, 245, 332).

4. *"Floating" or out-of-body experiences.* Wilson and Barber (1983, p. 360) stated: "The overwhelming majority of subjects (88 percent) in the fantasy-prone group, as contrasted to few (8 percent) in the comparison group, report realistic out-of-the-body experiences" (which one subject described as "a weightless, floating sensation" and another called "astral travel"). Only one of Mack's thirteen subjects (No. 2) failed to report this; of the other twelve, most described, under hypnosis, being "floated" from their beds to an awaiting spaceship. Some said they were even able to drift through a solid door or wall, that being a further indication of the fantasy nature of the experience (more on this later). Also, "Eva" (No. 9) stated that she had once put her head down to nap at her desk and then "saw myself floating from the ceiling . . . My consciousness was up there. My physical body was down there" (Mack 1994, p. 237). Also, in the case of "Carlos" (No. 12), "Flying is a recurring motif in some of his more vivid dreams" (Mack 1994, p. 338).

5. *Vivid or "waking" dreams, visions, or hallucinations.* A majority of Wilson and Barber's subjects (64 percent) reported they frequently experienced a type of dream that is particularly vivid and realistic (Wilson and Barber 1983, p. 364). Technically termed *hypnogogic* or *hypnopompic hallucinations* (depending on whether they occur, respectively, while the person is going to sleep or waking), they are more popularly known as "waking dreams" or, in earlier times as "night terrors" (Nickell 1995, p. 41). Wilson and Barber (1983, p. 364) reported that several of their subjects "were especially grateful to learn that the

| Fantasy Proneness Markers | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|
| 1. Susceptibility to Hypnosis | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 2. <i>Paridentity (Imaginary Companions, Past Lives, Dual Identities)</i> | • | | • | • | • | • | • | • | • | • | • | • | |
| 3. Psychic Experiences | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 4. 'Floating' or Out-of-Body Experiences | • | | • | • | • | • | • | • | • | • | • | • | • |
| 5. Vivid or 'Waking' Dreams/Visions/Hallucinations | • | • | • | • | • | • | • | • | • | • | • | • | |
| 6. Hypnotically Generated Apparitions | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 7. Receipt of Special Messages | • | | • | • | • | • | • | • | • | • | • | • | • |

Figure 1. Alien encounter cases from John Mack's *Abduction* studied for fantasy proneness.

'monsters' they saw nightly when they were children could be discussed in terms of 'what the mind does when it is nearly, but not quite, asleep.'" Some of Wilson and Barber's subjects (six in the fantasy-prone group of twenty-seven, contrasted with none in the comparison group of twenty-five) also had religious visions, and some had outright hallucinations (Wilson and Barber 1983, pp. 362–363, 364–365, 367–371).

Of Mack's thirteen selected cases, all but one (No. 13) reported either some type of especially vivid dream, or vision, or hallucination. For example, "Scott" (No. 3) said he had "visual hallucinations" from age twelve; "Jerry" (No. 4) recorded in her journal "vivid dreams of UFOs" as well as "visions"; and "Carlos" (No. 12) had the previously mentioned "visionary" experiences and dreams of flying (Mack 1994, pp. 82, 112). Almost all of Mack's subjects (Nos. 1–11), like "Sheila" (No. 2), had vivid dreams with strong indications of hypnogogic/hypnopompic hallucination (Mack 1994, pp. 38, 56, 80, 106, 132, 168–169, 196, 213, 235, 265–267, and 289).

6. *Hypnotically generated apparitions.* Encountering apparitions (which Wilson and Barber define rather narrowly as "ghosts" or "spirits") is another Wilson-Barber characteristic (contrasted with only sixteen percent of their comparison group). A large number of the fantasizers also reported seeing classic hypnogogic imagery, which included such apparitionlike entities as "demon-

type beings, goblins, gargoyles, monsters that seemed to be from outer space" (Wilson and Barber 1983, p. 364).

Mack's subjects had a variety of such encounters, both in their apparent "waking dreams" and under hypnosis. Only the latter were considered here; all thirteen subjects reported seeing one or more types of outer-space creatures during hypnosis.

7. *Receipt of special messages.* Fifty percent of Wilson and Barber's fantasizers (contrasted with only eight percent of their comparison subjects) reported having felt that some spirit or higher intelligence was using them "to write a poem, song, or message" (Wilson and Barber 1983, p. 361).

Of Mack's thirteen abductees, all but one clearly exhibited this characteristic, usually in the form of receiving telepathic messages from the extraterrestrials and usually with a message similar to the one given "Arthur" (No. 13) "about the danger facing the earth's ecology" (Mack 1994, p. 381). Interestingly, many of these messages just happen to echo Mack's own apocalyptic notions (e.g., pp. 3, 412), indicating Mack may be leading his witnesses.

In the case of "Eva" (No. 9), the aliens, who represented a "higher communication" (Mack 1994, pp. 243, 247), purportedly spoke through her and described her "global mission." "Jerry" (No. 4) produced a "flood of poetry," yet stated, "I don't know where it's coming from" (p. 99); "Sara" (No. 7) has been "spontaneously making draw-

ings with a pen in each hand [of aliens]" although she had never used her left hand before; and "Peter" (No. 11) stated he has "always known that I could commune with God" and that the aliens "want to see if I'm a worthy leader" (Mack 1994, pp. 99, 192, 288, 297).

Results

One of Mack's subjects ("Sheila," No. 2) exhibited four of the seven fantasy-prone indicators, and another ("Arthur," No. 13) exhibited five; the rest showed all seven characteristics. These results are displayed in Figure 1.

Although not included here, *healing*—that is, the subjects' feeling that they have the ability to heal—is another characteristic of the fantasy-prone personality noted by Wilson and Barber (1983, p. 363). At least six of Mack's thirteen subjects exhibited this. Other traits, not discussed by Wilson and Barber but nevertheless of possible interest, are the following (together with the number of Mack's thirteen subjects that exhibit it): having seen UFOs (9); New Age or mystical involvement (11); Roman Catholic upbringing (6 of 9 whose religion was known or could be inferred); previously being in a religio-philosophical limbo/quest for meaning in life (10); and involvement in the arts as a vocation or avocation (5). For example, while apparently neither an

Fantasy continued on page 54

To Err Is Human

NANCY SHELTON

More than one hundred skeptics from twenty-one states and two Canadian provinces attended the Committee for the Scientific Investigation of Claims of the Paranormal's superb Human Error Workshop August 17-21, 1995, at the University of Oregon.

Our guides throughout the five-day program, all CSICOP Fellows, were: James Alcock, professor of psychology, York University, Toronto; Jerry Andrus, inventor, magician, illusionist, and philosopher; Barry Beyerstein, professor of psychology, Simon Fraser University, Vancouver; Ray Hyman, professor of psychology, University of Oregon; and Loren Pankratz, clinical psychologist, Oregon Health Sciences University. Alcock, Beyerstein, and Hyman are also members of CSICOP's Executive Council.

Hyman, a cognitive psychologist, coordinated and moderated the talks, all of which were characterized by lively interaction with the attendees, and humor. Though others' gullibility frequently elicited mirth, Hyman quickly warned us that *everyone* is subject to errors both in belief and action. He explained that Piltdown man, supposedly an early man but reconstructed by hoaxers from human and animal bones, fooled both laypeople and scientists for about 40 years. Was it a clever hoax? Hyman said no; filing the ape jawbone to make it fit the reconstructed human skull was crude and quite obvious after it was

examined with the probability of fraud in mind. Canals on Mars, which spawned books about Martian residents, the Face on Mars, and N-rays are other examples of mistaken beliefs, as was the discovery of the nonexistent planet Vulcan.

The Central Intelligence Agency hired Hyman and a parapsychologist to evaluate psychics working for the government. Hyman told the workshop attendees that not only were previous studies



Ray Hyman shows a model of the Piltdown skull (photo: Gerald Shelton).

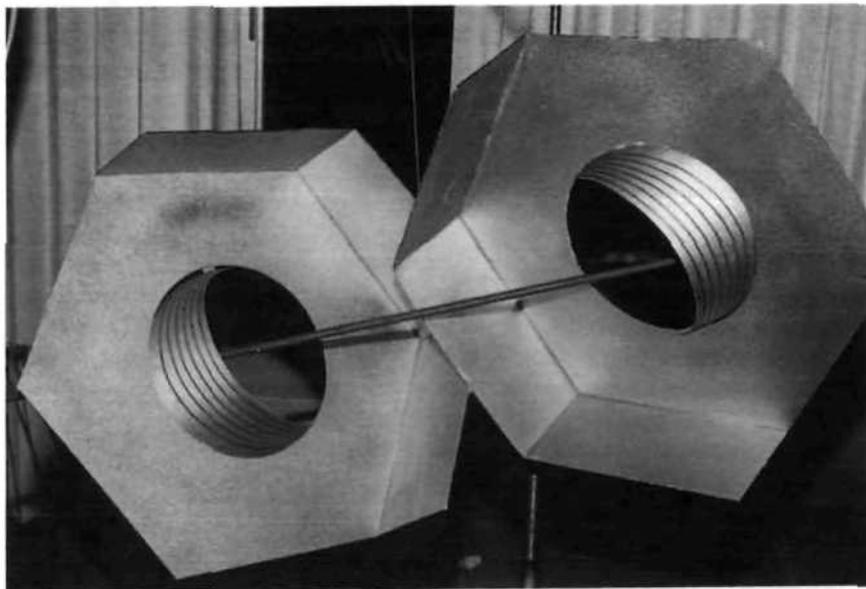
flawed, but their psychic accuracy was about 15 percent. The problem was that no one could determine which 15 percent was right. (See Hyman's "Special Report," *SI*, March-April 1996.)

In his syllabus "How To Do Cold Readings," Hyman said his purpose was

not to teach us how to be cold readers; rather he wanted us to know how powerful this suggestive activity can be. "Many errors result from the human tendency to discover hidden meaning in seemingly random events," Hyman said. He also cautioned us to be very gentle in disabusing those who believe such exercises are paranormal. "Cold readings work in the sense that the client is typically satisfied with the results . . . the error involved is in falsely assuming that the meaning and accuracy of the reading stems from some special occult powers of the reader. A related error is the assumption that the meaning of the reading is contained in the words of the reader." Instead, subjects create their own inferences from proposed generalities. The more personal information the client supplies, such as day, month, year of birth, the more credence he or she gives to the reader's accuracy and the greater the belief that the reader is psychic.

Andrus demonstrated how mystified we can be by visual cues. Among his many amazing creations that he encouraged us to play with were the Nutty Nuts and Bewildering Blocks. He challenged our auditory perception by playing his Never-Ending Chords on the piano. While watching his hands drop to lower octaves, we all "heard" the chords ascending.

Pankratz, an expert in medical anomalies and insurance fraud, discussed self-deception, a vulnerability within all of us. He told of patients who



"Nutty Nuts," an illusion created by Jerry Andrus (photo: Gerald Shelton).

each had numerous hospital admissions for diverse symptoms within a short time period. The subjects had made up, distorted, or hidden medical information. Even though doctors were informed beforehand that these patients appeared to have factitious symptoms (as in Munchausen syndrome, a feigning of illness), some doctors persisted in treating for the nonexistent illnesses. He said that because patient malingering is intentional and voluntary, it is not considered a psychiatric disorder.

Alcock explained that we have both experiential and rational psychological systems, which collide with each other. "Feelings and rationality often produce contradictory results." We have two sets of rules: one for religion, based on faith; another for the lab. We feel we have experience of psi even though it remains unproven. Frequency distribution is such that, in tests, some individuals will "get it right," thus convincing themselves—and others—that they have psychic powers. Such convictions may be extremely difficult to extinguish. Often the belief comes first: We believe, and then find corroborative evidence while

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ignoring negative evidence. Occurrences close in time are frequently inferred to be causally connected. A dream followed by an experience that can be perceived as correlative may seem precognitive.

Alcock also said that beliefs that reduce concern are more readily accepted. Prejudice permits one to feel "I'm not responsible for others' dire straits; it's their genes." Religion offers the comforting belief that departed loved ones will be met again in heaven. We often hold beliefs that have no rationale. "To be a good teacher you must be a good researcher" is nonsense, but offends some notion of what universities are all about," he said.

Hunches are not necessarily processed rationally, he noted. Coca-Cola took down its billboards because, the company stated, "Nobody looks at them." Sales dropped, and the billboards reappeared. Smokers rationalize evidence for cancer: "They'll have a cure for it when I'm 40." Behavioral change precedes attitude change. If you get people to *act* contrary to their beliefs, they will shift beliefs over time.

Beyerstein discussed how the human brain evolved, and how technology, just in the last 100 years, has confounded our programming, thus leading to human errors. Electric lights have lengthened our awake cycle. Jets that cross time zones in a day play havoc with the natural rhythms acquired through evolution. Biochronometry (not to be con-

fused with pop-psychology's bio-rhythms) is the scientific study of rhythmicity and biological clocks. Among the cycles we are attuned to are: circadian (about a day)—sleep/waking cycle; ultradian (much less than 24 hours—breathing, heart rate, EEG rhythms; the basic rest-activity cycle (BRAC)—90-minute period; infradian (a month or longer)—menstrual cycle, other hormonal rhythms, and seasonal changes.

Abrupt time shifts result in "desynchronization," the uncoordinated free-running of subsystem rhythms. Some effects are sleep disorders, gastrointestinal problems, and decreased vigilance. Optimum well-being depends upon the various cycles operating synchronically. Yet about a quarter of our population, often emergency workers whom we trust to make the right decisions (police, firemen, doctors and nurses, air traffic controllers), must operate under these adverse conditions, sometimes leading to fatal errors.

"Re-entraining," or resetting the biological clocks, he explained, usually takes about ten days to two weeks. Since out-of-sync biological clocks favor a longer day, east-to-west flights have less effect than do west-to-east. Further, change is easier when everyone in the new time zone is on the same waking/eating/sleeping schedule. Shift workers, who have their days turned upside down, and whose duty hours are advanced from evening to afternoon to morning, have the most difficult adaptation. (Reversing the shift order, e.g., morning/afternoon/evening would be more effective for the workers and result in fewer mistakes—life threatening or otherwise.)

The workshop demonstrated why errors are part of the human condition. Some contributors to error are not enough information, overabundance of *misinformation*, excessive repetition, and innumeracy. We automate as much as possible to save precious resources. Our brains are not video recorders; many stimuli never get to long-term memory. Much of what we think we remember is reconstructed from codified bits and imagination. The purpose of scientific methodology is to find the truth. It can also help us to minimize our errors. □

Believing What We See, Hear, and Touch: The Delights and Dangers of Sensory Illusions

.....
Try these experiments yourself. Do your senses deceive you?

RAINER WOLF

Sensory illusions arise when the brain's expectations do not match the information coming from the eyes, ears, or other sense organs. To survive natural selection during evolution, it has been favorable to *fool others*, but what might be the advantage of *fooling ourselves*? Sensory illusions are *perceptual artifacts* that mostly originate from an inadequate use of the brain's ingenious data-processing algorithms. For instance, we tend to perceive illusory regularities in random events; and our innate *credomania* makes us rigidly cling to any belief acquired by unreflected interpretation of any obscure observations. Behavioral sciences revealed that this tendency stems from our animal heritage and had contributed to the survival of our ancestors. If passing through some dangerous region, the outcome should be more favorable if one stays on the well-tried trail. But sensory illusions now can serve as sources of superstition. Thus, the reliability of our perceptions and our mode of thinking

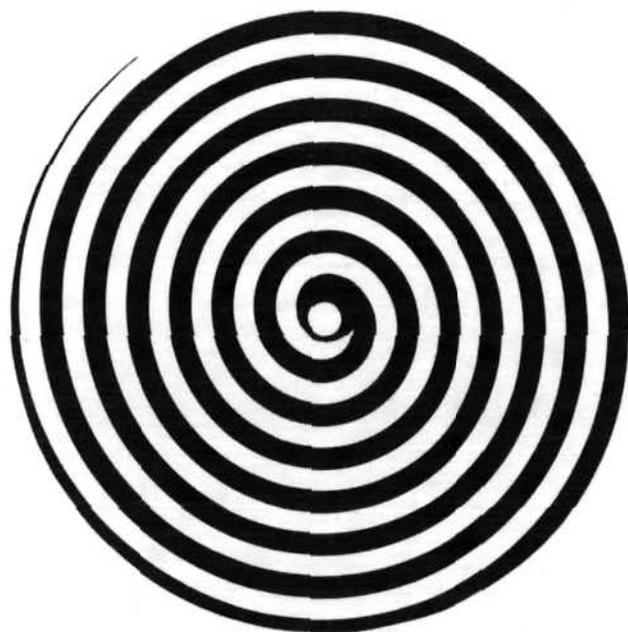


Figure 1. Spiral pattern for experiencing the 'motion-aftereffect.'

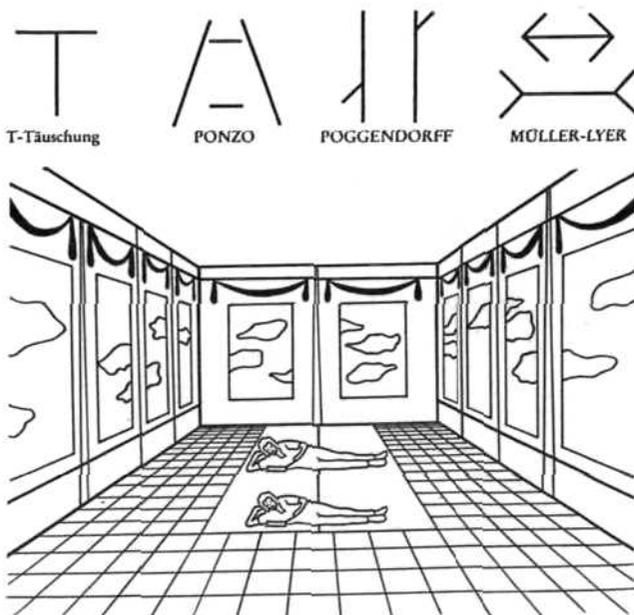


Figure 2. Four geometrical illusions to be detected in a perspective drawing, the 'Room of Illusions.'

Figure 3. Nothing but six lines?

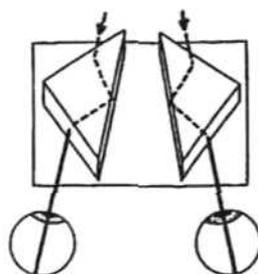


Figure 4. Simple depth-reversing spectacles consisting of two right-angle prisms, which are glued to a flat support. The prisms additionally cause a left-right reversal of the viewed scenery.

must be critically judged by objective tests.

To perceive features of the external world is basically a process of *active construction*. Seeing, for instance, does *not* simply work by imaging visual objects on some inner screen in our brain. The features of these images are, rather, *disassembled* into abstract pieces of information which, by some kind of *symbolic representation*, eventually generate a *highly abstract internal model of the external world* (Gordon 1989; Wolf 1985). For this purpose, our alert brain continuously computes tremendous amounts of data: "bottom-up" (specific to general) computations, "top-down" (general to specific) calibrations, and logic "ratio-morphic" conclusions (Lorenz 1973). Almost all of these performances occur *subconsciously* and, thus, are not open to introspection. They become obvious, however, when the *percept hypotheses* unconsciously made by our brain accidentally *do not fit* with our expectations. This is the very moment illusions arise, and we no longer believe our own eyes (Gregory 1980; Wolf 1987).

Our Brain Hypothesizes: Size-Weight Illusion

Incorrect top-down assumptions, of which we are quite unaware, may create a dramatic size-weight illusion. For this amazing experiment you need a $5 \times 10 \times 2$ cm block made of brass, iron, or lead, and a $5 \times 10 \times 4$ cm block made of balsa wood, both painted identically. Put the smaller (but heavier) block on top of the larger (but lighter) block. Estimate the feel of the weight of the two together while holding them in one hand, grasping them between the thumb and the other fingers. Next, "weigh" the small block by itself in the hand the same way. You will have the odd impression that the *small block is much heavier than both the blocks lifted together*. There are two factors contributing to this illusion. While holding both blocks, the fingers are touching large areas of them. Thus, *not much force* is needed to lift them up. When lifting only the small, albeit heavy, one, our brain automatically expects much less weight since, by their outer appearance, the blocks seem to consist of the same material. Furthermore, the fingers now are touching small areas only and therefore have to grasp the small block *more strongly* in order to lift it up. Thus, our brain assumes that the small block must be *very heavy*.

Illusions Due to Constancy Performance

Constancy performance means the brain judges approaching or receding objects as constant in size although the retinal image does not remain constant at all (Wolf 1985; Wolf and Wolf 1990a).

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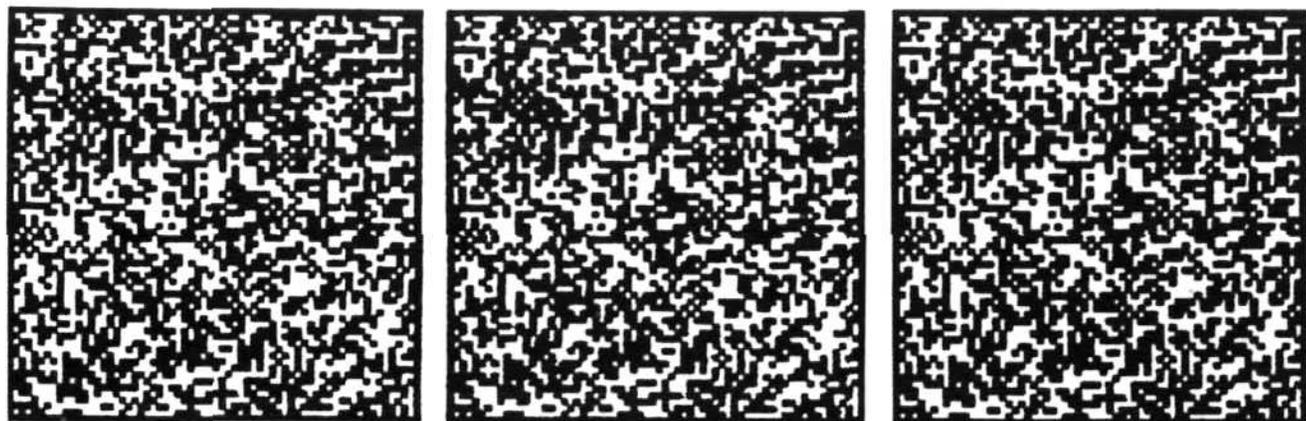


Figure 5. Random dot stereo pairs to test one's stereo vision. For binocular fusion, use the well-known 'Magic Eye' technique, or a stereoscope (a+b for normal 3-D, b+c for pseudoscopy, which results in a depth-reversed image); or alternatively *cross your eyes* (b+c for normal 3-D, a+b for pseudoscopy). While holding your head straight, move a pencil from the vertical space between the half images of a stereo pair toward your nose and concentrate your gaze on the tip of the pencil. Stop the pencil as soon as four images appear. While disregarding both the lateral 'ghost images,' cautiously shift your attention (i.e., the focus) to the central images, which soon will attain spatial depth.

Failing constancy performance is a main source of visual illusions. Cut out a copy of the spiral (Figure 1) and make it spin clockwise while steadily looking at its center. Our visual system tries to compensate for its continuous shrinking process, because most objects only *appear to shrink* while actually receding. Therefore, algorithms are switched on for *size correction*. You will become aware of these unconscious corrections when looking at a different object afterward: It will seem to *grow* tremendously without actually changing *size* because *size compensation* is erroneously transferred to the different object (*motion aftereffect*).

Geometric Illusions Become Visual Truths

Let us have a close look at four classic *geometrical illusions* (Figure 2). The Müller-Lyer illusion appears even more paradoxical when viewed in a mechanical model (Wolf 1987). The effect is well known, but it remains a curious experience to see the horizontal line change its length by about 30 percent while reversing the direction of the arrowheads. The Ponzo illusion makes the horizontal bars look different in length, but they are the same. In the T illusion we would not suppose that both lines are the same length. Finally, there is the Poggendorff illusion with the oblique line (if completed) appearing staggered rather than aligned. All these patterns are accurately imaged in our eyes. In our vision, however, they appear distorted in *size*, *shape*, or *orientation*. But are these effects mere *illusions*? The perspective sketch shown in Figure 2 depicts a pattern that might appear in our eyes when we enter a room. This image is immediately interpreted to contain *spatial information*, and from that very moment the illusions become *visual truths*: If the line drawing is interpreted as a real scenario, then the girl in the rear *must* be bigger than the one in front (though in the image they are the same *size*)—here the Ponzo illusion contains visual truth. Similarly, the rear width of the carpet only looks shorter than the carpet's length—the T illusion. The side wall ledges near the ceiling look like they would not meet the side wall ledges near the floor if the lines were joined, but both are exactly aligned—the Poggendorff illusion contains visual truth. Finally, the front width of the carpet actually *is much shorter* than

the back wall of the room (both are the same)—the Müller-Lyer illusion, working here with half the arrowheads only. Those parts of the sketch which, by perspective, are indicated as distant—for instance, the girl in the rear—appear *enlarged* in our perception, in order to compensate for the smaller retinal image of distant objects. What appeared as an illusion in a simple line drawing actually provides correct perception in our three-dimensional world (Gillam 1980). If the spatial context is removed, however, the same interpretations of the same line patterns appear unjustified, and hence, we call them "illusions."

Perceptions are Controlled by Conscious Imagination

Visual perception is strongly influenced by our *conscious imagination*. Figure 3 shows six horizontal lines on a white background. The bottom line appears to be somewhat *longer* than the next higher line, due to the Ponzo illusion. However, if you try to change your percept hypothesis by interpreting the same line pattern as the shape of a vodka glass, you will immediately *see* a different pattern: Both the lower lines now appear *equal in length*, the contour of the "glass" is marked by a thin, bright line, and the areas between the lines appear darker than the background. All these artificial, deceptive effects make us perceive this object more easily.

Challenging Our Brain by Binocular Depth-Reversal

To get a feeling for the work performed subconsciously by our brain, it is a promising approach to make the results of various algorithms of image computation *collide* with each other. It is well known that binocular depth perception is calculated from the little parallaxic *differences* between the images of our left and right eyes. If you were able to pull out your right eye and put it in the left eye socket, and vice versa, you should see all objects as *reversed in depth*, which means: Close objects appear to be distant, and distant objects appear to be close. Of course, we must leave our eyes in place and use depth-reversing spectacles instead (Figure 4, Wolf 1985, 1995).



Figure 6. The secret of Beuchet's magic chair as revealed by stereopsis.

After binocular fusion of the *random dot* stereogram shown in Figure 5, most readers will easily perceive the *dotted square* hovering in front of the dotted background. In the case of depth-reversal, the same square is seen *behind* its dotted surroundings. People who cannot see the square are stereoblind and will be unable to follow the next experiments. Note that this square does *not appear in the eyes*: If you close one eye, the square will disappear. Thus, the square actually turns out to be a *reconstruction* made up by our brain.

Beuchet's "Magic Chair"

We are fooled by Beuchet's "magic chair" (Figure 6) that makes everyone who sits on it "shrink." The illusion is due to an incorrect assumption made by our brain. The puzzle can be easily solved after binocular fusion of the stereo pair: Beuchet's chair actually consists of two separate parts of different size, which are placed at different distances. When viewed with *one eye* from a distinct site, the super-sized top seems to fuse with the normal-sized base, and both make up the illusion of a normal chair (Wolf and Wolf 1990a). Thus, our incorrect assumptions about distances lead to faulty size calibration.

When the Brain Does Not Accept the Eyes' Message: Perception Controlled by an Unconscious "Censorship Process"

Challenging our brains with paradoxical information provides a chance to introspectively watch our own image-processing in action. When observing a depth-reversed Christmas tree (Figure 7), you will be confronted with strange phenomena. The branches look rather curious, and the two glass balls at the lower margin of the image actually seem to be *broken*. Note the subconscious logic involved here. You can see only *one half*

of a glass ball if the other half happens to be hidden behind a branch. On the other hand, the branch appears behind the ball, and hence the ball cannot be covered by the branch. Our brain's conclusion: The ball must be *broken*.

Alternatively, our brain may assume that a partially occluded object is not broken. Then, depth-reversal cannot be perceived, although it is *unambiguously supported* by the present visual data. Depth-reversal is similarly suppressed when looking at familiar objects such as cars, houses, furniture, and especially human faces (Yellot 1981). Probably no readers will be able to perceive the entire pseudoscopic stereo portrait (Figure 8) as hollow. There is a chance, however, to experience the eerie percept of the hollow shape when the face is either covered by *high-contrast dots*, or when it is *turned upside down*. To facilitate depth-reversal, do not shift your gaze, but rather *stare* at the root of the nose. Most readers will succeed within a few minutes in perceiving the face, or at least parts of it, as depth-reversed. Be prepared to be confronted with strange landscape: the hollow nose deeply pointing backward and the eyes protruding on top of two hills.

Bypassing the "Censorship": The Eerie Landscape of a Depth-Reversed Face

What prevented us from perceiving the hollow shape in upright orientation, and why do some people fail to see it, even when the face is turned upside down? The message "hollow face," which is unambiguously reported by our eyes, obviously can be *suppressed* by some kind of *unconscious censorship*. Based on countless experiences, highly unfamiliar percepts, which our brain considers impossible, are strongly suppressed.

Van den Enden and Spekrijse (1989) argued that only conflicting disparities of texture perspective, but not cognition, pre-



Figure 7. A Christmas tree decorated with broken glass balls? For normal and depth-reversed vision, see instructions in Figure 5.

clude binocular depth-reversal. To test their texture perspective theory, my coworkers and I analyzed the subtle interplay between disparity cues, shading, and the “intrinsic knowledge” of the visual system by making these depth cues either cooperate or counteract against one another (Wolf and Wolf 1990b). Depth-reversed faces can be perceived easily as hollow when they are *alienated* by providing them with an artificial, high-contrast surface texture (as in the dotted half of the face in Figure 8), in spite of counter indications arising from texture perspective: On the tip of the hollow nose, for example, the dots appear somewhat larger, as they had actually been closer to the camera when the photograph was taken. According to Van den Eenden and Spekrijse, depth-reversal should have provided a false disparity of texture perspective. If this conflicting information, rather than familiarity, really was the main reason for the suppression of depth-reversal, then depth-reversal should have generally failed in our experiments. Depth-reversal obviously can be suppressed, regardless of the reversed shapes being unambiguously supported by the incoming disparity cues. This suggests the interference of some higher-level control mechanism, similar to an unconscious “censorship process,” which actually rejects any visual information that radically collides with our everyday experience.

Challenging one’s mind to experience depth-reversal provides a unique chance to introspectively watch one’s own censorship process in action. If you succeed in perceiving the hollow face, you might be inclined to blink or to change your line of sight. But whenever the visual input changes, the unconscious censorship process seems to be *reactivated* and the perception of the hollow shape is blocked again for a few seconds. Furthermore, 3-D computation times can be determined by the time course of depth-reversal of a moving object that is

partially covered (Wolf, Oberkamp, and Wolf 1995).

Having once become familiar with the eerie hollow shape of a face turned upside down, depth-reversal may be achieved in right-side-up faces, too. Depth-reversal of familiar objects is also facilitated when a pseudoscopic stereo portrait has been presented before, which could *not* be perceived as depth-reversed. Hence, there must be a *familiarization process* involving some kind of *unconscious learning* (Wolf, Oberkamp, and Wolf 1995). We conclude that visual perception is controlled by high-level cognitive factors, which essentially are based on familiarity cues. Irvin Rock has convincingly demonstrated that we cannot judge the expression in upside-down faces (Wolf 1987): They are alienated in such a way that our brain has no preconception concerning their shape, and thus, we can perceive them as hollow.

A Serendipitous Discovery for Diagnosis and Medication in Schizophrenia

Our experiments unexpectedly have gained some medical relevance, which is a beautiful example of a research strategy called “serendipity.” This term stems from an ancient fairy tale, a story of three princes of *Serendip* (Sri Lanka). The princes seemed to have developed an incredible degree of clairvoyance, which actually was based on open-eyed observation. In science serendipity means making discoveries not only by carefully designed research programs, but also, by chance.

About 15 years ago, a famous optical instrument company, Carl Zeiss in Germany, designed a new stereo microscope attachment. Unfortunately, the technicians had accidentally interchanged the right and left light paths, unaware of their error. I need not further explain the consequences. When I, just by

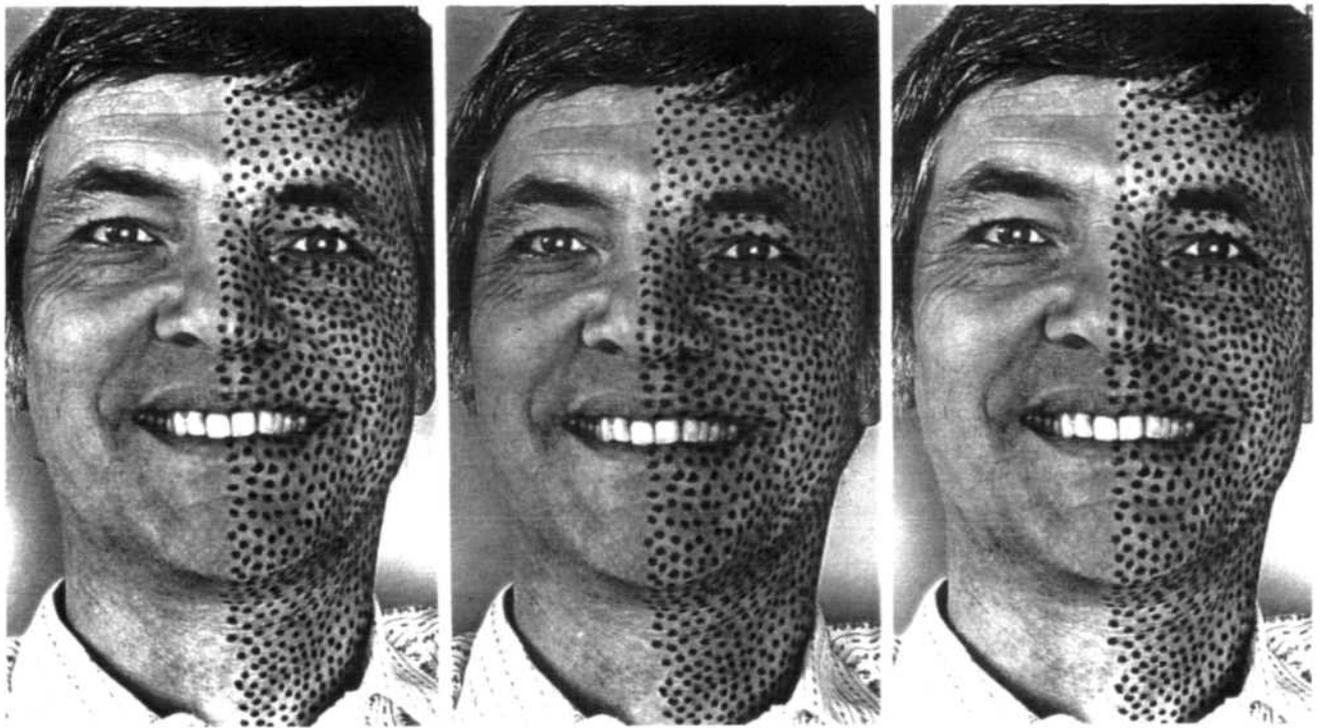


Figure 8. Stereo portrait of the author for challenging the reader's mind to perceive depth-reversal. The hollow shape is usually suppressed by an intrinsic 'censorship process' unless the face is turned into the unfamiliar upside-down orientation. The isotropic high-contrast dot pattern on the skin serves to intensify the 'natural' surface texture. It facilitates the perception of the upright, depth-reversed face by *alienation*, and by transmission of highly evident disparity data. Subjects with little experience in depth-reversal will perceive the depth-reversed shape within the dotted half of the face only, but the hollow shape is seen to slightly extend from there into the non-dotted regions.

chance, became aware of depth-reversal while working with a prototype of this microscope, I decided to play with depth-reversing spectacles, which is how I stumbled on the phenomenon of data suppression in human perception and its dependence on familiarity. Recently, at Berlin University I gave a lecture on data suppression experiments, the results of which were published in a newspaper article. Hinderk Emrich, from the Max Planck Institute for Psychiatry in Munich, who came across this article about data suppression in the brain, remembered an idea he had stored in the back of his mind: that the psychotic disorder *schizophrenia* might be based on some *deficiency in perceptual censorship*. He asked me for stereo slides to use to test depth-reversal by his schizophrenic patients, and he found two groups of exceptional subjects who could easily perceive depth-reversal of a human face: all his patients suffering from schizophrenia; and subjects under the influence of the psychoactive substances *cannabis* or *LSD* (Emrich 1992). [LSD may induce psychotic symptoms similar to those of schizophrenia.] Obviously, some still unknown deficiency prevents their "censorship department" from controlling the incoming visual data, and/or the output. The same deficiency leaves these subjects unprotected against the perception of various horrible hallucinations. Fortunately, "normal" subjects do not have the horrible hallucinations and anxiety schizophrenics have, thanks to the activity of unconscious "censorship" performance. A test based on binocular depth-reversal currently is being developed by Emrich in order to differentiate schizophrenia from other mental diseases. Furthermore, by using perception or depth-reversed faces as a marker of an impending schizophrenic attack,

the medication could be drastically reduced to 1/10 of the dose normally prescribed.

When pondering the treatment of schizophrenia, no one would have thought of depth-reversal as a means of diagnosis, and it probably would not have been discovered by a well-designed research program. Thus, I emphatically advocate allowing serendipitous playing as a successful and creative strategy in scientific research.

We Feel Free—but Are We? Voluntary Motions Are Not Initiated by Our Conscious Mind

There are crucial illusions that are indicative of our brain's interpretation of *causality*. Consider Roger Penfield's pioneer experiments (see Wolf 1987): He artificially stimulated the brains of conscious subjects by means of electrodes. Surprisingly, these subjects often experienced these stimulations as *spontaneously arising sensations* rather than as events imposed from outside. Although being completely controlled by the experimenter's stimuli, they felt *entirely free*. So we have to keep in mind that science fiction writers were wrong when describing a "world on wire," in which remote-controlled subordinates tried to conquer the outside power controlling their own actions and thoughts. Fortunately, such remote control is not yet possible. But even if it were, we might not be aware of it.

Another bewildering illusion about causality: Most people believe that an intentionally performed movement of their limbs is initiated by their willpower. When I am asked to spontaneously

move my hand by freewill decision at one time or another, it is my unambiguous experience that my psychological decision process is the *prima causa*, the trigger, of that movement. However, we have to consider the *readiness potential*, a characteristic electrical signal that starts 0.8 second before I consciously *decide* to move my hand (Dennett and Kinsbourne 1992). In the very moment of my *conscious decision*, the action had been already *determined almost one second ago* and could have been foreseen by the experimenter. Thus we must be aware that the chain between cause and effect, as we experience it, does not necessarily reflect the actual sequence of causal interdependence. There is no psychoneural interaction, at least in the case of a voluntary motion.

Antedating Perception: The Brain's Time Machine

We should also note the fascinating investigations of Benjamin Libet (Dennett and Kinsbourne 1992). When a weak mechanical stimulus is unexpectedly applied to the skin, for some unknown reason the subject's brain needs *half a second* for computation of the proper sensory signals. Nevertheless, the subject *immediately* experiences having been touched. Thus, the perception of the stimulus must have been *antedated* by the very stretch of time necessary for computation. Obviously, our brain "knows" pretty well *when* the sensory signal arrived, and it compensates for its computation time, as determined by some internal clock. The biological sense of this time illusion is quite obvious: In order to perceive stimuli coming from outside *in the right order*, it is favorable to *shift the perception backward in perceived time* to the very moment the stimulation actually had taken place.

As a proof of this incredible performance, consider the following experiment, which pretends to measure *reaction times*: A subject is asked to press a button when he perceives a gentle touch. Due to normal reaction time, the subject will push the button about 0.2 second after having been touched; 0.3 second later, however, the skin stimulus is *retroactively masked* by an electric stimulation of the sensory cortex, and thus *its perception* is cancelled *in retrospect*. The subject, who had properly reacted to a stimulus he actually had *not* perceived, will *apologize* for his imaginary error. There is an intense controversy as to whether or not events can be antedated by our brain, and some neurobiologists prefer to say that events are simply *attributed to a certain point of the time scale* (Dennett and Kinsbourne 1992). However, there is no way of avoiding admission that a percept experienced in this very moment may be retroactively cancelled half a second later. And experiencing the percept before having finished its computation does mean antedating the result. The ingenious trick of referring the entire sensory input to a *unitary time scale* is a prerequisite to determining *simultaneousness*, and thus, to conclude whether an event might be considered either a *cause* or an *effect*.

Credomania, the Phylogenetic Source of Human Superstition

Our brain tends to assume *causal relationships* between events that take place in succession. When there is actually *no causal*

ity, however, the same algorithms will be active "in idle motion." Such *inadequate interpretations of causality* turn out to be the source of our *innate credomania*, our tendency to rigidly cling to any belief whatsoever ("true believer syndrome," Hines 1988). Behavioral research has revealed that a similar tendency shows up in animals, too, and thus, credomania appears to be part of our animal heritage transmitted to us during evolution, and it still serves as an inexhaustible source of *human superstition*.

In a session of the Physical-Medical Society in Würzburg, Konrad Lorenz (1973) told an outstanding story about *superstition* in animals. When investigating social behavior in wild geese, Lorenz took care of a gosling named Martina, who took him for her mother. Lorenz decided to have Martina moved to his newly installed goose lab, which was upstairs in his house. So he slowly went into the house and called her to follow him. At that time, Martina was not used to entering the house, and she was afraid to do so. She hesitantly followed Lorenz, but she did not see that he had turned to the stairs at the left, and so, she traveled straight ahead into the entrance hall. Having then seen Lorenz on the stairs, however, she turned around to follow him upstairs. This hairpin turn henceforth remained part of her path each time she entered the house. One day, Lorenz forgot to let Martina in on time. Martina anxiously ran into the house and immediately went upstairs, skipping her habitual hairpin turn. When she arrived upstairs, however, she suddenly stopped. She pressed her wings closely against her body and shouted anxiously, then ran down the stairs to make her hairpin turn. Finally, after having climbed upstairs again, she shook her feathers and shouted her characteristic birdcall indicating satisfaction. Obviously, we all would characterize this behavior as superstitious if it had been performed by a human being.

Science and Pseudoscience

Nowadays there is a growing tendency toward belief in fundamentalism and mysticism. The New Age movement seems to be growing, although all efforts to establish that field in science have failed. Using *dowsing rods* to find subterranean water, for instance, never resulted in a higher rate of success than pure chance, provided that the experiments were performed under the conditions required for a *double-blind test* (Wolf 1993). A failure to prove claims seems to be the problem with parapsychology and other pseudosciences such as Hahnemann's homeopathy, Fliess' biorhythms, dowsing, palm reading, aura photography, Kirlian photography, iris diagnostics, classical acupuncture, faith healing, kinesiology, Reich's orgone energy therapy, pyramid power, levitation, astrology, clairvoyance, precognition, psychokinesis, spiritualism, UFOlogy, Freud's psychoanalysis, and many others (Couttie 1988; Gardner 1988, 1992; Hines 1988; Marks 1988; Wolf 1993, 1995). Their undeniable, yet limited, medical effects seem to be basically due to the *placebo effect*. The half-true slogan "whosoever heals, is right" unfortunately ignores the negative counterpart of placebo, the *nocebo effect*: Being in fear of an imaginary danger is detrimental to health. For example,

slightly raised leukemia rates have been reported in areas surrounding nuclear power plants, *even plants that were not yet operating* (Windeler 1993, based on Michaelis 1992; Kinlen, Dickson, and Stiller 1995). There are many studies indicating that all the alleged effects witnessed in the above-mentioned pseudoscientific fields are due to *self-deception*. Parapsychologists still have not presented a single, undisputed, reproducible, positive experiment, although they have tried hard to do so for some 120 years (Randi 1993). I know of no other field of research for which this is true.

Hallucination and "True" Perception

Today there is an urgent need for enlightenment about philosophically and scientifically based standards to help people distinguish fact from fancy. We cannot eliminate misperceptions and hallucinations, but we are able to avoid misinterpretations construed from them. Hallucinations, for instance, often seem very real and thus may be erroneously considered normal perceptions. I, myself, fell victim to two hallucinations, one auditive, the other visual. Our neighbors used to play loud rock music in the early morning with their windows wide open. Although protected by ear plugs, I once was awakened by the music. While angrily listening to the melody, I recognized that it was strangely repeated several times. When I removed my ear plugs as a test, I was awestruck by the silence. Hearing music had been a hallucination.

Visual hallucinations may be even more perplexing. Once I lay on my side before falling asleep, and I quietly enjoyed observing my sleeping wife's face, which was diffusely illuminated by moonlight.

Suddenly I became aware that my eyes had been closed all the time. How, then, could I see her and even my own hand lying on the pillow close to my face? "If I actually see my hand with my eyes closed," I pondered, "will I be able to see it moving, too?" I voluntarily bent my forefinger. Believe it or not, I saw it move. Only then did I open my eyes and see my wife's profile as I had done before. But I also recognized that my hand was entirely covered by the blanket, and thus, could not be seen at all. Note that in both cases, the experiments served to discriminate between a true percept and a hallucination.

Homo Esotericus?

What can be concluded from these insights into human nature? Our knowledge is generally hampered by various unconscious self-deceptions. A central problem is that the self contains a *sensor* to arbitrarily select from the incoming information and to suppress it. Thus, we will never get rid of those innate tendencies toward perceptual artifacts and superstition. We may only achieve *becoming aware* of the influence of perceptual artifacts and prepossessions on our perceptions and our conscious reflections. Although perception is our primary source of knowledge, its failures generally demand cautiousness from both the skeptic and the believer. The skeptic must not ignore reports of personal experience that do not seem to

fit into the skeptic's worldview, and the believer should not credomanically misinterpret his or her personal experience by unreflectingly taking it for real. It is a decisive step to skeptically question coherences of which we are firmly convinced, and *not* to credomanically believe what we have seen with our own eyes.

When critically judging human behavior today, however, one might ask whether *Homo sapiens*, the Latin name proudly given our own species, wasn't a little bit rash. Our ambiguous relationship to *magic thinking* clearly shows up in a story the great physicist Niels Bohr loved to tell: His neighbor, who had mounted a horseshoe on top of his door, was asked whether he was so superstitious as to believe that this horseshoe would make fortune favor him. The neighbor smiled superciliously and answered: "No, I am not superstitious at all, but . . . people say that a horseshoe continues to work, even in case you *do not* believe in its power!"

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The Enigmatic 'Battery of Baghdad'

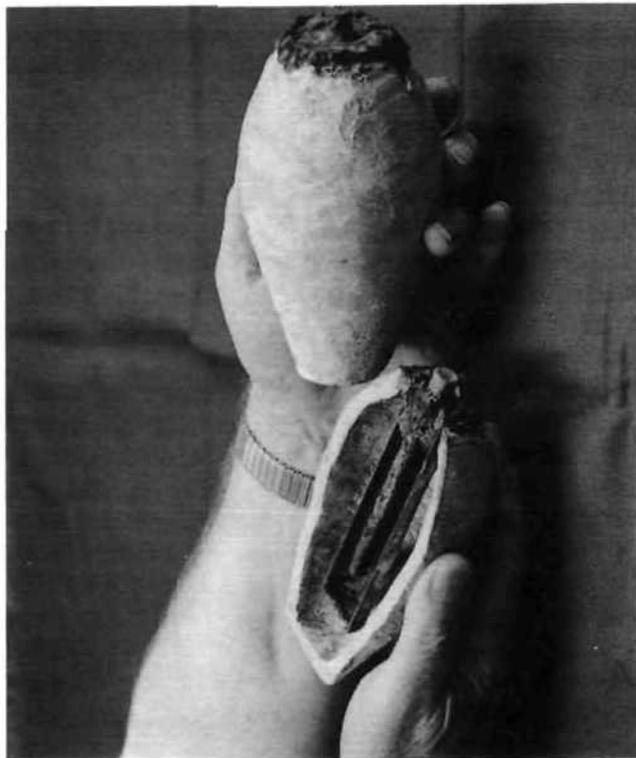
This 2,000-year-old find is considered by some scientists to be an electrical power source. Did it really work?

GERHARD EGGERT

“Nothing is impossible,” it is said. This at least holds true for pseudoscientific claims. Looking at Egyptian wall carvings or interpreting ancient texts, some sensationalists see evidence for ancient electricity, including light bulbs (Krassa and Habeck 1994; Von Däniken 1989; Editors of Time-Life 1990). These extraordinary claims that lack substantiated proof can be dismissed. But there is an ancient archaeological find considered by some scientists to be an electrical power source, the so-called “Battery of Baghdad.” Did it really work?

A Claim Is Born

The whole story goes back to the painter Wilhelm König (König 1938; Dubpernell 1978), who in the thirties served as director of the Iraq Museum in Baghdad. During excavations at Khuyut Rabbou'a¹ near Baghdad in 1936 an object of unknown purpose (Figure 1) was unearthed in 2,000-year-old Parthian layers [Parthia was an ancient Asian culture]. “In a



Model of the 'Battery of Baghdad' (The Berkshire Museum, Pittsfield, Massachusetts).

vase-like container of bright yellow clay, the neck of which had been removed, a copper cylinder was stuck, held in place by asphalt. The vase was about 15 cm high; the cylindrical tube with a closed bottom made from sheet copper had a diameter of 26 mm and a height of 9 cm. In the latter a completely oxidized rod of iron was found, held in place by a sort of stopper of asphalt. . . ." (König 1940; Dubpernell 1978). König (1938) noted parallel finds from Seleucia: bronze cylinders with papyrus relics inside; and from Ctesiphon: rolled bronze sheets. These later Sassanian finds have been discussed and depicted in detail by Paszthory (1989).

Perhaps the similarity of the object's form (but not the materials) to a modern dry battery with a zinc cup and a carbon rod led König to conjecture: "From its parts and their arrangement one might think that it must be a kind of 'galvanic' element or battery" (König 1938; Dubpernell 1978).

But one cannot say (De Camp 1991) that "the only use that anybody has been able to conceive for them is as battery cells for electroplating small objects with gold." By discussing the magical meaning of metals in antiquity, Paszthory (1989) has argued (like most of the excavators half a century earlier) that such objects might have been containers for blessings or incantations written on organic material. This answers convincingly the question of the claim's proponents: What else could it have been?

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Checking the Claim

One is tempted to assume that it is easy to check the "power source" hypothesis. In reality, the situation is more complicated. Take pieces from two kinds of metals and immerse them in an electrolyte (e.g., a sour or salty aqueous solution), and there will be a potential difference between the metals (simply because they are chemically different). More is needed for a good power source: To be useful, a reasonable electrical current (i.e., a flow of electrons) must flow for a reasonable length of time. The electrons (e) are set free at the anode, here, the iron (Fe) rod ($\text{Fe} \rightarrow \text{Fe}^{2+} + 2e$). To draw current from the apparatus, an outer electrical circuit must be closed; then the electrons can flow through it to the copper cylinder. There the electrons must take part in a cathodic reaction. But what kind? Because it is unknown which type of electrolyte (if any) was inside the copper cylinder, there are only speculative answers to this question (Table 1).

W. F. M. Gray, who was the first to build a reconstruction model of the "Battery of Baghdad," used a solution of copper sulfate for this purpose (Schwalb 1957). He found that this "worked quite well for a short time" (Ley 1954). Problems may arise from the direct deposition of copper on iron ($\text{Fe} + \text{Cu}^{2+} \rightarrow \text{Fe}^{2+} + \text{Cu}$). [Reconstruction models made by Gray are no longer on display but can be seen by appointment in the Berkshire Museum, Pittsfield, Massachusetts.]

Jansen et al. (1993) had the idea to use benzoquinone, which is known to be easily reduced to hydroquinone at the cathode. (Quinones occur naturally in the secretions of some beetles; as much as 300 mg can be found in large centipedes.) Good experimental results were obtained with 100 mg 1,4-benzoquinone in 200 ml dilute acetic acid (vinegar) as electrolyte. Other organic compounds would work also.

König (1938) himself vaguely spoke of an acid or alkaline liquid, and Schwalb (1957) thought that, compared with copper sulfate, "acetic or citric acid, which the ancient chemists had in plenty, should be even better." As Paszthory (1989) and Jansen et al. (1987b, 1993) have shown, naturally occurring organic acids or sour fruit juices (pH 2-3) are too weak: It would take strong mineral acids (unknown at that time) to generate hydrogen gas at the copper cathode in such an element. The small current flowing initially is due to the reaction of oxygen dissolved in the electrolyte. Thanks to the leakproof construction of the copper cylinder of König's find (soldered, sealed with asphalt), no oxygen (O_2) from the outside air can enter into the electrolyte (Figure 2, left). When the small amount of oxygen inside is consumed by the cathodic reaction to hydroxide, the current decreases to negligible levels.

In an erroneous model experiment (copper cylinder without bottom), Jansen et al. (1987a, b) have shown that only elements into which oxygen can diffuse from the outside can operate continuously.

But wait a minute: Most of the parallels to the Khuyut Rabbou'a find are not tightly closed copper cylinders. They are rolled bronze sheets only sealed at the top and the bottom (Paszthory 1989). Because the seam is not soldered, these cylinders cannot hold any liquid, so the whole vase would be filled with electrolyte (Figure 2, right). The walls of the earthenware

vases are porous, and oxygen from outside could diffuse steadily into the electrolyte, which would be tantamount to a steady electrical current. In this new speculative interpretation, the original "Battery of Baghdad" becomes a faulty deviation of the working Ctesiphon type. Nevertheless, a flat, open tray with a copper-wire mesh near the level of the electrolyte would be a much better design for the reduction of oxygen from the air.

But I am not persuaded, even by my own speculation, above. With the help of additional assumptions, one can get some current some of the time from the object. And if the current or the voltage is too low for practical applications, why not connect 10 or 100 or 1000 of them? As is always the case in experimental archaeology, successful experiments alone can show only a supposed ancient technique to be possible, but never its application. For instance, Thor Heyerdahl only showed with his Ra voyage that in principle it is possible to cross the Atlantic in an Egyptian boat. To accept the claim that the Egyptians really did so, one would need archaeological evidence from America (such evidence exists for the Vikings).

Concerning the claim of an ancient power source, where are the ancient electrical apparatuses or processes? Despite claims, there is neither an ancient object that supports the existence of ancient electrotherapy (most recent speculation: electroanalgesia [Keyser 1993]), nor electroplating; nor is there any written evidence. Archaeometry so far could not prove any ancient Near Eastern object to be electrogilded.

Based only on second-hand knowledge of König's mention of finds from Tel Asmar (2500 B.C.) some scientists took for granted the existence of such an ancient technique (Bockris and Reddy 1977). König also used his own observation of a strange galvanic gilding method of contemporary silversmiths in Baghdad as an argument for his interpretation of the find: "A primitive process of gold plating is still in use in Baghdad today on a secret [sic] electrical basis. Probably it is older than one might think?" (König 1940; Dubpernell 1978). The process (Figure 3) combines a current device and a cyanidic gold-plating bath in one simple unit with only two electrodes. As was shown recently (Eggert 1995), the process is very similar to John Wright's invention (1839) in Birmingham, England (Figure 4). This process was included by the Elkingtons in their British Patent 8,447 (Hunt 1973), where also the differences (e.g., the use of a common salt solution instead of dilute sulfuric acid) are described. The only reasonable explanation for this is that the process is not a relic of ancient knowledge ("older than one might think") but at the time of König's publication, only 99 years old.

In my opinion, the "magical container" hypothesis is much more probable than the "power source" claim. The latter is a "mystification by science" (Thumshirn 1986) of the object, which violates Occam's razor.

The Claim and the Scientists

It is no wonder that the claim of Parthian power sources found its way into (multicultural) pseudoscience (Ortiz de Montellano 1991). Von Däniken (1993) repeats it again and again without informing his readers about the disputes. And

Table 1. Suggested Reactions at the Copper Cathode

| Cathodic reaction | Reduction of | Source of the reactant | Reference |
|--|------------------------------|---|-------------------------------------|
| $\text{Cu}^{2+} + 2e \rightarrow \text{Cu}$ | cupric ions to copper metal | copper sulfate from mineral deposits | Schwalb 1957 |
| $\text{OC}_6\text{H}_4\text{O} + 2\text{H}^+ + 2e \rightarrow \text{HOC}_6\text{H}_4\text{OH}$ | p-quinone to p-hydroquinone | secretion of centipedes etc. | Jansen et al. 1993 |
| $2\text{H}^+ + 2e \rightarrow \text{H}_2$ | protons to hydrogen gas | mineral acids (unknown at that time) | Jansen et al. 1993 |
| $\text{O}_2 + 2\text{H}_2\text{O} + 4e \rightarrow 4\text{OH}^-$ | oxygen gas to hydroxide ions | oxygen dissolved in the electrolyte in the closed copper cylinder | Paszthory 1989, Jansen et al. 1987b |
| $\text{O}_2 + 2\text{H}_2\text{O} + 4e \rightarrow 4\text{OH}^-$ | oxygen gas to hydroxide ions | oxygen from the air | Eggert 1996 (this article) |

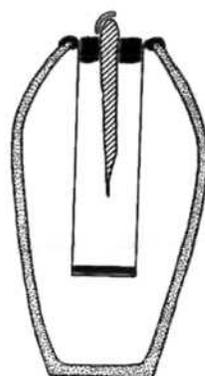
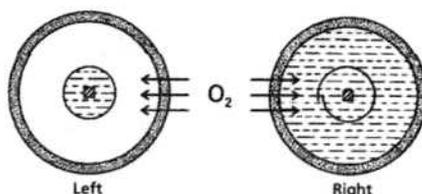


Figure 1. Vertical cross section of the Khuyut Rabbou'a find (König 1938)

- └ copper
- ▨ iron
- ▤ burnt clay
- asphalt
- ⤿ cap layer (relic)

Figure 2. Left: Horizontal cross section of the Khuyut Rabbou'a find (Figure 1.)



Right: Hypothetical reconstruction of an element with a bronze roll cathode

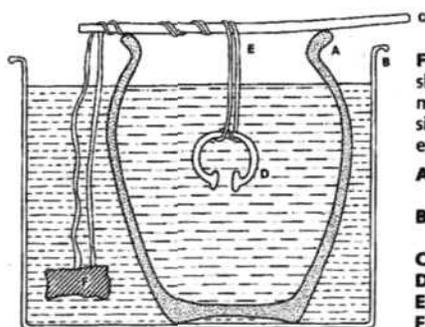


Figure 3. König's (1938) sketch of the gilding method of the Baghdad silversmiths with his explanations:

- A porous clay jar with gold cyanide solution
- B cooking vessel with solution of common salt
- C rod for hanging
- D object to be gilded
- E copper wire
- F zinc pole

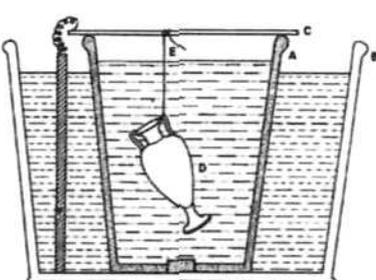


Figure 4. Modified drawing of Wright's invention of 1839 (Eggert 1995):

- A ordinary flowerpot containing a cyanide solution
- B outer vessel containing dilute sulphuric acid
- C (obviously metallic) rod
- D object to be gilded
- E (metallic) wire
- F sheet of zinc surrounding the porous cell

what about the scientists who also often cited the claim uncritically from third-hand information? They apparently liked the idea that electrical current had been used by the ancients and was only rediscovered by L. Galvani and A. Volta. The question regarding the "Parthian power source" was sometimes lost, and so, the conjecture became stated truth. This helped in a public relations campaign for the exhibition of objects from the Iraq Museum in the "Roemer- und Paläzeum-Museum" in Hildesheim (Germany) in 1978, where the find was presented. While other museums showing the same exhibition correctly called the object "controversial," the Hildesheim museum said, "Unbelievable as it sounds, some 1,800 years before Galvani . . . the Parthians knew an electrical cell" (Catalogue 1978). The museum presented a gilding experiment to journalists with an open reconstruction model of the "battery" (no asphalt stopper on top).

In 1978 German television (ZDF) journalist G. Kirchner let a Hildesheim restorer wearing a white coat pose as a chemist with a reconstruction model to lend more credibility to the claim. In the book accompanying the television series, Kirchner (1979) states after uncritical presentation of the find of a battery that the battery development department of a certain company was to perform experiments to solve the enigma of the Parthian "battery." First publish the results, then do the research?

Such investigations must be done carefully. Coll (1970), for example, fell into the pseudoscientist's trap of not citing his source of information. He denied the existence of the object based on wrong information from an archaeologist; Von Däniken (1978) thus was able to counter triumphantly.

MacKechnie Jarvis (1960) also could not resist speculation: "The following suggestion is made without the opportunity for visual examination of the find. It is that the object found is a cell of modern origin and that its presence in the desert in the neighbourhood of Baghdad can be explained by the activity of telegraph enterprise during the second half of the nineteenth century."

The fact that the construction of the "Battery of Baghdad" is technically not optimal can allow one to indulge in flights of fancy. H. Gebelein, a German professor and both chemist and alchemist interprets this as a hint that the construction plan for the "battery" might be hidden in ancient mythology: the affair of Venus (in alchemy related to copper) with Mars (related to iron).² In Gebelein's view, the copper cylinder corresponds to the vagina, the iron rod to the penis. And what about the presumed lemon juice or vinegar as electrolyte? These were used for contraception in ancient times, explains Gebelein.

While Gebelein's interpretation is really alchemy, the idea that the object might be a sexual symbol and not a battery is certainly worth considering (Priesner, see Jansen et al. 1993).

The Claim: A Shocking Discovery?

Although not likely, what if the Parthians really used electricity? Would it be "a shocking discovery" (Gray 1963)? Certainly not. It would add only one item more to these inventions lost in time, which for one reason or another had no significant impact on the

course of history despite their potential (Stiebing 1984). The claim of an ancient power source is not an "impossibility" (Von Däniken 1968). But even if it existed there is no need to postulate external influences leading to or surrounding such an invention.

Just the opposite: Had there been extraterrestrial visitors with space travel technology, they could have shown the Parthians ways to produce much less primitive power sources than the ones the Parthians possibly had.

Notes

1. Other transcriptions of the Arabic name in the literature are Khujut Rabu'a and Chujut Rabuah.
2. Background is the view of some alchemists that ancient mythology is an allegoric form of description and proliferation of the secrets of the alchemists (Gebelein 1991).

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What's That I Smell?

The Claims of Aromatherapy

A small dose of aromatic oil may make for a pleasant experience, but the claims of aromatherapy go way beyond that.

LYNN McCUTCHEON

Aromatherapy typically involves putting a few drops of some pleasant-smelling, plant-derived oil in your bath water, sniffing it from an inhaler, or massaging it directly into your skin. I sampled a number of these “essential oils,” as they are called, and I was impressed with their unique aromas. So what’s the problem with smelling something fragrant while you are bathing or while you are getting massaged? According to John Meisenheimer, who practices dermatology in Orlando, Florida, a tiny percentage of the population is allergic to some essential oils. But for the rest of us, the answer is, “nothing.” A small dose of aromatic oil probably won’t hurt you a bit, and if you enjoy the smell, that’s fine!

The problem lies with the claims made by aromatherapy’s most widely known practitioners—claims that are causally confused, ambiguous, dubious, and unsupported by scientific evidence. After reading several books and articles written by the enthusiastic supporters of aromatherapy, I believe that there are some recurrent themes that are worth a closer look.

One such theme is what I call "confused causation." Virtually all aromatherapists claim that if you relax for several minutes in warm bath water to which has been added a few drops of essential oil, you will get out of the tub feeling pleasant. I agree, but what causes the pleasantness? Is it the warmth, the water, the minutes spent resting, the few drops of oil, or some combination thereof? It would be easy to conduct an experiment in order to find out, but for some strange reason aromatherapists haven't seen fit to do this. Instead, they imply that the essential oil is the main cause. Says Meisenheimer: "The amount of essential oil from a few drops placed in your bath that might actually penetrate the stratum corneum [skin] is probably too small to have any meaningful, systemic, physiologic effect."

Other examples of confused causation permeate aromatherapists' writings. Hoffmann (1987, p. 94) claims that chamomile is good for insomnia *if* taken in a late bath. Is it the lateness or the chamomile that makes you sleepy? For stress, Lavabre (1990, p. 108) recommends relaxation, a better diet, nutritional supplements, more exercise, and a few drops of an oil blend. Heinerman informs us (1988, p. 197) that jasmine oil massaged into the abdomen and groin promotes sexual stimulation. I'll bet it does, with or without the jasmine. On page 301 he suggests that to make unsafe water safe, boil it and add rosemary, sage, or thyme before drinking. The heat probably kills most of the germs. Edwards (1994, p.

135) mentions that many patients in hospitals in England receive massages with essential oils. According to her, "the relaxing and uplifting effect of the oils helps boost the morale of the patients." Isn't it possible that the massage did as much to boost morale as the oils did?

One of the favorite tactics employed by aromatherapists is the use of ambiguous claims. Any good psychic can tell you that you *never* make a specific prediction. You always leave yourself enough room so that whatever the outcome, you can claim success. Judging from what I read, the aromatherapists have mastered this strategy. Here are some of my favorites, followed by my brief commentary.

According to Frawley (1992, p. 155), incense "cleanses the air of negative energies." What are negative energies? The reader is encouraged to get massaged with oil regularly (p. 155) because this "keeps the nerves in balance." How would we know an unbalanced nerve if we saw one? Hoffmann tells us (p. 95) that

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ylang ylang is "supposedly an aphrodisiac." Is it or isn't it? Lavabre declares (p. 114) that benzoin resinoid will "drive out evil spirits." I'd love to see that. Presumably spruce oil is an even better essence because it is recommended (p. 64) "for any type of psychic work." Why limit yourself to evil spirits? Edwards (p. 134) quotes Visant Lad as saying that "life energy enters the body through breath taken through the nose." Is life energy the same thing as oxygen, and if so, why can't it enter through the mouth? About tea tree oil, Edwards opines (p. 135), "There is hope [it] may play a role in the successful treatment of AIDS." Is it hope or is it evidence? On the same page she tells readers that aromatherapy is good for "restoring harmony and balance between the mind and body." Such a phrase can mean almost anything you wish.

Not all of the claims are hopelessly ambiguous or unlikely to be true. I did a computer search of the psychological literature back to 1967, using the terms *essential oils*, *aromatherapy*, and the names of 23 common essences. I found that chamomile (Roberts and Williams 1992) can put people in a better mood, and lavender

sometimes causes mistakes in arithmetic (Ludvigson and Rottman 1989). Furthermore, several of the odors used by aromatherapists are capable of producing physiological arousal as measured by electroencephalogram (EEG) recordings (Klemm et al. 1992); and emotional changes, as measured by self-report (Kikuchi et al. 1992; Nakano et al. 1992). Peppermint odor appears to be capable of causing very small EEG, elec-

tromyogram (EMG), and heart rate changes during sleep (Badia et al. 1990); and some odors can modify artificially induced sleep time in mice (Tsuchiya et al. 1991). There is evidence that specific odors can better enable one to recall information that was learned in the presence of that odor (Smith et al. 1992).

As a whole, these findings stretched to the limit would support only small craft, sailing cautiously near the shores of the aromatic sea. Unfortunately, some aromatherapists have been more than willing to sail boldly into uncharted waters. Consider these claims about specific essential oils, with my comments.

"A few drops of jasmine (Tisserand 1988, p. 87) cures postnatal depression." I didn't find any olfactory research that mentions postnatal depression. "Marjoram oil (Tisserand, p. 37) turns off sexual desire." The few studies I found that mentioned marjoram had nothing to do with sex. Price (1991, p. 93) tells us that juniper berry is "relaxing" and "stimulating" (both?), and she (p. 48) and Valnet (1982, p. 87) recommend lavender for insomnia. The Klemm study showed that lavender was both arousing and unpleasant. Hoffmann (p. 94) claims that patchouli is good for anxiety. My computer search of the word *patchouli* turned up nothing. Valnet (p. 70) claims that ylang ylang is good for one's



sex drive. *Ylang ylang* didn't turn up anything either.

Other claims of dubious validity are common to the writings of aromatherapists—broad claims that are related to the practice of aromatherapy in general. The following claims are my words, but they represent a synthesis of views expressed by the authors listed.

• *Smell is the most direct route to the brain.* (Avery 1992; Edwards 1994; Green 1992; Raphael 1994). The implication is that smell is superior to the other senses because olfactory information gets to the brain quickest, and since aromatherapy is concerned with smell, it is a superior method of treatment. Olfactory information gets to the brain very quickly, but so does auditory, tactile, and visual information. The differences would certainly be measured in milliseconds, and it would have no practical consequence. The olfactory sense is directly linked to the limbic system—a portion of the brain concerned with emotionality and memories. The aromatherapists make much of this—the smell of ginger evokes memories of grandma's cookies, etc. What they don't tell you is that the sight of grandma's photo or hearing her voice can do the same. All the senses are part of a massive network that links all parts of the brain. Smell enjoys no particular advantage when it comes to access to or speed of access to various parts of the brain.

• *Natural oils are better than synthetic ones.* (Avery 1992; Edwards 1994; Hillyer 1994; Lavabre 1990; Price 1991; Raphael 1994; Rose 1988). Most of these authors felt it unnecessary to explain such a statement, but Lavabre told readers that "natural" molecules work better because they have memory (p. 49). It is possible to make a synthetic preparation identical on a molecular level to the most important compound in an essential oil. John Renner, who has heard many of the bizarre claims made by aromatherapists, told me that if the molecules are the same, "I doubt seriously that your body could tell the difference." Given that essential oils contain several compounds, it seems possible that a natural oil might have more than one active agent. If that is so, then aromatherapists should be spearheading the research effort to determine which chemical compounds are inducing the changes they claim are taking place. Instead, most of them seem all too willing to assume that natural oils are better, and that there is no need to defend this assertion with any rationale or research evidence.

• *Essential oils can help your memory.* (Hoffmann 1987; Lavabre 1990; Price 1991; Valnet 1982). I found no evidence to support this, and none of these authors provided a hint about how they arrived at that conclusion. Psychologist Elizabeth Loftus, a world-renowned human memory expert, told me in a personal communication that she knows "of no cogent scientific evidence that smells cure amnesia, or that they strengthen memory." There is such a phenomenon as context-dependent learning. It has been shown that it is easier to remember X when you can return to the environment or context in which you learned X. Presumably, the context provides cues that make it easier to recall X. It has further been shown that at least one essential oil can serve as a contextual cue (Smith et al. 1992). If this is the basis for the above-mentioned claim, it is highly misleading. The essence itself is not important, only the fact that it was a significant part of the context in which the original learning took

place. In other words, if the essence wasn't present when you learned X, then it won't help you recall it later.

• *Scientists are doing a lot of research on essential oils.* (Avery 1992; Price 1991; Rose 1988; Valnet 1982). Statements like this are usually followed by specific claims. The implication is that these claims are supported by scientific research. As we saw earlier, that isn't necessarily true. Whether or not scientists really are doing a lot of research on essential oils is debatable. By comparison with 50 years ago, there is probably more research on essential oils today. By comparison with hearing and vision, research on the consequences of smelling essential oils lags way behind. If there really is a lot of research on the effects of essential oils, why is it that these authors are so reluctant to cite it? Their books and articles rarely list or mention any scientific journal articles. Instead, if there are any references at all they are to books written by other aromatherapists.

All of this sounds as though I am strongly opposed to the use of essential oils. I'm not! If it pleases you to put some in your bath water or have a little rubbed on your back once in a while, by all means, go ahead. It is not the odor that arises from these fragrances that is troubling, it is the stench arising from the unwarranted claims made about them.

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Fun and Fallacies with Numbers

.....
*It is so easy to misuse or misunderstand statistics.
They can enlighten, and they can mislead.*

MARILYN VOS SAVANT

Numb Numbers*

- Average level of testosterone in the saliva of male trial lawyers, in nanograms per deciliter: 6.7
- Average number of shopping carts stolen from American supermarkets each hour: 38
- Percentage of Americans who think "espresso" is an "overnight delivery system": 7
- Change, since the Berlin Wall fell in 1989, in the percentage of western Germans who say they suffer indigestion: +5
- Percentage of Super Bowl viewers who do not live in the United States: 88

Those are "fun" statistics, meant to provoke a smile—and they do. But before we move on to more serious numbers, let's learn a lesson from these more playful figures.

For instance, how in the world does anyone come up with the average number of shopping carts stolen each hour? Simple. You start with the lackluster facts, according to the Food Marketing Institute in Washington, D.C., that there are about 30,400 supermarkets nationwide and that the average one loses 11 carts per year. Multiply those numbers, and you find that 334,400 shopping carts were stolen last year. Then you divide that by 8,760 (hours in a year) to get

*The preceding statistics were taken from "Harper's Index," a registered trademark of *Harper's Magazine*.

the "average number of shopping carts stolen from American supermarkets each hour: 38." It's a much snappier presentation of otherwise dull figures. And it's honest, too.

Similarly innocent is the "percentage of Super Bowl viewers who do not live in the United States: 88." It's both surprising and amusing to envision the whole world glued to American television, but when we stop to consider that the Super Bowl is broadcast to much of the rest of the planet, and that the U.S. population comprises only a small portion of the Earth's population, the number grows far less surprising. Even if the popularity of the Super Bowl is *huge* in the United States (and it is), if our country is dwarfed by all the other countries put together (and it is), the rest of the world can be largely uninterested in the Super Bowl (and it is), and our numbers will be swamped by their numbers.

According to A. C. Nielsen Media Research, about 91 million Americans watched the Super Bowl in 1993, and according to the National Football League's "guesstimate," maybe 750 million Earthlings watched it, all told. That means about 12 percent of the total estimated viewers were Americans—ergo about 88 percent weren't, which dovetails with the original statistic. But a different way to describe those same numbers is that with 91 million American viewers out of a total U.S. population of 250 million, about 36.4 percent of the American population tuned into the 1993 Super Bowl. And with 659 million non-American viewers (750 million viewers in the world minus the 91 million viewers in the United States = 659 million) out of a total non-U.S. population of 5,134 million (5,384 million people in the world minus the 250 million people in the United States = 5,134 million), about 12.8 percent of the non-American population tuned in to the Super Bowl.

In short, according to the above sources, 36.4 percent of the Americans watched the Super Bowl, but only 12.8 percent of the non-Americans did. To make the opposite point of the original statistic, then, we can simply divide 36.4 by 12.8 and arrive at the conclusion that the Super Bowl is about three times as popular in the United States than in the rest of the world. So they're not glued to American television, after all (yet). But the foreign viewership still seems like a high number, doesn't it? After all, 12.8 percent equals about one out of every eight people. How was the worldwide viewership statistic "guesstimated"?

First, we telephoned Nielsen, but they have no means of gathering information outside of this country, either directly or indirectly, and they didn't have firsthand knowledge of any

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American or foreign organizations that do. Next, we telephoned ESPN International, which carried much of the foreign coverage, and asked if there was any way at all to guess how many non-Americans watched the Super Bowl. Not to their knowledge, they said. But there were surely plenty of *possible* foreign viewers. So we telephoned the NFL and asked where they got their 750 million worldwide viewership. From nowhere at all, it turns out. They just said it! But I wanted to give them the benefit of any doubt, so we telephoned ESPN again and asked how many *possible* foreign viewers there were. Here are the numbers:

| | |
|--|---------------|
| Possible households in Europe? | 48.40 million |
| Possible households in Latin America? | 3.50 million |
| Possible households in Asia? | 2.00 million |
| Possible households in the Middle East and Africa? | .05 million |
| Total possible households? | 53.95 million |

While not quite complete enough for a totally definitive answer, it is clear where this information leads us. (There are additional telecasters, but their numbers are relatively small.) If we round up the total possible households to 60 million, then for the 659 million non-American viewership number to be accurate, this means not only that every single foreign household (with a television) on the planet was tuned in to the Super Bowl, but that 11 people were clustered around each one of those sets! (Of course, the figures can't actually say that every single household was tuned in, but for every one household *not* watching the game, 22 people in another household must have been!)

How about the percentage of Americans who think "espresso" is an "overnight delivery system"? Seven turned out to be a teensy bit less honest than the previous example, but it's funny enough to forgive the statisticians who managed to evoke that response. I guessed that the data probably arose from a scenario equivalent to the researchers giving people a quiz with a multiple choice of answers—one of which was the purposely humorous "overnight delivery system," thus taking innocent advantage of the fact that for a growing percentage of Americans, English is not their primary language. In some Spanish dialects, "expreso" means "special delivery." (And plenty of Americans spell "espresso" as "expreso," complicating the issue.)

So we called Patrice Tanaka and Company, the public relations firm for Krups North America (the coffee company), who commissioned the telephone survey, and she provided us with the details. There had indeed been a multiple-choice quiz, and "an overnight delivery system" was the first choice. This is how the entire question appeared:

What is "espresso" (ess-PRESSO)? Is it . . .

. . . an overnight delivery system?

. . . a speedy laxative?

Numbers continued on page 55

Ever a Thumb to Suck, a Skirt to Hold

JOSEPH A. EZZO

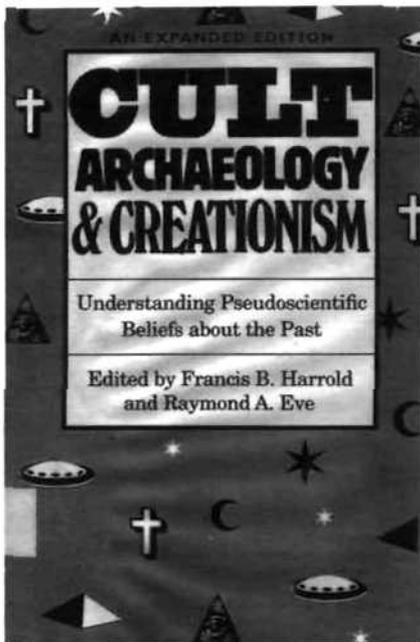
Cult Archaeology and Creationism: Understanding Pseudoscientific Beliefs about the Past. An Expanded Edition. Edited by Francis B. Harrold and Raymond A. Eve. University of Iowa Press, Iowa City, Iowa. 1995. ISBN 0-87745-513-9. 204 pp. Paperback, \$13.95.

On February 26, 1996, NBC presented a documentary titled "The Mysterious Origins of Man," hosted by Charlton Heston, that offered a strong pro-creationist view of human origins. Three elements dominated the program: (1) an unscientific approach to evidence and method; (2) a tendency to offer simple explanations of complex human phenomena; and (3) a distrust of the established scientific community. Over the course of the next week or so, my Internet bulletin board (ARCH-L) was clogged with angry rejoinders by archaeologists, many of whom seemed to be at their wits' ends over such foolishness.

The updated version of *Cult Archaeology and Creationism: Understanding Pseudoscientific Beliefs about the Past, An Expanded Edition*, edited by Francis B. Harrold and Raymond A. Eve, seems to have appeared at an opportune time. Indeed, throughout this book the three elements so critical to "The Mysterious Origins of Man" are repeatedly shown to be cornerstones of pseudoscientific and creationist thought. As the title suggests, this book is an expanded version of the first edition, published by the University of Iowa Press in 1987.

The contributors to the book include archaeologists, physical anthropologists, historians, and psychologists. The book consists of eleven chapters, the first nine of which are identical to Chapters 1-9 of the first edition. Chapter 10 was solicited by the editors for this edition, and focuses

on Afrocentric theories about past human development and achievement. Chapter 11 is an update of the final chapter in the earlier edition. Well researched and well written, *Cult Archaeology and Creationism*



stands alongside four other commendable books on the subject of the pseudoscientific misuses and misperceptions of archaeological data: J. Peter White's *The Past is Human* (Taplinger Books, 1974); William H. Stiebing's *Ancient Astronauts, Cosmic Collisions* (Prometheus Books, 1984); Kenneth Feder's *Frauds, Myths, and Mysteries* (Mayfield, 1990; second edition, 1996); and Stephen Williams's

Fantastic Archaeology (University of Pennsylvania, 1992). The authors of these works, save for White, are contributors to the expanded edition of *Cult Archaeology and Creationism*.

The theme of this book is concisely summed up in Chapter 1, "The Nature and Danger of Cult Archaeology," by Stiebing, who quotes the late Isaac Asimov (p. 4): "Inspect every piece of pseudoscience and you will find a security blanket, a thumb to suck, a skirt to hold. What have we to offer in exchange? Uncertainty! Insecurity!" Four of the chapters in the book (Chapters 3-6) deal with studies designed to determine the pervasiveness of creationist and pseudoscientific beliefs among college students. The alarmingly high percentages of students who believe in paranormal phenomena, particularly ESP and UFOs, clearly reflect Asimov's statement: These are young people, many of whom are living away from their parents for the first time, facing an intimidating world and an uncertain future. Beliefs in phenomena that defy rational explanation and potentially can furnish one with power to control future events indeed provide the security blanket that wards off uncertainty. Unfortunately, changes toward a more rational view of the universe during college are not in evidence, as Thomas Gray (Chapter 3) reports in his findings at Concordia University in Montreal. One of the unsettling aspects of reading this book today is that the trends present in these studies have not changed

in the last decade; if anything, pseudoscientific beliefs, even among better-educated people, are likely gaining in popularity (witness the popularity of prime-time television shows such as "The X-Files," "Unsolved Mysteries," and "Ancient Mysteries," as well as the "documentary" mentioned above).

Chapters 4 through 6, by Feder, Luanne Hudson, and Harrold and Eve, respectively, report on the development of a three-state (California, Connecticut, and Texas) data base of college students who were tested for their knowledge and beliefs regarding pseudoscience and creationism. Hudson, who focused on pseudoscience, notes that although a minority of students were found to have strong beliefs in most of the pseudoscientific phenomena about which they were questioned, another minority also did not believe in them (with the remainder being undecided or ignorant of the topic). Harrold and Eve's finding on creationist beliefs is similar, and quite alarming in the percentages of students who believed that creationism should be taught in the public schools (nearly 50 percent in California and Connecticut, and nearly 60 percent in Texas). Not surprisingly, the authors found strong correlations between religious conservatism and creationist beliefs, as well as between poor scientific training and creationist beliefs.

Chapters 7 ("ETs, Rafts, and Runestones: Confronting Pseudoarchaeology in the Classroom" by Suzanne Knudson Engler) and 9 ("Fantastic Archaeology: What Should We Do about It?" by Stephen Williams) present entertaining and provocative stories of the development of pseudoscience awareness courses at the university level. (Now that Williams has retired from Harvard University, it is uncertain whether or not his pseudoscience courses will continue to be taught.) "A Century after Darwin: Scientific Creationism and Academe," by Laurie Godfrey and John Cole (Chapter

8), is far more sobering with its informative discussions of gains and losses made by creationist organizations with regard to issues such as publishing and public education, including the 1986 vote of the Louisiana Supreme Court to disallow creationism to be taught in the public schools. [The U.S. Supreme Court in 1987 upheld this decision.]

Bernard Ortiz de Montellano, an authority on multiculturalism in science education, provides the chapter on Afrocentrism. He discusses how Afrocentrists, determined to replace our Eurocentric educational bias with a different "centrism," are obsessed with the idea of race; and how black skin was the key not only to George Washington Carver's remarkable discoveries of plant products, but also to the entire Egyptian civilization (despite the fact that Egyptians are not closely related genetically to sub-Saharan Africans). Afrocentrists' claims of a Nubian (Nubia was an ancient African kingdom) presence in North America 3,000 years ago are based on fragmentary data. For example, Afrocentrists interpret the fleshy lips and flat noses of prehispanic Olmec statues on what is now the Gulf Coast of Mexico as being African in origin. Sadly, but not surprisingly, because Afrocentrists couch their claims in a multicultural approach to the past, they have been received positively in a number of postmodern circles. Consequently, the scientific establishment has been reluctant to criticize their claims, fearing being branded as racist.

The updated chapter by Harrold, Eve, and Geertruida C. de Goede ("Cult Archaeology and Creationism in the 1990s and Beyond") indeed brings us to the present with the state of various belief systems. Erich Von Daniken may be all but dead in North America, but the idea of ancient astronauts is still alive and well. Scientific creationists, beaten repeatedly in the courts, have sought out school boards as more recent targets, and some groups offer a "softer" version of creationism that does not overtly reject scientific principles (but remember "The Mysterious Origins of Man").

Afrocentrism's future is highly uncertain, but New Age perspectives are flourishing, and claims about contacts with aliens and channeled media, and the influence of these entities on humans for thousands of years, have grown more outlandish yet popular every year. A search of various periodical indices indicated that articles advocating creationist and related studies have declined significantly since the mid-1980s. However, the chapter authors cite the backlash against science by postmodernist thinkers currently in vogue on many university campuses. This rejection of objectivity and scientific principles has become a new and powerful adversary for the scientific community.

The book, while very useful (as noted) timely in its updated edition, certainly could have been expanded more. New Age thinking and its effects on public perceptions about the past could very well have warranted a chapter (or, for that matter, an entirely separate book!). Similarly, the effects of postmodernism, which in recent years have reduced much of archaeological theory to a politically based relativism that condemns scientific principles, need to be examined in this light as well. Updated or recent studies on student beliefs would also have contributed nicely, although it is acknowledged that constraints such as time, budget, and length of book may have prevented the editors from a more ambitious edition.

The issuing of this book in paperback makes it accessible for those on limited budgets; it is well worth the cover price. The contributors do not provide any hard and fast solutions to the dilemma of the popularity of creationist and pseudoscientific beliefs in our society because they acknowledge, of course, that there are none. If this book leaves us with anything of certainty, it is that in the realm of educating the public to the dangers of creationist and pseudoscientific thinking, skeptics and scientists still have their work cut out for them, and will continue to for decades to come. □

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PHILOSOPHICAL
INTERACTIONS
WITH
PARAPSYCHOLOGYThe Major Writings
of H. H. Price
on Parapsychology
and Survival

EDITED BY FRANK B. DILLEY

An Excursion into
the Unnecessary

GORDON STEIN

Philosophical Interactions with Parapsychology: The Major Writings of H. H. Price on Parapsychology and Survival. Edited by Frank B. Dilley. St. Martin's Press, New York, 1995. ISBN 0-333-59838-5. 294 pp. Hardcover, \$59.95.

Philosophical Interactions with Parapsychology is a collection of journal articles, lectures, and book reviews by the British philosopher H. H. Price (1894-1984). Price, at Oxford, was quite interested in deriving a philosophical explanation or system that would be consistent with the existence of parapsychological phenomena. He accepted as real and demonstrated telepathy, hauntings, telekinesis, survival of death, precognition, clairvoyance, and mediumship. He tried to explain how these could occur in a world governed by logic and scientific explanations that did not seem to allow these phenomena, as described.

Price, it seems, has gotten off on the wrong foot. He has felt the necessity to explain phenomena that may not yet need an explanation. If the phenomena are not real, then no explanation is needed. Price was, it now seems reasonable to say, a bit premature in his acceptance of the definitiveness of these phenomena. Anecdotal evidence and some of the not-quite-convincing experimental evidence are not adequate to confirm that any of the phenomena actually exist. They may, but there is still no need to develop a philosophical system until this has been established. Otherwise, we are simply exercising our imaginations.

Price hits upon the aspect of parapsychology that lies at its heart. He says the materialist outlook, which underlies much (if not all) of scientific thought, is

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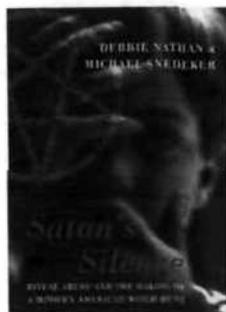
the real threat to the religious outlook. The phenomena of parapsychology, if they are real, require a modification (or even a discarding) of the materialist outlook, thus freeing religion to have its "phenomena" without fear that they will be disparaged by the holders of a scientific outlook as not fitting into the real world. I think that Price is correct about this.

Here we have the heart of the matter in another way, as well. Perhaps a number of people (scientists included) are anxious to "jump the gun" in their theorizing about the paranormal because they are troubled by the limitations of the materialist outlook when it comes to religion. Motivations other than a search for the truth of how the universe functions (no matter how idealistic this sounds) should be suspect. We would all like the universe to function in a way that makes us feel comfortable, but that may very well not be the way it really works.

Price's theorizing leads him into what

I would call "nonproductive" directions, in that he tries to explain one mystery with another mystery. This simply will not do, as it does not really "explain" anything. Price's new mystery is called by him the "psychic ether" hypothesis. Although many scientists (at least those with a knowledge of science history) would wince at this revival of a discredited word (*ether*), Price tries to define it as follows: It is a state intermediate between "mind" and "matter." Price points out that in Eastern philosophy, there is indeed such an intermediate state, and the dichotomy felt in the West between the two is really more of a continuum. He gives as an example the memory we have (the image) of a friend's face after the friend is no longer in our presence. There is a sort of an image present and Price claims that this "Ether of Images" has both mental and material properties.

My response would be that all "thoughts" fit into this category, but they may be only the brain's response to chemical or electrical stimuli. Price has added an additional layer of explanation to something that may be satisfactorily explained without it. This then becomes an Occam's razor problem, in which we are guided to accept the simpler, adequate explanation of two offered. In short, this book is an interesting excursion by a brilliant mind into the realm of the unnecessary. □

The Silence of the
Persecuting Prosecutors

ROBERT A. BAKER

Satan's Silence: Ritual Abuse and The Making of a Modern American Witch Hunt. By Debbie Nathan and Michael Snedeker. Basic Books, New York, 1995. ISBN 0-465-07180-5. 317 pp. Hardcover, \$25.

Anyone fortunate enough to discover and read Debbie Nathan and Michael Snedeker's *Satan's Silence* will quickly realize this is the best book yet written about the current

American tragedy of childhood sexual molestation. Not specifically the sexual molestation of children—which is indeed a serious problem—but the persecution, prosecution, and conviction of

innocent adults wrongly accused of ritual sexual crimes against children they did not commit.

To believe for a moment that the Salem witch-trial horror of 1692 could ever be repeated even once in an enlightened and civilized society seems unthinkable, but to realize that it has happened here in the United States more than a dozen times within the past decade borders on the bizarre and unbelievable. How can a supposedly educated and informed populace allow such flagrant miscarriages of justice to occur and, then, once the truth is known, fail to take swift and firm action to free and exonerate the innocent?

Nathan and Snedeker's work covers each sordid instance of satanic panic: from the Bakersfield (Kern County), California, fiasco in 1980, in which four innocent adults were sentenced to a total of more than 240 years of imprisonment for crimes they did not commit based on the testimony of Mary Ann Barbour, who was known to be suffering from a schizoaffective disorder; to the 1992 Little Rascals Day Care Center horror in Edentown, North Carolina; and the 1995 outrages in East Wenatchee, Washington.

The Kern County tragedy was but a precursor to the much better-known witch-hunt involving Judy Johnson and the McMartin Preschool case in Manhattan Beach, California. This stain on American jurisprudence lasted from 1983 to 1990.

In the McMartin case, the accused, Peggy and Ray Buckey, spent five years in jail before being released on \$1.5 million bail, then underwent a trial lasting 28 months—the longest criminal proceeding in American history—before all charges were finally dismissed. Judy Johnson, who said she believed she had divine powers, and who the courts described as a psychotic alcoholic, triggered the case by accusing Ray Buckey

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of sodomizing her son. This accusation launched a veritable fear-storm of social panic and paranoia that not only infected much of Los Angeles County but quickly spread across the country.

In regard to the McMartin case, Nathan and Snedeker note, "The social hysteria that McMartin incited upped

"The medical and psychotherapeutic communities aided and abetted this stupidity by encouraging the use of hypnosis, guided imagery, and other New Age nonsense to implant suggestions of early childhood sexual abuse into the minds of believing and trusting people."

ritual abuse cases to another level. While at first they were products of delusional individuals by 1984 whole social systems had been set up to justify and develop accusations and prosecutions" (p. 93).

By 1984 the media were promoting the idea that ritual sex-abuse was common and pervasive. In January 1984, 60 million people watched the ABC-TV drama "Something About Amelia," dealing with a handsome, affluent father who sexually abused his teenaged daughter. The movie implied such cases were common.

In the spring of 1984, 24 people in Jordan, Minnesota, were charged with operating a child-pornography and sex ring that included their own sons and daughters as victims. In April, janitors and teachers at a day care center in Chicago were accused of abusing children in satanic rituals and making them eat boiled babies. In May, workers at a Montessori school in Reno, Nevada, were charged with ritually abusing 26 children; and in June, a middle-aged teacher's aide in Memphis was accused of sexually assaulting 19 children in her charge and engaging in satanic rituals.

By the end of the summer, cases surfaced of ritualistic sex-abuse, pornography production, and sacrifice of animals and humans in 14 day care centers in New York; dozens more in Southern California; and individual cases in Niles,

Michigan; Spencer Township, Ohio; Sacramento, California; Malden, Massachusetts; West Point, New York; and Miami, Florida. In the latter case, two immigrants were accused of molesting eight children in a home-based, baby-sitting service. A few months later, a 19-year-old day care teacher's aide in

Pittsfield, Massachusetts, was accused of molesting preschoolers and threatening to kill their parents. He was quickly tried, convicted, and sentenced to several life terms in prison on the flimsiest imaginable evidence.

In early 1985, the ritual sacrifice of children was alleged in Fort Bragg, California; and in Clarksville, Maryland, where a kindergarten teacher was accused of assaulting her preschoolers with a screwdriver. Then in New Braintree, Massachusetts, day care workers were charged with defecating on their charges and photographing them nude. Late in 1985, Kelly Michaels at the Wee Care Day Nursery in Maplewood, New Jersey, was arrested, charged with incredibly obscene and impossible acts, convicted, and sentenced to prison where she served for five years before an investigative reporter for the *Wall Street Journal*, Dorothy Rabinowitz, managed to convince the authorities to free her.

In summary, between late 1983 and 1987, wild and baseless allegations triggered intensive investigations in more than 100 American communities. Even today, in 1996, these witch-hunts continue.

How and why did this mass panic occur? What is most valuable about *Satan's Silence* is its careful and detailed account of the historical and social

background of a nation awash in a number of political and cultural changes—including changes in gender relations and sexual experimentation—that unsettled thousands of law-and-order conservatives and Christian fundamentalists. Among the latter group in particular, hostility toward women in the workplace, abortion, and public child-care; fear of sexuality in general; and deep belief in an active, ever-present and living Satan converged in a number of conspiracies widely publicized in the Christian media. Livestock slaughter by Satanists, devil-worshipping corporate executives, rock musicians whose songs were filled with demonic subliminal messages, ritual sex-abuse orgies, and satanic cabals

“To believe for a moment that the Salem witch-trial horror of 1692 could ever be repeated . . . seems unthinkable, but to realize that it has happened here in the United States more than a dozen times within the past decade borders on the bizarre and unbelievable.”

behind every tree and under every rock were the topics for hundreds of Sunday sermons. Feminists specifically bore the brunt of wild, sex-abuse conspiracy theories and were seen as the primary source of widespread mistreatment and abuse of children.

Nathan and Snedeker make crystal clear exactly how these fear-motivated urban legends coalesced around the belief in ritual abuse and aroused communities to the point that hundreds of innocent people were persecuted, tried, convicted, and sent to prison where they remain to this day. Even more remarkable is the fact that so few people protested and that so little was done to defend the innocent. In Nathan and Snedeker's words:

In a culture as heterogeneous as ours, so extensive a moral panic can be achieved only by concerted efforts at institutionalizing it. Indeed, this is exactly the way in which belief in ritual abuse spread: via an impassioned

nationwide crusade conducted by social workers, therapists, physicians, victimology researchers, police, criminal prosecutors, fundamentalist Christians, ambitious politicians, anti-pornography activists, feminists, and the media. It was a powerful effort that did not come together overnight. But as it slowly took shape a veritable industry developed around the effort to demonstrate the existence of ritual abuse.

In the absence of conventional evidence, the proof became words obtained via suggestion and coercion and the most ambiguous of behaviors from both youngsters and the accused. Verbal “disclosures” about events that never happened were obtained from children using interview techniques that cognitive psychologists have, subsequently, discredited as dangerously coercive and

suggestive. Additionally, prosecutors introduced new forms of therapeutically induced “evidence”—such as preschool-age children's play with toys and dolls that have genitals, their vague scribbles and drawings and parents' retrospective accounts of their children's nightmares and masturbation—to show that the youngsters had been traumatized by abuse (p. 5).

Nathan and Snedeker also show that in the name of “saving the children,” jurists and prosecutors have exploited popular anxieties about sex to carry out character assassinations on defendants, accusing them of promiscuity, homosexuality, and drug use. The medical and psychotherapeutic communities aided and abetted this stupidity by encouraging the use of hypnosis, guided imagery, and other New Age nonsense to implant suggestions of early childhood sexual abuse into the minds of believing and trusting people.

Cases of multiple personality disorder (due of course to satanic-ritual abuse), alien abduction, parental alienation syndrome, and other dissociative-identity disorders grew like weeds and furnished daily grist for the television talk-show mills.

When the tide finally turned against these abuses of intelligence and reason with the birth of organized resistance groups such as VOCAL (Victims of Child Abuse Laws) and the False Memory Syndrome Foundation (FMSF) one would assume a diminution in unfounded charges would result. Sadly, instead of owning up to “its history of sordid involvement in fomenting ritual-abuse panic, the child-protection profession remains officially silent on the issue.” The reasons for this are many, but the primary reason is that most of the leading figures had their public image and reputations on the line and if they dared correct themselves they feared public humiliation.

As Nathan and Snedeker note, people continue to push discredited dissociation and repression theories of traumatic amnesia and, while admitting that their profession's past mistakes are at least partly to blame for current criticism, they have

never yet made any effort to publicly review those mistakes in particular cases—to reexamine the transcripts of Kee McFarlane's child interviews in the McMartin cases, for instance—or to take concrete steps to overturn convictions based on such errors. Instead, they dismiss public concerns about false charges as a political backlash against feminism and efforts to ensure children's welfare.

Satan's Silence is well written, carefully researched and annotated, and effective in showing the individual and social mechanisms of panic and hysteria; the precise manner in which paranoid thinking is aroused and developed; and the way in which ignorance, fear, and religious convictions combine to create

cognitive dissonance. It also reveals the subtle workings of other psychological principles such as mass sociogenic illness by proxy, social desirability, and secondary gain.

It should be required reading for anyone concerned with the negative effects of social movements. For example, Nathan and Snedeker's discussion of *memorates*, the process by which an individual uses popular legends to explain an ambiguous or puzzling experience (such as a perceived contact with the supernatural), shows how the believers could share their emotional terrors in socially acceptable ways without stigmatizing themselves as being disturbed or deviant. For example, memorates of satanic cults, UFO abductions, and Elvis sightings are sup-

posedly credible because they communicate commonly held fears and anxieties. *Satan's Silence* is a work of specific value to students in sociology, and in clinical, forensic, and social psychology programs.

The book is also a splendid example of what the best efforts of investigative reporters can do; it is certainly worthy of Pulitzer Prize consideration. It will also be of great value to any and all activists like Dorothy Rabinowitz and Elizabeth Loftus whose current efforts to free the unjustly imprisoned need all the support they can get. This book also supplies a telling and forceful response to all the apologists for the supernatural who continually ask the skeptics, "What possible harm can belief in the paranormal do?" □



Flaws and Fiction

GORDON STEIN

The X-Files Book of the Unexplained. By Jane Goldman. Simon and Schuster, London, 1995. ISBN 0-684-81633-4. 331 pp. Hardcover, £16.

We can learn much from *The X-Files Book of the Unexplained*. We can learn that journalists can rarely be jacks of all trades. The author of this book is a journalist, but she has no real experience with the paranormal. She also seems to have had no real experience with science. The result is a piece of journalism that reads well, but seems incapable of properly evaluating the often conflicting evidence for or against the paranormal. Just as a layperson often cannot evaluate the reported results of medical or scientific research, Goldman seems to be unable to sort the wheat from the chaff in almost every area she covers. While admitting that "The X-Files" television program is *fiction*, she fails to realize that much of *her* book is also fiction. This is all the more

amazing because she acknowledges the help of the Committee for the Scientific Investigation of Claims of the Paranormal, James Randi, and assorted other skeptics, several of whom have told me that they had little or no contact with her, which may explain why, even though citing a number of skeptical sources in her bibliography, she does not seem to have learned anything from them.

These are serious charges, and I fully intend to document them with a couple of examples. Take reincarnation. Goldman thanks Paul Edwards, who has written extensively on reincarnation from a critical point of view. Yet Goldman's article on this subject has only three short quotes that sound like they might be from Edwards, and they are immediately countered by argu-

ments from the other side. Yet Ian Stevenson, perhaps the strongest "respectable" pro-reincarnationist, gets most of his viewpoints presented without rebuttal. Where there *is* rebuttal, it is in the form of a couple of snide comments that can hardly be taken as serious rebuttal.

On the subject of spontaneous human combustion, perhaps the major work on the subject (actually, a semi-credulous book) is omitted, and all the critical literature and authorities are not cited or discussed. Several different phenomena involving fire are all lumped together, even though they may have unrelated causes.

We come now to the layout and design of the book. It is a superb piece of popular printing. Nearly every page contains a color photo, or other color printing. This is especially amazing when it comes to the two "Cottingley Fairy" photographs depicted. They are *in color!* Color photography, of course, was not invented when the photos were made, yet someone has hand colored them. Why, it is difficult to say. There are many quotes and still photographs from "The X-Files" television show. There is a list of all of the program's themes and topics. It is almost as if this book were designed specifically for fans of the show, as a promotion or "collectible," and not as a serious examination of the topics included. That, if it is indeed the case, could well explain the really sloppy job of "research" that has been done.

It should be noted that this is a British publication, although from an American publisher, Simon and Schuster. A call to the New York office revealed that the book was not yet scheduled for American publication. This was in spite of the fact that a handwritten note that accompanied the review copy stated that U.S. publication would be simultaneous. Perhaps someone at the U.S. office (probably too good to be true) realized the flaws in this book and cancelled American publication. □

NEW BOOKS

Frauds, Myths, and Mysteries: Science and Pseudoscience in Archaeology. Second Edition. Kenneth L. Feder. Mayfield Publishing Co., 1280 Villa St., Palo Alto, CA 94041. 1996. ISBN 1-55934-523-3. 290 pp. \$19.95, paper. Second edition of highly readable work (first published in 1990) providing a professional archaeologist's perspective on unsubstantiated and extreme claims made about the prehistoric past. Each chapter has been updated and new topics added throughout. Illustrations have been increased by 25 percent, and side-by-side comparisons of "pseudo" mysteries and real ones have been included.

Leaps of Faith: Science, Miracles, and the Search for Supernatural Consolation. Nicholas Humphrey. Basic Books, New York, 1996. ISBN 0-465-08044-8. 244 pp. \$23, hardcover. The distinguished theoretical psychologist (formerly of Cambridge University, now at the New School for Social Research) addresses the long battle between science's physical/materialistic explanations for phenomena and people's spiritual explanations for them. Traces the history of how people coped with anxieties and fears and their search for miraculous phenomena. The second half of the book uses what Humphrey calls "The Argument from Unwarranted Design" to critique modern parapsychology and its claims to have proved the reality of paranormal psychic powers. He analyzes the circumstances that can combine to produce what he calls "paranormal fundamentalism," an unshakable conviction that no matter what the evidence, "there must be something there."

The "Mars Effect." Claude Benski, Dominique Caudron, Yves Galifret, Jean-Paul Krivine, Jean-Claude Pecker, Michel Rouzé, Evry Schatzman. Prometheus Books, 59 John Glenn Dr., Amherst, NY 14228. 1996. ISBN 0-87975-988-7. 157 pp. \$20, paper. This is the long-awaited report of an independent study by seven French scientists representing the French Committee for the Study of Paranormal Phenomena (CFEPP) to test and assess Michel Gauquelin's neo-astrological theory that great athletes are born preferentially when Mars is in two of twelve sectors in the sky. CFEPP and Gauquelin agreed on the experiment's protocol, published in 1981. A sample of 1,066 French athletes was compiled, and their birth times and dates assessed against the predictions of the theory. The sample was also compared against a control group of 85,280. The study results do not support Gauquelin's theory and show no evidence of any influence whatsoever of Mars on the births of athletes. Part One of the book describes and reports on the study. Part Two considers whether the "Mars Effect" evidence previously reported by Gauquelin was due to selective bias. Five appendices provide details. The book concludes with a commentary by mathematician J. W. Nienhuys, who reviewed the entire study. The SKEPTICAL INQUIRER plans a review article on this study in a future issue.

Science, Nonsense, and Nonsense. Michael Zimmerman. The Johns Hopkins University Press, 2715 North Charles St., Baltimore, MD 21218-4319. 1995. ISBN

0-8018-5090-8. 220 pp. \$25.95, hardcover. A biology professor and college dean, Zimmerman laments the inability of increasingly large portions of the American public to differentiate science from pseudoscience. This book is his attempt to address that problem, by introducing the nontechnical reader to the nature of science and encouraging students and others to successfully blend science and environmentalism. "I hope to educate readers about the ways we use and abuse science and the ways we reach public scientific decisions." He begins by drawing on the premises of a number of popular pseudoscientific beliefs to document the basic philosophical underpinnings of the scientific method, then addresses how we know what we know, how political forces shape the nation's scientific agenda, and how to use critical thinking to assess issues of environmental chemicals, food safety, and land use.

Watch the Skies! A Chronicle of the Flying Saucer Myth. Curtis Peebles. The Berkley Publishing Group, 200 Madison Ave., New York, NY 10016. 1995. ISBN 0-325-15117-4. 420 pp. \$6.99, paperback. A welcome mass-market paperback printing of a book, by an aerospace historian and originally published by the Smithsonian Institution, that our reviewer (Fall 1994) called a "meticulous" and "admirable" book that chronicles decades of claims, investigations, and public belief, and puts the subject of UFOs and alien spaceships "into its proper mythic and folkloric context."

—Kendrick Frazier

ARTICLES OF NOTE

Bickis, Mikelis, I. W. Kelly, and G. F. Byrnes. "Crisis Calls and Temporal and Lunar Variables: A Comprehensive Examination." *Journal of Psychology* 129(6): 701-711, November 1995. Total daily crisis calls were recorded over a three-year period in Vancouver. Using spectral analysis and regression analysis, the authors examined data from the first two years to determine if periodicities existed. Strong weekly, annual, and semiweekly cycles and weak monthly, semiannual, bimonthly, and 4-monthly cycles were uncovered. Very weak lunar relationships with the anomalistic cycle, half-synodic, and sidereal were

also found. These lunar relationships were not consistent with beliefs in folklore or tradition. Data in the third year were predicted with models with and without lunar variables. The addition of lunar variables was found to add nothing to the predictive value and, in fact, slightly worsened the predictions.

Blum, Deborah. "The New Biology of Our Behavior." *Sacramento Bee* (Special Report), Oct. 15-19, 1995. Over an eight-month period, Pulitzer Prize-winning science reporter Deborah Blum interviewed experts and reviewed studies in the biology of

human behavior, then wrote and published a series of illuminating articles over six days that takes 14 newspaper pages. The articles deal intelligently and sensitively with new scientific evidence finding that our genes—in combination with culture and environment—are major players in shaping behavior, emotions, and thoughts. The controversial issues such findings raise are likewise carefully considered, in areas involving intelligence, hormones, monogamy, gender differences, race (many biologists argue for discarding the whole concept), violence, and the possible misuses and abuses of scientific insights.

Brigden, Malcolm L., M.D., "Unproven (Questionable) Cancer Therapies." *Western Journal of Medicine* 163(5): 463-471, November 1995. Discussion of the increasing tendency of cancer patients to seek some form of alternative treatment. Recommends that physicians with cancer patients always make sure that they discuss unproven remedies early in their treatment and also be aware of alternative therapies in vogue in their locality.

Coughlin, Ellen K. "Not Out of Africa." *Chronicle of Higher Education*, February 16, 1996, pp. A6-7. Report on Wellesley College classicist Mary Lefkowitz and her new book, *Not Out of Africa*, which forthrightly refutes Afrocentric views about Egyptian influence on ancient Greece.

Frazier, Kendrick. "So Human a Quest." *The Humanist*, November/December 1995, pp. 33-34. Essay discusses three related concerns for science and the skeptical movement: avoiding an "us vs. them" mentality; not giving up on the "awe factor"; and including the humanities. Adapted from a talk given at the American Humanist Association 1995 conference in Scottsdale, Arizona.

Krauthammer, Charles. "The Return of the Primitive." *Time*, January 29, 1996, p. 82. Recent state and local efforts to make it illegal to deny medical insurance coverage for naturopathic and herbal treatments are a symptom of something new, says the columnist: "irrationalism" gaining "official sanction." "Though relatively harmless, there is something disturbing about these little adventures in New Age shamanism. They are symptomatic of a more general and potentially ominous recent phenomenon: a flight toward irrationality, a retreat to prescientific primitivism in an age that otherwise preens with scientific pride." The recent sensationalist "abuse" trials "in which teachers and parents are jailed on the most improbable charges of ritualistic, orgiastic Satanism since the Salem witch trials" are an outbreak of "officially sanctioned primitivism that is not benign and cannot be winked at."

Leland, John, and T. Trent Gegax. "Instant Bad Karma." *Newsweek*, January 22, 1996, pp. 63. Brief investigative report on controversial guru Frederick Lenz, author of the New Age novel *Surfing the Himalayas*. Lenz formerly operated under the name Rama, or Zen Master Rama, and built a following and fortune offering a "fast path to enlightenment," along the way using his cult members

in various ways and persuading many that their parents are evil.

Loevinger, Lee. "Science as Legal Evidence." *Interdisciplinary Science Reviews* 20(4): 335-346, 1995. From 1923 to 1993 the prevailing standard of admissibility for scientific evidence in U.S. courts was general acceptance in the scientific community. In 1993 the U.S. Supreme Court held that the Federal Rules of Evidence had superseded the former standard and enunciated new criteria that were more substantive and detailed. These imposed greater responsibility on trial courts, required a more realistic understanding of science, established more rigorous standards for the reception of scientific evidence, and made the law more responsive to the needs of a scientific and technological society.

Lohr, J. M., R. A. Kleinknecht, D. F. Tolin, and R. H. Barrett. "The Empirical Status of the Clinical Application of Eye Movement Desensitization and Reprocessing." *Journal of Behavior Therapy and Experimental Psychiatry* 26: 285-302, 1995. Study reviews the published reports of clinical application of Eye Movement Desensitization and Reprocessing (EMDR, see *SI*, January/February 1996). Finds that the research protocol frequently reduces the verbal report and independent observer ratings of distress—strikingly in some instances. Psychophysiological measures showed little effect of EMDR treatment. There was little empirical evidence to indicate an effect of treatment on motor or behavioral indices. Eye movements do not appear to be an essential component of treatment, and there have been no substantial comparisons with other treatments. Studies have not adequately controlled for nonspecific (placebo) effects.

Randi, James. "Investigating Miracles, Italian-Style." *Scientific American*, February 1996, pp. 136. "Italian media and public swoon over weeping plaster casts of religious figures, charismatic faith healings, and anything that bleeds, sweats, or moves in an unexpected way." He worries that "rampant disregard for rational thought is sweeping a nation that has made so many contributions to modern science." Fortunately, he reports, scientists like Luigi Garlaschelli and Franco Ramaccini work with the Italian Committee for the Investigation of the Paranormal to provide rational explanations for the supposed miracles. Examples are cited.

Roth, Ann Macy. "Building Bridges to Afrocentrism: A Letter to My Egyptological Colleagues." *Newsletter of the American*

Research Center in Egypt. No. 169, December 1995. Also available on the WWW at: http://oi.uchicago.edu/pub/papers/AMRoth_Afrocenrism.ascii.text. A professor of Egyptology provides a balanced and thoughtful discussion and critique of Afrocentric Egyptology, which in America "is less a scholarly field than a political and educational movement aimed at increasing the self-esteem of African Americans," but often citing claims of "dubious credibility" and combining legitimate Afrocentrism with age-old mystical-crackpotism toward Egyptology. Addresses the four major contentions of Afrocentric Egyptology: (1) that the Ancient Egyptians were black; (2) that the ancient Egyptians were the greatest civilization in history; (3) that the Egyptian civilization had extensive influence on Europe and Africa; and (4) that there has been a scholarly conspiracy among Eurocentric Egyptologists to suppress evidence about the blackness of the ancient Egyptians, their greatness, and their influence on European and African civilizations. Urges teachers of Afrocentrism, instead of learning such doctrines on faith, to capitalize on their students' enthusiasm for this subject and encourage them to investigate the primary evidence for themselves.

Truzzi, Marcello. "Reflections on the Blue Sense and Its Critics." *Journal of Parapsychology* 59(2): 99-130, June 1995. An examination of critics' reactions to Truzzi's book *The Blue Sense: Psychic Detectives and Crime*, with special attention to what he calls the "extreme" but opposite reactions (all 1991) of Robert Baker (SKEPTICAL INQUIRER, Fall) and Colin Wilson (*J. of the Society of Psychical Research*), as well as the more "moderate" criticisms of Ray Hyman (*Journal of Parapsychology*).

Will, George. "Intellectual Segregation." *Newsweek*, February 19, 1996, p. 78. Afrocentrism's many myths constitute condescension toward African-Americans, says Will in this column. On the one side of this dispute, says Will "are scholars, with a traditional understanding of how truth is acquired and respected. On the other side are political activists wearing academic gowns. They believe that the truth of a proposition about history is less important than the proposition's therapeutic effect on the self-esteem of people whose ethnic pride might be enhanced by it. . . . Afrocentrists begin with, because Afrocentrism depends on, disdain for historical methodology."

—Kendrick Frazier

Exhausting the Mundanely Possible: The Inexplicable in Pursuit of the Miraculous

RALPH ESTLING

A while back I received a typed letter from America that the writer had dated the nineteenth of the month. Nothing remarkable in this, except that I received it on the fifteenth of the month. Now, this could be a case of superluminal velocity of mail delivery. It could also be a case where the writer hit the *nine* key when he or she meant to hit the *zero*; and as the envelope was postmarked the tenth of the month, I was, and still am, more inclined to opt for the latter explanation. You see how otherwise miraculous or inexplicable facts are explained by careful, logical deduction of which any rational person might be proud. What it all really boils down to is: What is the least unlikely assumption that can possibly be made in accordance with the known facts, or in other words, wielding Occam's razor with a barbershop flourish. Brutal, but it makes its point, or slash.

There are quite a few people who disagree with this view: the view that states that before we proclaim the miraculous, with its surfeit of wonders, we first must exhaust the mundanely possible. Some people insist, for example, that the ancient Egyptians could not possibly have built the pyramids on their own without extraterrestrial help. This notion makes its latest appearance in the film *Stargate*. I've been to Egypt and it's perfectly evident how the idea of pyramid construction originated and devel-

oped, it's all still there, set out for you: starting with mastabas, tombs that are large, low, rectangular slabs of rock with sloping sides and flat roofs; and going on from there to step pyramids, which are like several mastabas piled on top of each other, each one smaller as the structure goes up. From here it is easy to go on to real pyramids. Well, fairly easy. You can see a smallish, very early pyramid with an angle that was too sharp and the whole thing collapsed in a heap and was just left there, no doubt with a great deal of undecipherable ancient Egyptian expletives; and another with an incline that was lessened in mid-construction to avoid a similar tumble, so that the pyramid seems to bulge out at the sides as if it were just beginning to inflate into a pointy hot-air balloon and then changed its mind and decided to stay a pyramid. By this step-by-step approach to the matter of pyramid building (an example, in case you're interested, of what is known as the heuristic method of learning), the Egyptians gradually got the hang of it and went on to put up the three pyramids of Gizeh. The heuristic method—learning by doing, or trial by error—has much to recommend it, though it does have one or two drawbacks: sudden death being one of them. Still, sometimes it's the best we can do if the extraterrestrials don't come down to lend a tentacle to jump-start civilization.

The thing is, too many of us are

inclined a bit too sharply, like that pyramid I mentioned, to opt too readily for the inexplicable, with much the same result when all the facts are in. Of course, things might *be* inexplicable. But there's an obligation we have—because we possess brains—to seek hard and long the explicable, and not stop doing so until this possibility is totally ruled out. And of course there's the opposite sin: of things "explained" in an offhanded way in which nothing is really accounted for, of words spun on a gossamer web of grand and grandiose, of speculations that are rooted in blarney. You can take these explanations, spread them over forty acres, and raise yourself a fine crop of barley. We need to maintain the middle ground: where we don't surrender to the inexplicable too soon, nor decide that things are all nicely wrapped up when they're not. Middle grounds, golden means, tend to be good places to start from in all quests, if only because that's where we're likely to end up.

As for the Erich von Dänikens of this world—the men and women who see (or say they see) the hand of (if not) God, supertechnological extraterrestrial beings in Pyramids in Egypt, Nazca figures in Peru, and crop circles in Wiltshire—they are to science and to rational inquiry what Attila the Hun was to civilization.

No doubt it's possible to be too skeptical, too demanding of facts and evi-

dence. But this is rarely the problem with most of us who inhabit a world the rest don't recognize and can only vaguely imagine: a world most of us would like to think the human race left behind 500 or more years ago but can't

Ralph Estling writes from Ilminster, Somerset, U.K.

quite think it, not when there is so much evidence lying around in full view like a collapsed pyramid that the human race for the most part still believes in demons and in the wondrous, in mysteries and mysticisms, in things that medieval men and women believed in and took for granted in the terrifying universe they dwelt in, in the universe of

the inexplicable. Enlightenment and reason still appeal to the few. If it's a case of majority rule, those few have a lot to ponder. And to fear.

Exhausted the mundanely possible, have we? We haven't even begun to quarry the first stone, smooth the sand, and throw away all the unwanted rocks to build that pyramid. □

Ten 'Sightings' of Poor Journalism

BRYAN FARHA

The December 21, 1995, airing of the Fox television network show "Sightings" revealed a minimum of ten journalistic errors and/or overdramatizations within this one-hour program, likely designed to "persuade" the viewer into believing that the reported phenomena are real. Eight of these errors were made before the end of the show's first segment for the apparent purpose of "hooking" the viewer into watching the remainder of the program by saturating the beginning story with large amounts of baseline intrigue.

The show is hosted by Tim White; the executive producers are Henry Winkler and Ann Daniel. The writer, Susan Michaels, bears responsibility as well. Some of the errors are less significant than others, but responsibility in journalism requires a massive effort for accuracy. Certainly we all make "good faith" errors at times in the print media. I know I do. However, the errors in this episode, which resemble the journalistic style of other "Sightings" shows, have a leading and persuasive intention. The stories seem even more compelling due to the eerie background music. Let's look at these ten journalistic errors/dramatizations chronologically as they were stated

by White in this "Sightings" program:

1. "There's further proof of a dramatic UFO encounter over Iran." This statement appeared in the introductory segment before the first story actually began, as sort of an advertisement encouraging viewers to tune in later for this "encounter." Far more overdramatization than an inaccuracy, this one is designed to tug on emotions and imagination more than anything. The use of the words *proof* and *encounter* are the lures. Good science dictates that the word *proof* should be reserved for phenomena with overwhelming evidence. The problem for the often unsuspecting public lies in the definition of the acronym UFO, which merely means "unidentified flying object." It's not difficult to justifiably claim to spot a UFO. The difficulty lies in providing sound evidence that the UFO represents an alien spacecraft. Therefore, "encountering" a UFO is not difficult. If a person sees an unidentified flying object, is not the very sight of it an "encounter"? But we are led to believe that there is substantial evidence of contact with aliens when we hear the statement. Beware.

2. "They spent everything they had trying to cope with the terrifying haunting in

their rustic mountain home." This one, which begins the program's first story, is simple. "Sightings" is making an assumption that, in fact, the home is haunted. When the writer refers to the alleged phenomenon as a "terrifying haunting," she is claiming that the house is haunted. We don't know this yet.

3. "Strangely, as soon as they made the commitment to stay, a paranormal force wanted them out." This statement is in reference to a family's deliberations about whether to move or continue living in the same rustic mountain home. Here, "Sightings" is making two assumptions—one, that what the family is allegedly experiencing is, in fact, a "paranormal force," and two, that the force wants the family out of the house. Neither was substantiated with sound science.

4. "The investigation focuses on three areas where activity is most pronounced." Referring to locations in the home, "Sightings" is claiming that "activity" exists. Acceptable scientific procedures were not used to help draw this conclusion. This language "encourages" the viewer to believe that there is paranormal activity in the house. What criteria did they use to determine where those three areas were?

5. "A few minutes later an unseen force pushes a heavy video camera off its sturdy tripod." An unseen force may have pushed the camera off its tripod, but so might some "not-so-unseen" forces, such as human error and negligence. "Sightings" leads the viewer to believe that paranormal forces are responsible, when, in fact, this was not substantiated. More appropriately phrased: "A few minutes later a heavy video camera strangely fell off its sturdy tripod without apparent provocation."

6. "This is compelling evidence that some kind of physical disturbance is affecting the Lee home." Obviously referring to No. 5, this statement would much more accurately be phrased: "This may contribute to the evidence that some kind of physical disturbance might be affecting the Lee home." This modified statement would be an example of responsible journalism regarding conclusion-drawing of alleged paranormal phenomena. Because a camera fell off a tripod does not make the evidence compelling.

7. "This preliminary investigation confirms what the Lee family has felt for more than a year—that more work will have to be done to determine why their home is being targeted, and what it will take to appease the spirits here." If the sentence ended after the word *done* there would be no problem. By continuing, "Sightings" is stating, in essence, that the home is being invaded by "spirits." The assumption that more work may be warranted is fine, but the conclusion that spirits exist in the home is unfounded.

8. "Since our investigation, the unseen forces inside the Lee home have turned violent. Steve Lee recently sent us this photograph of a large scratch across his forehead. There was no scratch on the negative. The following day, as this home video shows, Steve developed a large, painful welt on his forehead. His doctor can't explain the cause of the injury." An analysis, in reverse chronology: His doctor not being able to explain the cause of the injury is actually the *only* logical conclusion that can be

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drawn. If the doctor has no problem saying the phenomenon is from unknown origins, why is it so hard for others to espouse this posture? Regarding the fourth sentence, very few would question that there is a welt on his head and that it is likely painful. About the third sentence, it is possible that there is no scratch on the negative, although it might be better worded: "'Sightings' cannot detect a scratch on the negative." This would prevent "Sightings" from drawing conclusions for everyone. The second sentence simply indicates that Lee sent "Sightings" a photograph indicating a scratch on his forehead. No problem. The most difficulty lies in the first sentence that indicates that the "unseen forces" had become violent—as if there was even proof of unseen forces and that the welt on the forehead was the direct result of violence. The alleged violence was after the investigation, so there was no way to ascertain the "cause" of the welt. Yet "Sightings" does not hesitate to attribute the welt to "spirits" or "unseen forces."

9. "Several photographs show a face staring out into the cosmos." Regarding a different and well-publicized story about NASA photographs of Mars transmitted by the Viking orbiter in 1976, this statement implies that the morphology on this specific location on the planet was intentionally designed by "Martians" to be that of a "face." More accurately, the statement could have read: "Several photographs show an image resembling a face staring out into the cosmos." The subtlety in wording between "show a face" versus "resembling a face" have significantly different inferences.

10. "'Sightings' investigates the frightening story of a restless spirit that haunts her family." Similar to previously mentioned errors, this commercial message regarding a future story implies that a "restless spirit" is proven to be real and that it is "haunting" this woman's family—neither of which exemplifies good journalism, although since it involves a future story, the verdict is still out. Don't hold your breath—not because the possibility doesn't exist, but rather because of the pattern of poor journalism emerging from "Sightings."

Concluding Remarks

Some counterskeptics might ask, "Isn't it possible though that the paranormal phenomena claimed are true?" The answer to the *possibility* is yes. Ironically, while proofreading this manuscript after it was completed, a lightweight room thermometer fell off my file cabinet onto the floor. It startled me. Admittedly, it felt kind of "eerie" since I was reading the part about the Lee home and its reported "haunting" when it happened. Is it possible that a "spirit" lives in my office and was threatened or perturbed by the skeptical nature of this article? There was no window open or air pressure that could have blown it off the cabinet. The cabinet and thermometer lie perfectly horizontal, so they weren't "leaning" in any direction. How can this experience be explained?

You see, I realize that this experience was a bit strange, but the conclusions that can be drawn are like those of the doctor who could not explain Lee's forehead welt: The experience of the room thermometer falling off the file cabinet at this point has no logical explanation. If I reported this, consistent with No. 5, however, it would read: "An unseen force pushed a room thermometer off a sturdy file cabinet." Potentially a huge embellishment. Sound scientific procedures are used not for supporting an antiparanormal position but to assist in drawing the most accurate conclusions based on the available evidence.

The problem here is twofold: First, we have some factions of the media who are apparently willing to sensationalize in order to increase viewers/readers. Second, we have, to a degree, an unsuspecting public. Some members of the general public have difficulty distinguishing between news and entertainment. The types of journalistic taboos reported here would not be condoned on network newscasts such as ABC, NBC, CBS, or CNN. If people, therefore, *choose* to watch sensationalistic television programming such as "Sightings," they need to do so with the clear understanding that what they are viewing is not "news" but rather, "entertainment." □

Senior Researcher Comments on the Hundredth Monkey Phenomenon in Japan

MARKUS PÖSSEL and RON AMUNDSON

The pseudoscientific myth of the Hundredth Monkey Phenomenon (HMP) was devised by Lyall Watson in 1979 and has been written about in the *SKEPTICAL INQUIRER*.*

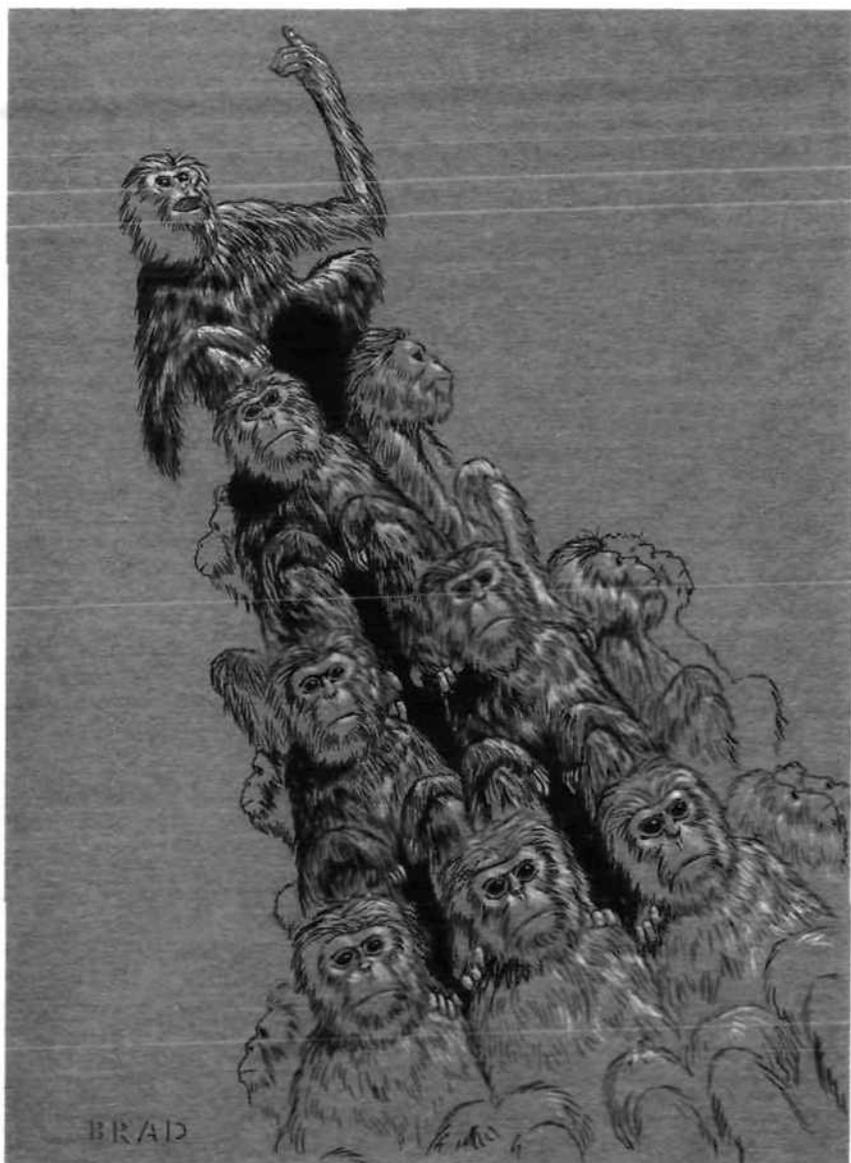
Like many pseudoscientific myths, the HMP was an elaboration of genuine scientific research.

Recent contact with a researcher close to the monkey research provides more insight into the possible origin of this myth.

The story went like this: Primatologists in Japan had discovered and carefully documented the spread, from monkey to monkey, of a particular feeding behavior within a group of macaques (rhesus monkeys) on Koshima Islet. The primatologists supplied a group of free-range macaques with sweet potatoes. One young macaque discovered that washing the potatoes in the sea or in a stream removed the dirt and sand. Gradually the other macaques in her group learned to wash their potatoes.

The documentation of this "pre-cultural" transmission of behavior was unusual in primatology; but not unusual enough for Watson, who suspected that supernatural mechanisms were at work on Koshima Islet. In his story, after a threshold was reached and

*See "The Hundredth Monkey Phenomenon" and "Watson and the Hundredth Monkey Phenomenon," by Ron Amundson, *SI*, Summer 1985, pp. 348-356; and *SI*, Spring 1987, pp. 303-304.



Brad Marshall

the hundredth monkey had learned of washing potatoes, the behavior spread by a sort of mass consciousness to the entire group, and even spontaneously leaped across the sea to groups of monkeys on other islands and the mainland.

Masao Kawai was one of the senior researchers working on the original macaque project. In 1984, while researching the HMP, Ron Amundson

about to leave on a research trip to Cameroon. Through an intermediary he was able to forward permission for use of the photo "only for your own article in which you criticize Mr. Watson for falsely describing the Japanese monkey studies." The intermediary reported: "He (Kawai) told me that you are quite right." That article, "The Hundredth Monkey Phenomenon," was published in the

lowed by Kawai's responses:

1. *Is Kawai aware of any sweet potato washing or other skills that propagated more rapidly than would be expected by normal, individual, "pre-cultural" propagation?*

Answer: No.

2. *Is Kawai aware of the spontaneous and rapid spread of sweet potato washing from Koshima to groups of macaques on other islands and on the mainland?*

Answer: Individual monkeys in other groups or in zoos may have accidentally learned washing behavior, but it hasn't been observed anywhere on Koshima that washing behavior has spread to other group members.

3. *Has Kawai heard any "anecdotes or bits of folklore" among his primatologist colleagues regarding rapid behavior propagation, and does he know of any contacts between Lyall Watson and his (Kawai's) colleagues?*

Answer: No. Kawai believes that the idea of telepathy may have been introduced by Western countries.

So much for the New Age image of the "mystical" East. Kawai, the best possible source of information on the Koshima macaques, considers the mass consciousness reported by Watson to have been a Western import.

The only mysterious, abrupt spread that remains to be accounted for is the continued ubiquity of the HMP story in New Age literature. □

"Kawai, the best possible source of information on the Koshima macaques, considers the mass consciousness reported by Watson to have been a Western import."

contacted Kawai, who was then director of the Primate Research Institute and chief editor of the journal *Primates*. A brief account of Watson's claims and a list of Amundson's doubts were sent to Kawai, along with a request to reproduce one of the macaque photos from the journal. Unfortunately, Kawai was just

Markus Pössel is a physics student in Hamburg, Germany. His inquiries about the Hundredth Monkey Phenomenon are part of his research for a book on the German-language authors Erich von Däniken and Johannes von Buttlar. Ron Amundson is a professor of philosophy at the University of Hawaii at Hilo.

Summer 1985 SKEPTICAL INQUIRER.

More details garnered recently from Kawai are of interest because of Watson's explanation of his sources. In 1979 Watson claimed his information came from "personal anecdotes and bits of folklore amongst primate researchers"; and in 1986, in a response to Amundson's *SI* critique, Watson mentioned "off-the-record conversations with those familiar with the potato-washing work." Are these reliable sources of information?

Markus Pössel successfully contacted Kawai recently and asked him about Watson's claims and sources of knowledge. The three questions asked are fol-

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I Should Have Called Dionne First, I Guess

CHARLES MEMMINGER

I'm really depressed. I had such high hopes when I launched the Psychic Enemies Network. It was my ticket to fame and fortune.

I figured if Dionne Warwick could get rich selling to a bunch of gullible callers to the Psychic Friends Network, I could do the same thing working the other side of the metaphysical tracks.

So instead of blowing psychic sunshine into people's ears, I'd tell them all the horrible things that were going to happen to their friends and family.

I admit it: I'm not a psychic, but neither are the jokers who work the phone banks for the Psychic Friends Network. But I can spew parapsychological mumbo jumbo as well as the next guy. And as a Psychic Enemy, I had a leg up on the competition, because I could actually predict things that would happen.

For instance, here's how the first call went:

"Good morning!" I said. "Welcome to the Psychic Enemies Network! You're gonna die."

"What?" she said.

"You're gonna die."

"What kind of a psychic are you?" she bellowed. "Whataya mean I'm gonna die?"

Charles Memminger writes the award-winning "Honolulu Lite" column for the Honolulu Star-Bulletin, where this piece originally appeared. E-mail to 71224.113@compuserve.com.

"How old are you?" I asked.

"About 53."

"Do you eat fatty foods, sit on the couch all day calling nutty phone services, and drink a lot?"

"That's none of your business, buster," she said.

"Well, you sound like you're stressed out. With your heavy drinking, your McDonald's problem, and your relative lack of physical movement, I'd say you're gonna die."

"How'd you know I go to McDonald's?" she said.

"I'm a psychic, remember?"

"Well, you're rude, too. The other psychics say nice things, like, I'm gonna win the lottery."

"Did you win the lottery?"

"No."

"There you go, ma'am. They're lying. I'll tell you what's really in your future."

"Like what?"

"Like, you're a pathetic loser who will always be poor."

"Ahhhh! How dare you! I can't believe you would say that to me. How do you stay in business talking to people like this?"

"I thought you wanted to know the future."

"Yes, but I want to know about love, and fame, and fortune. Not death."

"OK," I said. "Do you have a job?"

"No."

"Rich relatives?"

"No."

"Do you look like Paula Barbieri or

Paula Abdul?"

"No."

"Do you have any experience in acting, dancing, international finance, national politics, or do you currently have any products being advertised on the Home Shopping Network?"

"No."

"OK, I'm in a psychic trance right now. Ammm. Ammmm. Here's your forecast: You are going to be poor, unloved, and unhappy. Then you're gonna die. Hello, ma'am? Are you still there?"

And that's pretty much how the few calls that came in went. It convinced me that people really don't want to know the future, at least not *their* future.

So, as of today, the Psychic Enemies Network is out of business. I can't believe people will spend perfectly good money to have a stranger with no more psychic ability than a clam lie to them about their income potential.

Hasn't it occurred to these callers that if just one of these phone psychics had any real ability to see into the future, he or she would be playing the commodities market like a Stradivarius and be rich enough to hire Bill Gates as a yard boy? Does Dionne Warwick ever wonder why no psychic ever warned her that her singing career might end up in the toilet and that she'd wind up shilling for some dubious infomercial?

And the most depressing thing about the Psychic Friends Network is that I didn't think of it first. □

Web from page 17

ology "explains how a person can be a murderer or child molester at one moment and the next moment may appear calm, rational, and even brilliant. Demons may zap in out [*sic*] of victims at the speed of light, sometimes staying for just a few seconds at a time."

See a self-described Israeli spoonbender at <http://www.urigeller.com>, Uri Geller's Psychic City. There you will find Geller's "Internet Challenge": "We invite you to use your psychic powers to bend a spoon across the Internet. Locked in a 'see-through safe' is a spoon. Its image is being relayed 'live' worldwide on the Internet. Any registered person able to bring their own psychic powers to bear on the spoon and bend it while watching

its image on the Internet will be invited to participate in paranormal tests by telephone with Uri Geller . . . if successful, contenders stand to win \$1 million, which may be shared if there is more than one successful attempt." A British on-line magazine, *Delphi Internet* at <http://www.delphico.uk>, interviewed Geller in a recent issue, and asked him, "Why do so many people insist you're fake?" He modestly replied, "You can ask the same question to people who don't believe in Jesus Christ or God."

If none of the above sites are far-out enough for you, visit the Mind Control Forum at <http://members.gnn.com/five> string. Its owner writes, "Hi, I'm Ed Light, one of many captives of the mind-control 'cabal's' microwave anti-personnel projects. As I type this in I'm being

forcibly zapped. The Mind Control Forum is my personal contribution to the resistance to the plutocracy's mind control conspiracies." It links you to places like Brian's Government Psychiatric Torture Web Site, which "includes reference material such as Alan Frey's paper on how to beam voices into the human mind using radio waves." Also on the Mind Control Forum are pages of "victims," including photos of brain surgery being performed on Robert Naeslund, "the Swedish mind-control victim who has struggled with brain transmitter implants."

But when the above proves to be simply too much for you, you might pause at the Home Page <http://www.cscicop.org>, and find a refreshing breath of fresh air. □

Fantasy from page 20

artist, healer, nor UFO sighter, "Ed" (No. 1) had "a traditional Roman Catholic upbringing" and—as rather a loner who said he felt "lost in the desert"—he not only feels he can "talk to plants" but said he has "practiced meditation and studied Eastern philosophy in his struggle to find his authentic path" (Mack 1994, pp. 39, 41-42). "Carlos" (No. 12) is an artist/writer/"fine arts professor" involved in theatrical production who said he has seen UFOs and has a "capacity as a healer"; raised a Roman Catholic, and interested in numerology and mythology, he calls himself "a shaman/artist teacher" (Mack 1994, pp. 330, 332, 340-341, 357).

Also of interest, I think, is the evidence that many of Mack's subjects fantasized while under hypnosis. For example—in addition to aliens—"Ed" (No. 1) also said he saw earth spirits whom he described as "mirthful little playful creatures" (p. 48); and "Joe" (No. 6) said he saw "mythic gods, and winged horses." "Joe" also "remembered" being born (Mack 1994, pp. 170, 184). "Catherine" (No. 5), "Sara" (No. 7), "Paul" (No. 8), and "Eva," (No. 9) said they had past-life experiences or engaged in time-travel while under hypnosis. Several said they were able to

drift through solid doors or walls, including "Ed" (No. 1), "Jerry" (No. 4), "Catherine" (No. 5), "Paul" (No. 8), "Dave" (No. 10), and "Arthur" (No. 13). "Carlos" (No. 12) claimed his body was transmuted into light. I have already mentioned that under hypnosis "Peter" (No. 11) said he becomes an alien and speaks in an imitative, robotic voice. In all, eleven of Mack's thirteen subjects (all but Nos. 2 and 3) appear to fantasize under hypnosis. Of course it may be argued that there really are "earth spirits" and "winged horses," or that the extraterrestrials may truly have the ability to time travel or dematerialize bodies, or that any of the other examples I have given as evidence of fantasizing are really true. However, once again the burden of proof is on the claimant and until that burden is met, the examples can be taken as further evidence of the subjects' ability to fantasize.

Conclusions

Despite John Mack's denial, the results of my study of his best thirteen cases show high fantasy proneness among his selected subjects. Whether or not the same results would be obtained with his additional subjects remains to be seen. Nevertheless, my study does support the earlier opinions of Baker and Bartholomew and

Basterfield that alleged alien abductees tend to be fantasy-prone personalities. Certainly, that is the evidence for the very best cases selected by a major advocate.

Note

I am grateful to psychologists Robert A. Baker and Barry Beyerstein for reading this study and making helpful suggestions.

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Numbers from page 39

- ... an Italian opera?
- ... a coffee drink?
- ... the latest car from Italy?

And the pollsters didn't neglect cappuccino, either!

What is "cappuccino" (cappuccino)? Is it...

- ... a monk who has taken the vow of silence?
- ... a French actress popular in the 1960s?
- ... an espresso-based drink?
- ... a type of mushroom?
- ... a hillside town in the Italian region of Tuscany?

Surely the folks who developed that survey were moonlighting there to supplement their main income as writers for "The Late Show with David Letterman."

(And if not, they should call Letterman right now; maybe they can moonlight for him.) Inadvertently funny in retrospect, they were probably just trying to pin down definitely what people know. And they found out, didn't they?!

Now let's move from the sublime to the ridiculous. This next pair of statistics is an example of the worst kind of *post hoc* fallacy. To be sure, they're only meant to entertain (not to educate), but they do serve as a good illustration of a very common logical error. In sum, we read that since the Berlin Wall fell in 1989, the percentage of western Germans who say they have indigestion has gone up by 5 percent. We also read that since that same time, the percentage of eastern Germans who say they have indigestion has gone down by 12 percent. Well, that tickles the American funny bone, all right, but what does it really mean? Nothing. Without a causal relationship, this information is darned near useless. (Now, as for the average level of testos-

terone in the saliva of male lawyers—well, that sounds pretty straightforward!)

When we look askance at the statistics about the Germans and their political indigestion, it seems almost intuitive to observe that they are empty of meaning. But that's simply because the factors that the statistics try to correlate—in this case, the Berlin wall and stomachaches—appear too far apart in category or classification.

Here's how such statistics can mislead us: The closer the separate factors are in category or class, the more that people will think they're causally related, regardless of the apparent evidence (or lack of it). In other words, if the factors have, say, music or medicine or mathematics in common, it has been my observation that our cognitive ability to perceive them as separate entities breaks down. This results in the equivalent of thinking that when Placido Domingo eats an extra piece of cake, Luciano Pavarotti gains weight. □

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EMDR Treatment

Scott Lilienfeld's analysis of Eye Movement Desensitization and Reprocessing—EMDR (*SI*, January/February 1996) is appropriately skeptical, as one should be with pop psychology. Many of these modern therapies have a kernel of validity to accompany their popular appeal, but whatever value they may have is usually pushed far beyond any rational usefulness. This would appear to be case with EMDR. I believe the kernel is its valid and repeatable usefulness for immediate but temporary relief. Unfortunately, Lilienfeld seems to have missed this application.

Many months after having suffered near-fatal burns in an airplane crash, I still experience little events that trigger a post-traumatic stress (PTSD) reaction. Many times these events appear randomly, although any doctor working on my right arm (the only unburned area suitable for IVs), or technician taking a blood sample is very likely to cause me to regress, go back to the hospital, and experience an overwhelming sense of depression. As life continues to become more normal now, these reactions are becoming less frequent.

Early in my recovery process, I heard a news report about this hot new therapy called EMDR. I decided to try it, and discovered that it is surprisingly effective in short-circuiting these depression episodes. My version, consisting of rapid eye movement from side to side for five to ten seconds, is tremendously helpful in regaining composure. (I get the same effect by moving my eyes rapidly up and down, but this tends to move my whole face at the same time, and what I am doing is much more obvious.) It was after a year of using EMDR for fast, temporary relief that I read Lilienfeld's *SI* article questioning the technique's validity as a long-term therapy. My own experience confirms this skepticism, but emphasizes its immediate effectiveness. I suspect that there is some electrochemical process here associated with the eye muscles that has a highly specific and repeatable effect on depression, at least for me, but I'll have to leave it to the neuroscientists to tell us why.

An intriguing alternate hypothesis is suggested in Martin Gardner's article ("Post-Freudian Dream Theory"), ironically

Editor's Note

The number of letters to the editor received continues to expand; our space available does not. As a result, many letters we would have liked to publish we could not. Thank you for writing. All letters are read with great interest, and many are shared with the *SI* authors and other appropriate parties. —Kendrick Frazier

in the same issue of *SI*. Gardner describes the Evans-Newman theory thus: "Dreams are the process by which the sleeping brain moves information worth preserving into its long-term memory, and erases from short-term memory the trivia that otherwise would clog neural pathways." Lilienfeld touches on a possible link between EMDR and rapid eye movement (REM) sleep, but only to dismiss it in the context in which it is proposed by the originator of EMDR. Could it be that waking REM for those troubled by PTSD has the same function as sleeping REM has for us all? If Evans and Newman are right, EMDR could be erasing from short-term memory whatever is causing the immediate distress. Such a hypothesis is consistent both with Lilienfeld's thesis that EMDR is not proven as a substantive therapy, and with my observation, which I can still verify, that it is highly effective in the immediate time frame but otherwise has no lasting effect.

John S. Derr
Tijeras, N.M.

After reading "EMDR Treatment: Less Than Meets the Eye?" I was struck by certain similarities between EMDR and cognitive therapy. Although Lilienfeld does not mention this as a possible explanation for EMDR's purported efficacy, I think it deserves consideration. Cognitive therapy has been well studied and demonstrated to be effective, particularly in the treatment of depression; and as H. I. Kaplan, B. J. Sadock, and J. A. Grebb (*Kaplan and Sadock's Synopsis of Psychiatry*, 7th ed., Baltimore: Williams and Wilkins, 1994, p. 532) point out, depression is often associated with anxiety. Furthermore, they also note that cognitive therapy is indicated for post-traumatic stress disorder (p. 610), generalized anxiety disorder (p. 614), and

panic and related disorders (p. 860). The EMDR techniques described on p. 27 of the *SI* article are sufficiently like the techniques of cognitive therapy described by Kaplan, et al. (pp. 860-861), and the indications sufficiently similar, that I would expect EMDR's effectiveness (if any) to be due to that approach alone, without any kind of eye movement.

Van L. Knowles
Berea, Ky.

Scott O. Lilienfeld replies:

I thank John S. Derr for his interesting observations. Such anecdotal observations, if replicable, can provide a fertile source for the testing of hypotheses concerning a treatment's mode of action. Derr's hypothesis that EMDR provides short-term relief by producing rapid eye movements during the waking state is inconsistent, however, with a number of studies indicating that EMDR is equivalent in its effects on anxiety and related mood states to an identical procedure minus eye movements. Thus, whatever efficacy EMDR may possess does not appear to be attributable to its use of eye movements. An alternative explanation for Derr's findings is classic (i.e., Pavlovian) conditioning: Eye movements, when paired repeatedly with anxiety-provoking thoughts, may distract clients from their anxiety and thereby produce an association between these thoughts and decreased levels of anxiety. According to this hypothesis, eye movements may be akin to the relaxation component of systematic desensitization, a widely used behavioral technique for phobias in which clients are asked to remain calm while confronting (or imagining) feared stimuli. Such a hypothesis would be worth examining in controlled studies.

Van L. Knowles's conjecture that EMDR's efficacy, if any, derives from its incorporation of cognitive therapy mechanisms is intriguing and worth considering. I agree that several of the techniques used in EMDR, such as the substitution of negative cognitions with positive cognitions, are similar to those used in standard cognitive treatments for anxiety disorders. The evaluation of Knowles's hypothesis is complicated, however, by two factors. First, many cognitive treatments incorporate procedures that are traditionally considered behavioral in nature, such as the exposure of clients to feared stimuli until their anxiety habituates.

Second, many of the "cognitive" procedures used by cognitive therapists may actually work by means of the same learning principles that appear to underlie the effectiveness of behavioral treatments. For example, the common cognitive technique of encouraging clients to make positive self-statements (e.g., "I can handle this") during anxiety-provoking experiences might owe its effectiveness to a classic conditioning process in which aversive stimuli are repeatedly paired with anxiety-reducing thoughts. Thus, although Knowles is correct to point out the commonalities between EMDR and cognitive therapy, whatever efficacy EMDR possesses may in fact be attributable to its reliance on behavioral techniques (e.g., exposure) that are adventitiously incorporated by many cognitive therapies.

(Francine Shapiro's response to Scott O. Lilienfeld and his reply are in review.—EDITOR)

Science and TV

As both a self-professed skeptic and a fan of the television series "The X-Files," I feel some response is needed to William Evans's article "Science and Reason in Film and Television" (January/February 1996). My main problem with his analysis is that he appears to define "skeptic" as a person who does not believe in paranormal phenomena. I believe a better definition would be that a skeptic is someone who will not believe a proposition of fact unless it is supported by credible empirical evidence. In the reality I live in, I am aware of no reliable empirical evidence supporting the existence of ghosts, for example, and therefore I am skeptical about claims as to their existence.

However, on a series such as "The X-Files," there is abundant first-hand evidence of paranormal events occur. Both Dana Scully and Fox Mulder are skeptics; Mulder has subjected false paranormal claims to rigorous analysis on several occasions and found them wanting. But given the "reality" the show works within, if Mulder did not believe in paranormal phenomena he would not be a skeptic; he'd be an unreasoning boob.

Is this a subtle distinction lost on many fans of "The X-Files" who *do* believe in little green men, telepathy, and astrology? Probably. But I would not lump the show

in with other less cerebral, more visceral (figuratively and literally) films and television series. "The X-Files" demonstrates the need for hard empirical evidence to support claims, and the benefits of subjecting evidence to scrutiny. It's not a pair of scientists hunched over a Bunsen burner, but "Miami Vice" is not how law enforcement works, either. At least, not in this reality.

David Dumble
Albany, N.Y.

Regarding William Evans's *Science and Reason in Film and Television*, the use of doubters who disbelieve the evidence of their own eyes and question the sanity of befuddled protagonists is a literary device of long standing. Much popular fiction would be impossible without it (I myself used the ploy in my most recent pot-boiler). Ghost stories, an honorable genre, particularly rely on thwarted skepticism to produce tension, suspense, or humor.

The point of television spook shows such as "The X-Files" is to entertain and amuse. For Evans to argue that the series' portrayal of skeptics is "unscientific" is as silly, for example, as denouncing Mother Goose for the same sin because, as we all know, no wolf, no matter how big or bad, has the lung power to blow down a house of straw. It is sillier still for Evans to complain that the program and others like it are too believable; believability and the fostering of a willing suspension of disbelief are fundamental imperatives of storytelling. That which is not credible is not fun.

Joseph R. Garber
San Francisco, Calif.

William Evans correctly noted that the entertainment media often portray skeptics as dogmatic individuals who are almost always proven wrong when alleged paranormal events are confirmed.

He fails to mention, however, one shining exception to this pattern: the children's cartoon "Scooby Doo." Since its premiere in the early 1970s, Scooby and the gang have been investigating mysteries involving unexplained ghosts, monsters, and other assorted paranormal creatures. Episode after episode, the mystery inevitably turns out to be a hoax perpetr-

ated by a villain for nefarious ends.

"Scooby Doo" is perhaps the most popular cartoon shown over the past two decades. Most Americans under the age of 30 watched it as a child, and many older Americans watched it with their children. Skeptics wanting to discuss the paranormal might effectively relate to their audience by noting that paranormal happenings are often not as they first appear, as Scooby Doo frequently discovered.

Daniel K. Poling
Alexandria, Va.

Several recent issues of the SKEPTICAL INQUIRER have taken up the subject of how science and the paranormal are treated in American television. Readers of *SI* would probably be interested in knowing that the science fiction series "Babylon 5" has named a fictional organization after CSICOP. In the B5 universe, there is a group of highly powerful telepaths called "psi cops" who enforce the rules of "Psi Corps," which all human telepaths are forced by law to join if they don't want to go on "psi-inhibiting" drugs or go to prison. A check of the main B5 World Wide Web site (<http://www.hyperion.com/lurk/lurker.html>) gave the following quote originally posted in Usenet by series creator J. Michael Straczynski after the first episode was aired featuring the "psi cop" Bester, named after author Alfred Bester, who wrote about telepathic police:

I was wondering when anyone was going to hit on the CSICOP reference. I was looking for a good name for the pit bulls of the Psi Corps, and thought it made for a great play on words, and a very obscure almost-pun, to name them Psi-Cops.

Michael S. Hopkins
Norman, Okla.

A Notable Murder

Richard Wiseman, Donald West, and Roy Stemman's article on psychic detectives ("Psychic Crime Detectives: A New Test for Measuring Their Successes and Failures," *SI*, January/February 1996) contains an error concerning the murder of P. C. Gutteridge, which is a more significant case than it would seem from their description.

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Gutteridge was shot four times, not two; twice in his left cheek, then through his eyes as he lay on the ground. To whip out a gun and shoot someone through each eye who was standing would suggest an unlikely degree of accuracy, especially at night. What makes this act of brutality noteworthy is the theory that has circulated since: that one of the murderers feared the dead man's retinas (or possibly pupils) would retain a visual impression of the last thing he saw, and so destroyed them—retinal retention being yet another long-standing extraordinary claim for which there is no evidence.

Also, Wiseman et al. state that the investigation lasted six months, whereas Gutteridge was killed on September 27, 1927; the killers were arrested in late January 1928; and both were executed on May 31, 1928.

Tom Ruffles
Norfolk, U.K.

Richard Wiseman replies:

My thanks to Tom Ruffles for noting two minor errors in our article on psychic detectives. These minor errors do not alter any of the results reported in the article, as the individuals who judged the accuracy of the psychics' and students' comments were presented with a large amount of reliable information about the crimes (e.g., the exact number of shots fired, the exact dates of arrest, trial, and hanging) and not the short, generalized, summaries presented in the article.

Health Statistics and Risk

In "Health Statistics May Be Bad for Our Mental Health" (*SI*, January/February 1996), John Allen Paulos deplors the exaggerated fears of disease that health statistics can create in public perceptions. He comments that "People worry that electromagnetic fields, which have increased by a factor of ten in the last fifty years, have caused an increase in leukemia rates, which in fact have risen slightly, if at all, in that time." He leaves the impression that concern over electromagnetic fields is unfounded.

Although he does an admirable job of placing many kinds of health risks in perspective, Paulos fails to distinguish between two measures of risks that have

different implications for public health. The population-attributable-risks proportion measures the fraction of all cases of a disease in a population that can be attributed to a certain exposure; in the case of electromagnetic fields and leukemia, this proportion is indeed very small. However, a different figure, the attributable risk in the exposed, is of relevance for calculating the risk of disease in subsets of the population with greater degrees of exposure to the factor of interest. Occupational exposure to intense electromagnetic fields may be associated with an increased risk (on the order of 50 percent) of leukemia in the small fraction of the population that makes its living repairing power lines and with other types of close exposure to these fields. It is inappropriate to dismiss as unfounded all concerns about the health risks of certain exposures, as measures to control them may be of importance for those with greater than average exposure.

Edward B. Whitney
Denver, Colo.

Questions about 'Alien Abductions'

Joseph Bauer's article on the "alien autopsy" ("A Surgeon's View: Alien Autopsy's Overwhelming Lack of Credibility," January/February 1996) asked some pertinent questions, but why aren't harder ones being asked about the entire UFO matter? Such as: Why are the world's governments hiding the evidence of alien visits? "People would panic," true believers chant, but would they? Orson Welles panicked the nation with a radio program describing invaders destroying everything and everyone in their path. The only intelligent response for those who believed they were hearing a genuine news broadcast was panic and flight. Would this generation, raised on "Star Trek" and *Star Wars*, be terrified or curious?

Another question is: Why would the military hide the evidence of alien visitations? Why haven't our military leaders gone to Congress, displayed alien artifacts, and demanded umpty-jillion dollars to build a high-tech defense system? What kind of military establishment would ignore threats of invasion and show disinterest in building the forces to fight it?

Last spring, I met a young woman who

claimed to be an alien abductee. As she spoke, she looked deep into my eyes with the direct intensity that warned me here was a person who did not have both feet grounded in reality. The alien autopsy film wouldn't fool a careful observer, but was it designed to edify the faith of such true believers? Or was it designed to sell to a media that has joined the *National Enquirer* in its glorification of cheap sensationalism?

Virginia Vineyard
Duncan, Ariz.

Science and Theory of Dreams

In his otherwise excellent article ("Post-Freudian Dream Theory," *SI*, January/February 1996), Martin Gardner incorrectly asserts that "Nightmares . . . occur only during NREM (non-rapid eye movement) sleep" (p. 7). In fact, all or virtually all nightmares are simply extremely vivid dreams and therefore occur during REM sleep. Gardner may be confusing nightmares with "night terrors" (pavor nocturnis), which are episodes characterized by sudden arousals from deep sleep that begin with panicked screams or cries. Night terrors, which generally occur in children, superficially resemble nightmares because they are marked by intense signs of anxiety and abrupt increases in autonomic activity (e.g., accelerated heart rate). Unlike nightmares, night terrors are not associated with reports of vivid dreaming and almost always occur during NREM sleep.

Scott O. Lilienfeld
Assistant Professor, Psychology
Emory University
Atlanta, Ga.

May I draw your attention to a small error in Martin Gardner's column? Gardner asserts that "Nightmares . . . occur only during NREM sleep." In fact, nightmares occur during REM sleep. A nightmare is simply a vivid bad dream. Vivid dreams, of whatever tone, are associated with the REM phase. Indeed, the paralysis of skeletal muscles, which along with rapid eye movements is a distinguishing feature of that phase, seems to enter into the content of many nightmares as a feeling of

entrapment, or of being helplessly "ridden" by a malign being seated on the chest (hence the term *nightmare*). Nightmares are most common in the second half of the sleep period. While occasional nightmares are normal, recurrent fearful dreams afflict about five percent of the population at any given time; a further six percent report having had repeated nightmares in the past. Mental health professionals classify repetitious distressing dreams as *dream anxiety disorder*. Perhaps Gardner was thinking of night terrors, a condition distinct from nightmares, which does happen in NREM sleep, typically during the first half of the sleeping period. . . .

Leonard George
Clinical Psychologist
Vancouver Hospital and
Health Sciences Centre
Vancouver, British Columbia

In "Post-Freudian Dream Theory" Martin Gardner writes, "REM dreaming surely serves some useful function, otherwise why would evolution have invented it?"

Gardner is here making a remarkable and utterly uncharacteristic mistake, for natural selection is essentially negative, in that it selects against what is disadvantageous to a species. REM dreaming, precisely as a form of dreaming, offers no purchase for any kind of natural selection, whether positive or negative. Such purchase could be offered only by some as yet undiscovered and more directly observable consequence of the possession of the disposition to REM dream.

Antony Flew
Reading, U.K.

Martin Gardner states "REM dreaming . . . serves some useful function, otherwise why would evolution have invented it? . . . One plausible argument is that during the night, when it is difficult to hunt for food, mammals began to rest their bodies and minds until the sun arose."

Perhaps Gardner has chosen his words unwisely. The fundamental nature of evolution is the random manner (chance included) that natural selection acts on the development of species. As Prof. Cromer

states, "Natural selection, for instance, is purely opportunistic, responding to local conditions. It doesn't follow a script" (*Uncommon Sense*, Oxford University Press, 1993, p. 173). . . .

D. F. Hughes
Toronto, Ontario
Canada

Martin Gardner does not mention that Freud completely revised his wish-fulfillment theory of dreams when he observed World War I combat casualties experiencing repetitive battle dreams—obviously not wish-fulfilling.

Having spent most of my career with the Veterans Administration, I treated veterans from three wars who had vivid, repetitive dreams of their combat experiences. (I, myself, had them for several weeks following my tour of combat in World War II.)

I suspect that most of our nightly dreams are probably brain junk; but certainly not post-traumatic revivifying dreams, which deserve further study.

Albert Kostlan
Lafayette, Calif.

Martin Gardner replies:

The distinction between nightmares and night terrors is a recent technical one. What experts now call terrors were, in the past and are by almost everyone today, called nightmares. In his book Sleep (p. 187) J. Allan Hobson writes: "Nightmares occur at all ages. Some are precipitated from non-REM sleep, in which cases they are characterized by pure fear without visual imagery, and others from REM sleep, when they take the form of vivid and frightening dreams." Hobson reproduces a picture illustrating the monstrous terror that can accompany non-REM sleep, calling it a "classic nightmare" experience. Why quibble over using a word with its traditional common meaning?

Antony Flew and D. F. Hughes are right in pointing out that evolution filters out harmful mutations, often leaving harmless ones undisturbed even if they have no survival value.

Albert Kostlan must not have seen the first of my two columns on dreams where I

mention Freud's awareness of war combat nightmares and how he tried to interpret them as wish fulfillments. He considered them so painful that the mind's "censor" is powerless to give them benign disguises.

Hoax or Joke?

Reading "Who Plays the Fool When Discover Magazine Hoaxes Its Readers?" (*SI*, January/February 1996) reminded me of a "science fact" article by Isaac Asimov in an April *Amazing Science Fiction* (later renamed *Analog*) sometime in the 1950s. The title (apart from possible minor spelling errors on my part) was "The Endochronic Properties of Resublimated Thiotimoline." It included numerous numerical tables, graphs, and references, and described thiotimoline, a sulfur compound that dissolved rapidly in water. As its purity was increased (by repeated sublimation) the speed of solution decreased, eventually becoming negative (that is, the substance dissolved before the water was added). Apart from a brief paragraph stating there may be philosophical implications that are inappropriate to mention in a paper on chemistry, and a remark about the need for automating the adding of the water because of the problems created when a human, noting that solution had occurred, tried to withhold the solvent, there was no indication that there was anything extraordinary being discussed. The editor, John Campbell, later had to apologize to his readers, many of whom wrote letters of outrage when they discovered that the references were bogus. He promised never to play April Fool again.

John G. Fletcher
Livermore, Calif.

The editorial comments on the April Discover magazine ice-borer hoax brings to mind an amusing story that resulted in quite a number of responses.

The BBC had a program called "Panorama" many years ago, hosted by newsreader Richard Dimbleby. Dimbleby had every bit as much credibility as our Walter Cronkite or Chet Huntley. Dimbleby had waited for several years for "Panorama" to run on April 1st. When it did, he sat at his news desk, a placard with

April at the top and a huge 1 underneath, next to him.

He launched into a story about the spaghetti harvests taking place in many quaint villages in northern Italy. Films were shown of people plucking what was really cooked pasta from the branches of mulberry trees, feasting on the fresh harvest at huge tables.

The BBC switchboards lit up all over the British Isles. Callers were wanting to make sure they had seen and heard correctly. One man said, "My wife doesn't believe it, but if Dimbleby said it, it must be true! Isn't it?"

I, for one, would love to see a kinescope of this, and any reader who might have an NTSC-compatible copy can contact me by e-mail at FurFaceDJM@aol.com.

David J. Mann
Portland, Ore.

Eugene Emery made some good points in his criticism of *Discover* magazine. *Discover's* 1995 April Fool's Day joke could well have been a bit more obvious. Nevertheless, there is a difference between a hoax and a joke. Further, Emery's suggestion that *Discover* might start giving us "breathless" accounts of ESP and alien kidnappings, and his speculation that *Discover* was "probably" under pressure from Disney to cover UFOs were gratuitous and completely unsupported by evidence. Indeed, *Discover* has thrived since Disney took it over, and it is one of the few periodicals that I read nearly cover to cover. Emery was irresponsible in taking such a swipe at one of the few sources of real science available to the lay public.

Matt Young
Boulder, Colo.

I subscribe to both *Discover* and *SKEPTICAL INQUIRER* and enjoy both publications. I really got a kick out of the April hoax done by *Discover*, as it was fun to see a "serious" magazine tweak itself and its readers with humor.

As for the article by C. Eugene Emery, Jr., all I can say is lighten up. Occasional humor done in good taste never hurt anyone.

Steve J. Broden
Clayton, Calif.

In the January/February 1996 issue's "Media Watch" column, C. Eugene Emery, Jr., makes the point that since the Small Mammal Zoo and Discovery Center does not exist, the letter to *Discover* magazine from Shigatsu Baka must itself be an April Fool joke. A clearer and certainly more amusing indication of this is that "Shigatsu Baka" literally means "April Fool" in Japanese.

James Unterburger
Portland, Ore.

The joke's on me. I had to read C. Eugene Emery Jr.'s Media Watch column in the January/February issue three times before I figured out it had to be a put-on. It seemed impossible to me that anyone with half a brain could have failed to see through either the 1994 or 1995 *Discover* magazine April Fool articles. Or that anyone who was in fact taken in could be so humorless as to throw what amounted to a three-page snit in a major publication.

Some of us who do not believe that skepticism means checking your sense of humor at the door have a great deal of trouble defending the movement against the popular image of the Emerys of the world, a load of Cromwells out to squash every last elf, suppress every last giggle, and basically turn the world to shades of grey. Lighten up!

A. C. Willment
Ridgewood, N.J.

C. Eugene Emery, Jr., was quite right to raise concerns over *Discover* magazine's attempts at April Fool "humor." Today's public is prone to accept any reason for either ignoring or even rejecting genuine science. Even the hint of fake, phony, or funny science in a single article in a single issue of a reputable science journal casts an odor on the whole journal and scientific writing in general—just the excuse many readers need to justify their negative attitudes toward science. What I (of all people) am not suggesting is that there is no room for humor or parody in science. There are humor magazines devoted to just that (e.g., *Annals of Improbable Research*, *Journal of Irreproducible Results*, *Journal of Polymorphous*

Perversity, etc.), and I have served on their editorial boards or contributed to them. But, just as these journals would be inappropriate places to announce, say, an important medical breakthrough, journals such as *Discover* serve neither their readers nor science by including joke "scientific" reports.

George Englebretsen
Department of Philosophy
Bishop's University
Lennoxville, Quebec
Canada

O. J. Simpson Trial and Reason

I guess it was bound to happen. Even the *SKEPTICAL INQUIRER* was unable to resist getting a piece of the O.J. Simpson trial on its pages ("Don't Bother Me with the Facts: The Simpson Case and Rational Thought," by Elie A. Shneour, January/February 1996). The article is a perfect example of the strengths and weaknesses of logic. The strength is shown in the logical conclusions drawn from the facts of the trial. However, because two major axioms of the criminal justice system were ignored in framing the arguments, the conclusion reached is valid but not true.

Specifically, the two missing axioms are: (1) Because the power of the state is so much greater than any individual, the state's actions must be beyond reproach in gathering and presenting evidence in a trial. (2) The public is better protected if a criminal is not convicted than if the state is able to obtain convictions through falsehood.

I grant the evidence presented at the trial was overwhelming against Simpson; in fact, I would stipulate all of the author's conclusions are warranted. But taking into account that this evidence was clearly tampered with by the police, even if there is a logical case to be made that the tampering may not have affected the case, axiom No. 1 clearly precludes using any evidence presented by two men who have been clearly shown to have tampered with the evidence in this and other cases. Thus the case against Simpson failed to meet the legal requirements for conviction. So Simpson is free, and axiom No. 2 comes into play; the logic is still sound and the justice sys-

tem worked, albeit slowly and painfully.

Because two trained police professionals chose to abuse their power and tamper with the evidence in a murder trial, the law of the land made it impossible to obtain a conviction. If the specific example had been of a UFO sighting or other paranormal event, much the same rules of logic could have been applied. If the chief proponents of the unusual circumstance had a record of faking the evidence, would any member of CSICOP fail to discount their testimony? The selective use of testimony has long been a tool of the unscrupulous and a clear indication of fraud. How is it more appropriate to use faulty testimony in a murder trial than in a UFO sighting? Logic is useful, but it has its limits.

Ralph E. Hunt
Brockport, N.Y.

"Don't Bother Me with the Facts" vaults to judgments that are inconsistent with both rational thought and the judicial process. For example, what logic dictates that "Rational thought in a functioning civil society requires that the circumstantial evidence should have been accorded weight above all other evidence"? Is there scientific evidence that this approach leads to more accurate judgments of guilt or innocence? What evidence of human behavior or logic "compels a punishment consistent with the deeds committed"? Will society be better off if whoever killed Ron Goldman and Nicole Brown is himself slashed to death?

In science, the research hypothesis is supported when the null hypothesis (the hypothesis of no difference) is rejected. In a court of law, a defendant is presumed innocent until "proven" guilty. This presumption of innocence is analogous to the null hypothesis. A scientific study first demands that the null hypothesis be rejected with a high level of probability. One might set that level such that fewer than five times out of a hundred is the experimental result likely to have occurred by chance. Our society places equally high standards on the rejection of the presumption of innocence. Society is not well served by sending innocent citizens to jail or killing them.

Finally, support of the research

hypothesis is dependent upon the design of the study, the objectivity of the researcher, and the quality of the evidence. A good design says, "This is the most likely explanation for the evidence we have gathered." Sloppy lab work, poor analysis, or evidence of tampering would deny publication in any refereed journal. Applying the generally accepted rules and guidelines of the scientific community to the prosecution's evidence in the Simpson trial would have resulted in a rejection of consideration and strong disapproval of the prosecution team. Slipshod treatment of the evidence created too many confounding variables and alternative hypotheses to reject the presumption of innocence with a high level of certainty.

As a juror, I would have judged Simpson likely to be guilty. As a scientist, I would be compelled to acquit him. If the Los Angeles Police Department and similar departments throughout the country begin to respect the rules of science, our society will be better off than it would with the conviction of one person based upon evidence that was treated with less care than a fetal pig in a high school biology class.

George L. Miller
Fitchburg State College
Fitchburg, Mass.

Elie Shneour believes not only that O. J. Simpson committed the crimes he was charged with, but also that *no rational person could believe otherwise*. Never mind the perjuries, the sloppy police work, and laboratory errors that would invalidate any ordinary scientific experiment. Never mind questions about the time frame, and whether Simpson had the opportunity to do all the things he must have done if he were the killer.

No; the jurors' failure to reach the same conclusion as he does proves to Shneour that they lack his power of rational thought; and from there he leaps to his ludicrous comparison of their action with beliefs in pseudoscientific phenomena (astrology, the Loch Ness monster, etc.) in the face of "irrefutable scientific evidence to the contrary"!

Give us a break, Mr. Shneour.

Harry J. Kamack
Newark, Del.

Elie A. Shneour replies:

In assessing the O. J. Simpson trial, it is important to keep in mind that the possible perjury by detective Mark Fuhrman, the bloody glove, the labeling of swatches, and the "missing" blood were not the defining fundamentals of that case. Many critical facts concerning the evidence were ignored by the jury as well as by the media. Example: the fact that detective Philip Vannatter was required by police regulations to keep the Simpson blood sample in his immediate custody at all times until he could deliver it to the laboratory.

I agree with George L. Miller's statement that police departments should begin to respect the rules of science, but that admonition applies even more cogently to trial lawyers. On the other hand, I can only marvel at Miller's assertion that as a juror he would have judged Simpson guilty, but as a scientist he would have acquitted him. I fail to follow the logic of that argument. What goes on in a court of law cannot be so glibly equated with the activities of a scientific laboratory, but the laws of evidence share a common rationale with the scientific method. The Simpson trial was neither the evaluation of a scientific hypothesis nor a scientific experiment, and to make that comparison is ludicrous. And all the pedantry in the world cannot overcome the fact—a fetal pig in a high school biology class notwithstanding—that there was overwhelming evidence even without the DNA data to convict Simpson.

Harry J. Kamack's letter states that I believe "not only that Mr. Simpson committed the crimes . . . but also that no rational person could believe otherwise." It is not a matter of belief, Mr. Kamack, but one of sober, exhaustive, and responsible evaluation of the evidence. The defense, for example, was unable to offer one instance of exculpatory evidence in support of the defendant. Indeed, no rational person in a position of responsibility for the fate of another human being and the quality of justice in a free society could have decided as the Simpson jury did. And as a civil society, we are all diminished by that outcome.

Ralph E. Hunt's letter makes a valid point about two criminal justice axioms, but the conclusion reached about my application of it being valid but not true is misguided. The Hunt letter grants and stipulates the

fact that the evidence presented at the trial was overwhelming against Simpson. But then the letter goes on to state that "this evidence was clearly [emphasis added] tampered with by the police." This is totally without any foundation whatsoever. Not a single iota of evidence was presented to support this widely held but erroneous belief.

Johnson's Attack on Naturalism

I appreciated Thomas Jukes's critical review of *Reason in the Balance*, Phillip Johnson's second book that attacks naturalism in science education ("Flight from Reality," *SI*, January/February 1996). Phillip Johnson is a very popular creationist debater now on the college tour. I've read many of Johnson's essays and, like Jukes, noticed how frequently Johnson contradicts himself. Indeed, how can Johnson call himself a realist, and then condemn scientific realism?

Johnson is quick to deny any association between himself and the "young-earth" crusaders at the Institute for Creation Research, yet he borrows their same debating tactics. Like Duane Gish and Henry Morris before him, Johnson attacks all the flaws and inconsistencies he finds in evolutionary theories without submitting his own hypotheses to a challenge, analysis, or test. That's probably because Johnson is a lawyer, not a scientist. When Harvard paleontologist Stephen Jay Gould reviewed Johnson's first book, *Darwin on Trial* (*Scientific American*, July 1992), he noted that as a lawyer, Johnson's strategy is to "poke any hole to win acquittal" rather than acknowledge evolution's long-term gains. Debates over natural history will never reach a final "verdict," and this dilemma must frustrate lawyers like Johnson who seek decisive judgments.

In Jukes's review of *Reason in the Balance*, he claimed, "Publications continued to present articles on evolution, at a level of sophistication several orders of magnitude higher than Johnson's, and there is no indication that he has read any of these articles." Jukes must have overlooked the Research Notes at the end of Johnson's book because Johnson revealed that he had read such articles, but brushed aside their implications.

For example, on page 228 of his end-

notes, Johnson cites an article by Kenneth R. Miller in the February/March 1994 *Technology Review* ("Life's Grand Design"). In that article, Miller recounted an experiment where dental researchers applied mouse epithelial cells to the beaks of baby chicks. Later, these chicks grew teeth, complete with impact-resistant enamel. Miller suggested that most birds retain "pseudogenes" they inherited from their reptilian ancestors. The mouse epithelial cells stimulated the teeth-growing trait carried in their gene fragments. But note Phillip Johnson's response:

It would require an additional chapter to address these examples here, and the effort would distract readers from the main philosophical themes, so I will merely say that I look forward to discussing these examples before scientific audiences with the support of my very capable associates who have investigated them all.

Since Johnson's book is only 245 pages long, I can't believe he chose not to debunk Miller's claims because doing so would have demanded one additional chapter. Although I agree that Miller's article isn't an open-and-shut case, I suspect that Johnson didn't challenge Miller in print because he didn't yet have a good rebuttal. Still, I'm sure that Johnson and his "associates" are busy drafting a persuasive challenge right now. And, naturally, it won't involve any new experiments. Scientists test while creationists talk.

Tom Morrow
Washburn, Tenn.

It Can't Be

The answer to your "Forum" column, "Looking Up to Logic" (*SI*, January/February), is simple:

If you see (or think you see) a newspaper called *The London Times* anywhere, it's either a hoax or an hallucination.

No paper exists with the name *The London Times*. The newspaper published in London, England, to which Americans sometimes give this name is simply called *The Times*.

Mark Tier
Sheung Wan, Hong Kong

Indignation and Nonsense?

The article on the African-American Baseline Essays ("School Daze: A Critical Review of the 'African-American Baseline Essays' for Science and Mathematics," *SI*, September/October 1995) led to some letters (January/February 1996) from competitors in the More-Sensitive-Than-Thou contest being conducted among the politically correct ("cancel my subscription..."). Self-righteous indignation is, clearly, a delicious emotion. But some *SI* readers (one, at least) hope that it will continue to debunk pseudoscientific nonsense, even when the nonsense comes from members or supporters of some racial or ethnic group. If that policy ever changes, cancel my subscription.

David A. Shotwell
Alpine, Tex.

Several letters in the January/February 1996 issue of *SKEPTICAL INQUIRER* under the heading "African-American Baseline Essays," prompted a question that stuck: Which is the greater evil—racism or racial/ethnic identification? I suspect they are not very different.

What is important about my friends (who are from various parts of the world) is that they are my friends. Although I appreciate history as a branch of knowledge, I don't give a hoot about what an individual's ancestors did.

It sickens me to see ethnic tribalism increasing—and being called pride. Our society makes it easier for some to shed their ethnicity than for others, but it is a laudable goal for all.

Jack Raso
Maspeth, N.Y.

I hope you did not (but fear that you probably did) attempt to placate William J. Knight, whose wildly intemperate letter appeared in the January/February *SI*.

"Horrorified" at what he considered a "vicious caricature" accompanying the article on African-American Baseline Essays in the September/October 1995 issue, he threatened to "cancel my subscription, cease my donations to CSICOP, and denounce the organization as racist in any situation where the name of CSICOP

is invoked" unless you printed an "unqualified apology." It is from Knight that an apology should be forthcoming.

This kind of intimidation is typical of the basically authoritarian mind-set of so many of those who profess to be brimming with sensitivity and respect for their fellowmen. A person capable of such an outburst over an illustration (not caricature) that was not only appropriate to the subject but innocuous to anyone not politically corrected to the verge of lunacy is no asset to an organization devoted to rational inquiry and civil discourse.

Donald G. Oakley
Roswell, Ga.

Psychic Fairs in Zeeland

Maybe creationists in the United States don't go to psychic fairs (*SI*, November/December 1995), but their Zeeland counterparts do. Zeeland (the old one, that is) is

a province of The Netherlands. The Christian fundamentalist parties (yes, plural, one of them does not even admit women as members! And our equivalent of the Supreme Court said that this was OK) do have two seats in our Provincial Council of 30 members. Of course the fundamentalists do believe in all kinds of psychic phenomena; except that they think it is of the Devil. And that is why they go to the Psychic Fair in Zeeland. To picket. And to warn any innocent visitors.

Marie P. Prins
Oost-Souburg
The Netherlands

David Baltimore's Transgression?

In Barry Markovsky's review of Michael Friedlander's *At the Fringes of Science* (January/February 1996, p. 50), he writes: "allegations of data fabrication against Nobel

Prize winner David Baltimore." I think that the statement is misleading, since it was a junior colleague of Baltimore who was accused of data fabrication (and the question is not entirely resolved); Baltimore's supposed transgression was apparently his impassioned defense of her and the way he conducted that defense. It seemed to me to reflect his basic belief in the goodness of scientists.

Jay M. Pasachoff
Director, Hopkins Observatory
Williams College
Williamstown, Mass.

The letters column is a forum for views on the matters raised in previous issues. Letters should be no more than 250 words. Due to the volume of letters, not all can be published. They should be typed double-spaced. Address: Letters to the Editor, SKEPTICAL INQUIRER, 944 Deer Dr. NE, Albuquerque, NM 87122.

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