

MIRACLE PHOTOGRAPHS • MILK-DRINKING IDOLS • 'READING' CANDIDATES' FACES IN SAN FRANCISCO

Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON

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CARL SAGAN On Science and Superstition

AN EXCERPT FROM HIS NEW BOOK, *THE DEMON-HAUNTED WORLD*

**THE ROLE OF REPRESENTATIVENESS
IN PSEUDOSCIENTIFIC BELIEFS**

THE SENATOR FROM OUTER SPACE

**VAMPIRES OF FOLKLORE
AND LEGEND**

SPECIAL REPORT:
*Spies, Psychics, and
Parapsychology*

Published by the Committee for the Scientific Investigation of Claims of the Paranormal



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EDITOR'S NOTE

Science and Superstition, and the CIA and Psychics

For science-minded people, any new book by Carl Sagan is an event. To all of us interested in the place of science and skepticism—and pseudoscience and superstition—in today's society, a book by Sagan that focuses on these issues is especially significant. In this issue, we are pleased to present excerpts from Sagan's *A Demon-Haunted World: Science As a Candle in the Dark*, to be published in April. Virtually every topic the SKEPTICAL INQUIRER deals with is touched upon in some way in this wide-ranging book, which represents Sagan's considerable thinking about and involvement with science and reason (and *unreason*) over the past decade. It was difficult to select just a few excerpts to share with you. All skeptics will want to read the book.

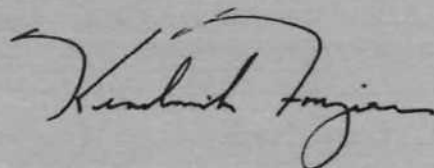
Sagan has been one of our most valued colleagues from the beginning. A founding CSICOP Fellow, he has always spoken out strongly on behalf of science and against pseudoscience and fringe-science. But he always brings a fresh perspective to these controversies. While steadfastly defending the values of science and explaining the majesty of scientific discovery, he also understands the appeal of pseudoscientific ideas and exhibits compassion for those tempted and sometimes deceived by them.

In early December 1995, newspapers and television news shows were filled with reports about a new CIA evaluation of 20 years of government-funded research in remote viewing (a fancy, sanitized name for ESP) for presumed intelligence-gathering purposes. The paranormalist spin doctors were out in force attempting to put their own twist on what was an essentially negative verdict about the validity and the value of remote viewing. Much confusion resulted. To help straighten out matters, we went directly to Ray Hyman. Hyman, a cognitive psychologist, CSICOP founding Fellow, and longtime member of our Editorial Board, was one of the two experts the CIA chose—and the only one noted for a skeptical stance—to evaluate the research. His analysis is part of the final report.

In this issue, Hyman first briefly presents his own dispassionate overview of the research issues he and statistician-parapsychologist Jessica Utts examined separately for the report. He then gives a more personal, detailed view of his concerns about the misconceptions he feels Utts and her colleagues have been promulgating about the results, and critiques the latest "best" evidence presented by parapsychologists. We conclude this important three-part Special Report by printing the final half of the Conclusions section of the CIA-sponsored report.

In this connection, you'll also want to read Martin Gardner's column about retiring U.S. Senator Claiborne Pell. Pell is among the most prominent of those political leaders who have pushed the intelligence community—often against its better judgment—to get involved with psychics and the paranormal. Your tax dollars at work.

This is the Twentieth Anniversary year for CSICOP. To celebrate, CSICOP has organized a major World Skeptics Congress, "Science in the Age of (Mis)Information," June 20-23, 1996, at the State University of New York at Buffalo campus in suburban Amherst, New York, where CSICOP was founded in 1976, and at the adjacent Center for Inquiry. Evolutionary scientist Stephen Jay Gould and Nobel laureate physicist Leon Lederman lead a cast of eminent scientists and scholars participating. Check the program on pages 8-10. It should be a grand gathering. We hope to see you there.



Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON

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The Return of Phrenology? *Chronicle* Gives New Meaning to Candidates' Face-Off

We all know that journalistic coverage of politics is often superficial, but an Op-Ed Page in the *San Francisco Chronicle* devoted to mayoral candidates gives new meaning to the phrase "only skin deep."

On October 26, 1995, the *Chronicle* published what it called "a unique perspective" on the five San Francisco mayoral candidates: "face reading." This perspective was contributed by Rose Rosetree, originator of a technique called "Face Reading Secrets." The *Chronicle* announced proudly that she has been a professional face reader since 1988 and has studied thousands of faces, including those of politicians. "Every face," she says, "is a perfect reflection of the inner person." The newspaper had the Virginia-based Rosetree turn her expertise onto the mayoral candidates, emphasizing that she knew nothing about them in advance.

Beneath each candidate's photo there followed eight column inches of drivel, er, description of each candidate's (supposed) characteristics. "The mayor has a relatively small area on the face for ambition. . . . He's got very full eyebrows, and that suggests he is aware of a lot of detail." "The significance of [candidate Roberta Achtenberg's] large front teeth is that she's got a lot of stubbornness." "Maybe the most significant thing about [candidate Willie Brown's] face is the overall shape. It's widest at the forehead, and then it tapers down. This is the passion-power leadership style." Candidate Ben Hom has "close-set eyes," meaning "he is very highly focused. Doesn't miss a trick. Very detail-oriented." Of candidate Joe Ventresca, Rosetree says, "This is one person—how can I put that delicately—who I would definitely check up on before voting for him. . . . His power style shows in his cheeks being fullest under the cheekbone, which is a wonderful power style that I call the pacifist power style. . . . In contrast to that, however, he has puffs over his eyes—I'm talking about wads of flesh that go from underneath the eyebrow and cover up part of his eyes. The

significance of puffs is major temper. So this is an interesting contrast. . . ."

And so on. And on.

Some readers were outraged. Some thought it a joke.

"I was amazed that the *Chronicle* devoted its Op-Ed page to a crackpot variation on nineteenth-century phrenology, claiming that nose-length, lip-thickness, and ear-shape reveal a person's mental and psychological qualities," said Paul V. Turner of the Stanford University Art Department in a letter to the editor to the *Chronicle* (apparently not published), shared with the SKEPTICAL INQUIRER. "This might be presented as an amusing example of public gullibility, but it's shocking that the *Chronicle* would legitimize such nonsense by turning over almost an entire page to [Rosetree], promoting her business.

"Fortunately, however, you included a photo of Ms. Rosetree's face. My analysis of its features reveals she has a charming personality, clever imagination, and an uncanny ability to con newspapers into abandoning journalistic responsibility."

The *Chronicle* did publish at least two letters to the editor.

"Leave it to the *Chronicle*," said one from Steve D. McLin of San Francisco. "Not wanting to ruin your reputation as a

lightweight, ridiculous newspaper, you decided to spice up what had actually been consistent, in-depth, and insightful analysis of San Francisco's mayor race with some crackpot's facial analysis of leading candidates, wasting an entire Op-Ed page in the process. Unbelievable. I am now looking forward to the inevitable follow-up when you hire an 'expert' fortune teller to read their palms and do their tarot cards. Then I'll be well equipped to cast my vote."

"Your Open Forum piece . . . was unbelievable," wrote Richard Ames of Eureka, California. "It was meant as a joke, right? . . . The *New York Times* and the *Washington Post* had better watch out. If the *Chronicle* continues to deliver this kind of creative journalism, they'll have to figure out a way to compete, or suffer the consequences."

Sally M. Dennett, a San Rafael, California, photographer, also wondered if it was a joke. But it wasn't. "I called Rose Rosetree [the *Chronicle* had thoughtfully provided her full business address in Sterling, Virginia] and left a message on her answering machine," she told the SKEPTICAL INQUIRER. "She sent me a description of her service. Unbelievable!"

Rosetree sent Dennett a nice, handwritten note and her literature. "Your face is PERFECT as an expression of your inner talents and challenges," it says. "Through the mail or in person, face readings are available from Rose to change forever how you see yourself."

What S.F. Mayoral Candidates' Faces Tell Us

The *Chronicle* has examined many aspects of the major candidates for mayor of San Francisco during the past few months. Today we present a unique perspective by Rose Rosetree, the originator of a technique called Face Reading Secrets. She has been a professional face reader since 1988, and has studied thousands of faces, including those of politicians. Every face, she says, is a perfect reflection of the inner person. The Virginia-based Rosetree turned her expertise on candidates in the S.F. mayoral race, emphasizing that she knew nothing about them in advance.



Frank Jordan

The mayor has a relatively small area on the face for ambition. Comparing this to the other people, he has less jaw



Roberta Achtenberg

It's pretty clear, looking at her eyes, compared to others, and her low-lying mouth, she is by far the least critical, as a



Willie Brown

With that passion-based characteristic wide forehead and not seeing anything, he can harm our people that work



Ben Hom

It's a truth, he's very generous, and he's very ambitious. And when you add all of those up, the face is that he



Joe Ventresca

All the people whose faces I've read this is one person—how can I put that delicately—who I would definitely

You can get a "Life Potential Face Portrait," a "Life Progress Face Reading," a "Compatibility Reading," or a "Mini-Reading by Mail." The first three, whether in person or by mail, cost \$85 an hour; the mini-reading costs \$12. She also touts her Dell trade paperback book *I Can Read Your Face*.

Dean Wakefield, Op-Ed editor of the *San Francisco Chronicle*, says running the piece was a diversion from the campaign's seriousness. "Having run several series of policy-oriented articles by each candidate for mayor," he told the SKEPTICAL INQUIRER, "we saw Rose Rosetree's article as an opportunity to have some fun with the campaign. While some people took the piece at face value, our idea was to give our readers a brief respite from the somber tone and mud-slinging that had characterized the race."

In early December, Sally Dennett sent letters asking the mayoral candidates their reactions to the piece. One who quickly answered was Willie Brown, the winning candidate, who in January 1996 was sworn in as mayor of San Francisco.

"I did think the Face Reading piece in the *Chronicle* was pretty strange and not particularly helpful or insightful for the voters of San Francisco," Brown said. "While I think the piece was essentially harmless, I thought it was a waste of space—which could've been put to much better use focusing on the real issues of concern to the voters of San Francisco."

Phrenology was a much-believed-in, nineteenth-century pseudoscience, discarded in the twentieth century. We're now nearing the twenty-first century. But, whether the justification is fun or something else, are we now in for a modern reincarnation of phrenology, with just a minor "face-lift"? —Kendrick Frazier

FOR THE RECORD

In the News and Comment story "UFOs Real? Government Covering Up? Survey Says 50 Percent Think So" (November-December 1995, p. 3), the labels on two lines of data in the table got switched. They should have read:

Strong Republican	38 percent
Leaning Republican	52 percent

A Roswell Reader

We have published so much recently on the Roswell crashed-saucer/alien bodies claims (see "Readers Forum: Viewers Find Flaws with 'Autopsy' Film," pp. 57, 59, and 60 in this issue), it's getting hard to keep track. Here is a guide:

- "An Absence of Alien Artifacts"—Carl Sagan (March-April 1996)
- "How to Make an 'Alien' for 'Autopsy'"—Trey Stokes (January-February 1996)
- "A Surgeon's View: Alien Autopsy Plagued by Overwhelming Lack of Credibility"—Joseph A. Bauer, M.D. (January-February 1996)
- "The GAO Roswell Report and Congressman Schiff"—Philip J. Klass (November-December 1995)
- "'Alien Autopsy' Show-and-Tell"—C. Eugene Emery, Jr. (November-December 1995)
- "'Alien Autopsy' Hoax"—Joe Nickell (November-December 1995)
- "The Roswell Incident and Project Mogul" [first-person recollections by scientist Charles B. Moore]—Dave Thomas (July-August 1995)
- Report of Air Force Research Regarding the 'Roswell Incident' [reprinted]—Richard L. Weaver (January-February 1995)
- "Showtime's Roswell"—C. Eugene Emery, Jr. (January-February 1995)
- "Conflicting Recollections in Witnesses' Accounts of Roswell 'UFO' Crash" (News & Comment)—Philip J. Klass (Fall 1994)
- Book review of Curtis Peebles, *Watch the Skies! A Chronicle of the Flying Saucer Myth*—Robert R. Young (Fall 1994)
- Book review of Kevin D. Randle and Donald R. Schmidt, *UFO Crash at Roswell* (Schmidt and Randle reply and Klass responds in the Summer 1992 issue)—Philip J. Klass (Fall 1991)

In addition, these four earlier articles, all by Philip J. Klass, are relevant: "New Evidence of MJ-12 Hoax," Winter 1990; "The MJ-12 Papers: Part 2," Spring 1988; "The MJ-12 Crashed-Saucer Documents," Winter 1987-88; "Crash of the Crashed Saucer Claim," Spring 1986. All four are reprinted in the *SI* anthology *The Hundredth Monkey and Other Paradigms of the Paranormal*, Kendrick Frazier, ed., Prometheus Books, Buffalo, N.Y., 1991. For continuing detailed reports and commentary, read also Klass's *Skeptics UFO Report*, 404 N Street SW, Washington, DC 20024. —Kendrick Frazier

It's All Downhill from Here

Last summer a picnic party of the East Bay Skeptics was led by Helen Hunter to a most amazing "mystery spot" near Cotati, California. The locals call it "magnetic hill." The picture shows the view from the driver's seat, and it's just as convincing in a photo as it is in real life. Anywhere along the slope "down" to the dip, if you stop the car and let it roll, it will roll back "uphill." In the photo E.B.S. board member Judy Daar (seen with my dog Spark) is expressing her amazement.

Even when she looked at the car from the side, the illusion held. Looking back "uphill" it's ambiguous, but by no means clear. Looking "downhill" it's a mind-blower. Directions: Go up into the hills about two miles on Lichou Road. Near the top there's a "no trespassing" sign at a cattle guard, but it doesn't apply to the asphalt road. Go past the arched ranch gate at the top of the hill, and you're there. There's a beautiful view from there, too. —Dan Dugan, San Francisco



Milk-Drinking Idols

Throughout the Hindu world on September 21, 1995, statues of Indian deities sipped spoonfuls of milk in supposed fulfillment of a devotee's dream.

As the phenomenon progressed, it spread from the deity Lord Ganesh, the elephant-headed, multihanded, Hindu god, to other idols, including Nandi the Bull, and statues of Lord Shiva, who is often depicted in human form with a serpent around his neck. Spreading across India, the milk-sipping phenomenon soon extended to other parts of the Asian continent as well as to Europe and North America where it was duly noted on television and in newspapers.

An Indian psychiatrist explained: "All people are vulnerable to such credulousness. Hindus were especially susceptible because this was the season of *pitri bhaksh*, when the devout offered milk for the souls of their ancestors." So many Hindus were caught up in the mass hysteria that milk supplies were depleted and prices soared—even for canned and powdered milk, although only "Kachcha," unboiled milk, was supposed to be accepted by the deities.

Skeptics pointed out that many of the statues were made of baked clay, which absorbs liquids prodigiously by capillary attraction. States Julia Higgins, professor of polymer chemistry at London's Imperial College, "Break a flowerpot, dip it in water, and the water disappears like mad." With glazed statues, only a bit of the glaze need be absent, say from a tooth (as indeed seemed the case in one statue), for capillary attraction to work.

But what about relatively nonporous materials like marble or even nonporous ones such as brass and other metals? Some people noticed milk pooling at the bottoms of such statues but could not explain how it was getting there. The secret was discovered by the federal Department of Science and

Technology in New Delhi. Researchers there offered a statue milk mixed with a red dye and observed that while the milk quickly disappeared from the spoon, it soon coated the statue due to surface tension. Explained the secretary of the Indian Rationalists' Society, Sanal Edamaruku: When a spoonful of milk is offered to a "wet idol" (many of the idols had been ritually washed) the spoon is naturally tilted a bit and the milk imperceptibly drains over the idol. In such a thin layer it is virtually trans-

isters with pipes running into them were found in the backyard. The canisters had gathered the milk fed by the devotees." And at a temple in Toronto investigated by CSICOP Fellow Henry Gordon, a well-known magician and author in Canada, the attendants refused to allow him to lift the small, thirsty idol from its large base. (He was also refused the opportunity to give the idol water and thus test the claim that it drank only milk.)

Although the widespread phenomenon reportedly ceased after one day, possibly due to official expectations, it continued in some homes in New York City for a time. Reported the *Miami Herald*, "It took 'the miracle' exactly eight days to reach Miami from India." On the other hand, at certain sites, such as the Ganesh temple in Toronto's Richmond Hill suburb, nothing ever happened.

Nature magazine reported that "science took a hammering from religion" over the affair, but it did so only on the propaganda level. *Nature* seemed heartened by the statement signed by prominent scientists in Madras. It called on educated Indians to help ensure "that primitive obscurantism and superstition did not hold sway over a society on the threshold of the 21st century."

—Joe Nickell

Sources: *New York Times*, *Toronto Star*, *Indian Express*, and *The Pioneer*, September 22, 1995; *Calgary Herald*, September 24, 1995; *Miami Herald* clipping, n.d.; *The Freethinker*, October 1995; *The Ontario Skeptic*, in press; *India Abroad*, September 29, 1995; *Nature*, vol. 377 (September 28, 1995). □



parent, especially on marble or other white or light-colored surfaces. "The basic principle behind it," says Edamaruku, "is that when two drops of a liquid are brought together it leads to the formation of one drop."

Hoaxing was apparently responsible in a few cases. For example, *India Abroad* reported, "At a temple in the Bengali Market area of the capital, can-

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CHRIS CARTER, JOHN MADDOX, AND OTHERS

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AND IN DOWNTOWN BUFFALO

COSPONSORED BY THE SUNYAB DEPARTMENTS OF PSYCHOLOGY, PHYSICS, PHILOSOPHY, ANTHROPOLOGY AND BIOLOGY

THURSDAY, June 20, 1996

2 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
Kendrick Frazier, Editor, *Skeptical Inquirer*; Science writer

3 p.m.–6 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 MD., National Radio Medical Commentator

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

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

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

12 noon-1:30 p.m. Press Conference—Green Room, Center for the Arts, Amherst Campus

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

UFOLOGY

Philip J. Klass, Senior Editor, *Aviation Week and Space Technology*, Wash., D.C.
James McGaha, Major, USAF, Tucson, Arizona

ASTROLOGY

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

Wim Betz MD., 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

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

Stephen Barrett MD., Psychiatrist, Allentown, Pa.
William Jarvis, Prof. of Health Promotion and Education, Loma Linda University

CREATION/EVOLUTION

Eugenie C. Scott, Anthropologist, Exec. Dir., NCSE
H. James Birx, 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**

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

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

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

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

PHILOSOPHY AND PSEUDOSCIENCE

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

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

CRITICAL THINKING IN EDUCATION

Moderator: John Kearnes, 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 EXPOSÉ

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

7 p.m.-10 p.m. Awards Banquet, Cash Bar, Reception, Hyatt Regency, downtown Buffalo

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 Méndez 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, PhD, Astronomer, *Alternativa Racional*, Spain

Henry Gordon, Ontario Skeptics, Canada

Stephen Basser, Australian Skeptics, Australia

Lin Zixin, PhD, former editor, *Science and Technology Daily* (China)

Shen Zhenlu, China Association for Science and Technology

Massimo Polidoro, editor *Scienza & Paranormale*, CICAP, Italy

REGISTRATION INFORMATION

SCIENCE IN THE AGE OF (MIS)INFORMATION

Yes, make my reservations for ___ person(s) for the **First World Skeptics Congress: Science in the Age of (Mis)Information** (\$149 per person). Includes Keynote Address and Conference Address. _____

Yes, I would like to attend the **Awards Banquet** on Saturday, June 22 (\$35 per person). 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). _____

Yes, I would like to attend the **Luncheon** on Saturday, June 22 (\$22 per person). Please make my reservations for ___ person(s). _____

(FOR NON-REGISTERED GUESTS) Yes, I would like to attend the **Leon Lederman** Conference 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) _____

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HOTEL INFORMATION—Mention CSICOP Conference for these special Conference Rates

Buffalo Marriott Hotel, 1340 Millersport Highway, Amherst, NY (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).

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Motel 6, 4400 Maple Road, Amherst, NY. (716) 834-2231. \$39.99 Single, \$45.99 Double.



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,
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Claiborne Pell: The Senator From Outer Space

Claiborne De Borda Pell, senior United States senator from Rhode Island and former chairman of the Senate's powerful Foreign Relations Committee, announced last fall that he will not run for re-election in 1996. For 35 years "Wellborn Pell," as colleagues sometimes call him because of his wealthy father, has been the most strident member of Congress in trying to persuade government agencies to increase funding for psychic research.

Interest in psi phenomena and other New Age folderol has always been part of the circus inside the Beltway. The Pentagon, the Central Intelligence Agency, and the Federal Bureau of Investigation all have people strongly supportive of psi funding. Both the Army and Navy have sponsored such research, costing taxpayers millions of dollars. Usually the work has been top secret, listed under code names that conceal the nature of the investigations. The secrecy is due in part to fear of ridicule by skeptics, and especially by Christian fundamentalists who suspect the agencies are in league with Satan.

In 1984 the Army Research Institute, fearful that the Soviets were decades ahead of the United States in paranormal research, funded an investigation by the National Academy of Sciences. Psychologist Ray Hyman was placed in charge of a subcommittee to report on the status of parapsychology. The study concluded there is no good evidence

that psi phenomena exist. Some of the psi research conducted by CIA officials is hard to believe, the academy found. The CIA had tried training psychics to look at photos of Soviet cars and tell what was going on inside them. The officials considered seriously the technique of puncturing tires by sticking pins into photographs!

A full report was published in 1987 by the National Academy Press under the title *Enhancing Human Performance*. (For a summary, see Kendrick Frazier's article "Improving Human Performance: What About Parapsychology?" in the *SKEPTICAL INQUIRER*, Fall 1988.) The report was of course roundly blasted by parapsychologists and by Pell as a misuse of government funds.

U.S. News and World Report (December 5, 1988), in an article titled "The Twilight Zone in Washington," estimated that "one-fourth of the members of Congress are actively interested in psi, be that healing, prophecy, remote viewing, or physical manifestations of psychic powers." Texas Democrat Jim Wright, former house speaker, said he believes he has strong psi abilities to see future events. We all remember how former White House residents Ronald and Nancy Reagan were devout believers in astrology. Dates of the president's important meetings were scheduled by Joan Quigley, their San Francisco astrologer. In my opinion, however, no one in Washington has rivaled Senator

Pell in combining ignorance of science with extreme gullibility toward the performances of psychics.

Born in New York City in 1918, and a graduate of Princeton University, Pell has a record of being one of the Senate's most liberal Democrats. Although an Episcopalian, he is strongly pro-choice on abortion rights, a brave stance considering Rhode Island's large Roman Catholic constituency. His pro-labor record is consistent. He has been awarded almost forty honorary degrees. Other honors include Italy's Grand Cross of the Order of Merit and France's Legion of Honor. He was one of the founders of the National Endowment for the Arts.

Pell's efforts to combat environmental pollution led him in 1988 to introduce a bill for government funding of a New Age organization named the National Committee on Human Resources. Senators Albert Gore and Nancy Kassebaum were co-sponsors. The committee was to have included two members "with training and experience in extraordinary performance results," a euphemistic way to describe parapsychologists. Ridiculed by other senators as a "spoon-bending bill," it quickly died. As one congressman put it, "The giggle factor is off the meter on this one."

Pell buys almost everything on the paranormal scene. His office shelves are jammed with books on the paranormal, including the many autobiographies of

Shirley MacLaine.

Pell is on the advisory board of the International Association of Near-Death Studies—studies purporting to establish that persons close to death often get peeks into the hereafter. He is also on the board of the Institute of Noetic Sciences, an organization devoted to psi research.

In 1987 Pell invited Uri Geller, the self-proclaimed psychic, to Capitol Hill to demonstrate his alleged powers in an electronically bugproof room. Hanging on his office walls Pell has a spoon bent by Geller, a framed photo of Geller, and drawings of a "smiley face" made by Pell alongside a duplicate made by Geller, supposedly using ESP.

Pell admits that on occasion Geller may use magic. "Geller was a magician when he was younger," Pell told a reporter. "Maybe when his intuitive processes fail, he can back them up with sleight of hand." This is a commonplace remark made by psi researchers whenever a medium or psychic is caught cheating.

In the late 1980s the magician James Randi was in Washington to receive an award for excellence in public speaking. The award was presented by fellow conjuror Harry Blackstone, Jr. Sitting in the audience, lean and frail, was Pell. When he watched Randi bend a spoon until it broke, Pell became visibly agitated. One of Pell's associates took the two spoon pieces to Pell who carefully wrapped them in a handkerchief. After the ceremony Pell visited Randi backstage. Pell was angry because Randi had presented the spoon-bending as a magic trick. Pell had seen Geller perform this feat and I believe Pell was absolutely persuaded it could only be done by psychic means.

Pell challenged Randi to duplicate a drawing the way Geller had done. Pell produced a pad and a pen. While drawing a figure on the pad Pell explained that he knew all about pencil reading, and would hold the pad in such a way that Randi could not see the pen wiggling. Pell also said he was aware that an impression of the drawing could be made on the pad's second sheet. He ripped off the top sheet, folded it twice, and put it in his pocket without handing Randi the pad.



AP/World Wide Photos

Senator Claiborne Pell.

Randi found a piece of paper and drew on it. He folded the sheet and placed it under Pell's foot. "If I duplicated what you drew," said Randi, "will you admit I have done it by trickery?"

Pell bent over to pick up and open Randi's paper. He turned pale and visibly trembled when he saw that Randi had exactly duplicated his drawing of an equilateral triangle.

Randi has given me permission to explain how he did this. In the act of tearing the sheet from the pad, Pell had allowed Randi an upside-down glimpse of what he had drawn! Blackstone had also seen the triangle, and was doing his best to keep from laughing. So much for Pell's ability to test a psychic! Was he convinced that Randi had performed a magic trick? Not on your life. His unflappable comment later was, "I think maybe Randi is a psychic and doesn't realize it." Several naive parapsycholo-

gists have come to similar conclusions about Randi, evidently believing themselves too smart to be fooled.

For seven years Pell had on his staff, at a reported \$50,000 a year, one of the nation's top promoters of the paranormal, Cecil B. Scott Jones. A handsome, white-haired man, Jones was for forty years a Navy pilot and intelligence officer. He still retains top secret security clearance. For several years he taught political science at two Wyoming institutions: Casper College and the University of Wyoming at Laramie.

While a Navy attaché in India, Jones said he had a paranormal experience so shattering that he told a reporter he could not describe it for fear of embarrassing the government. He added that this event "enabled me to do my intelligence assignment with much greater speed than one ordinarily expected." (See C. Eugene Emery, Jr.'s article, "Fear

of Ridicule the Main Roadblock: Pell Aide Likens Government to Ostrich When It Comes to Psychic Phenomena," in the *Providence Sunday Journal*, July 17, 1988).

After leaving the Navy and obtaining a doctorate in international studies at American University in 1975, Jones's apparent obsession with the paranormal steadily grew. He tried unsuccessfully to persuade some companies to market a technique for telepathic communication. As he told Emery, "The venture failed because the companies and potential customers in the government were afraid of ridicule."

Jones has been a believer in UFOs ever since he saw a silvery disk in the skies when he was a Korean War fighter pilot. His one book, *Phoenix in the Labyrinth*, was published by his Human Potential Foundation in 1995. It con-

and the global best interest to assume that if direct ET encounters have not yet taken place, it is not too soon to anticipate such encounters and to make sensitive preparations for them."

Jones's craziest lecture, given in Denver in 1992 at a symposium on UFO research, concerned the great explosion that occurred on June 30, 1908, in Tunguska, Siberia. Astronomers agree that the Earth was struck by a comet or huge meteorite. Not Jones. He said he believes it was a crashed UFO, cylindrical in shape.

Many pages in his book are devoted to the efforts of five psychics employed by Psi Tech, a commercial firm that claims to have perfected sophisticated techniques for remote viewing, not only of distant places, but also past events! Jones published these psychics' Tunguska research results, complete

phins could be used to locate the remains of flying saucers that have crashed into the sea. On another occasion Jones sponsored an effort by psychic mediums to contact dead Soviet bigwigs and urge them to beam thoughts of peace to living Soviet leaders. In 1986 Jones invited Pentagon officials to his home to hear taped spirit voices, one supposedly from William Randolph Hearst.

Jones's tireless efforts to persuade the government to fund paranormal research hit its most preposterous level in October 1990. Jones wrote to then Secretary of Defense Richard Cheney to say that a group of parapsychologists had made a truly amazing discovery. In listening to speeches related to the Persian Gulf War made by President George Bush, Secretary of State James Baker III, and Cheney himself, a mysterious word had turned up when the tapes were played backward. The word was "simone."

"I mention this," Jones wrote, "in case it is a code word that would not be in the national interest to be known." The speculation was that the subconscious minds of the speakers were inadvertently introducing the secret code word into their reversed speech! Jones's boss Pell admitted that "while it sounds wacky, there may be some merit" to it because he respects "Scott's [Jones's] responsible role in life." (See John Diamond's Associated Press account of October 20, 1990; C. Eugene Emery Jr.'s article, "Pell Aide Hears Code in Backwards Speeches," in the *SKEPTICAL INQUIRER*, Summer 1991; and a report in *Harper's Magazine*, January 1991, page 25.)

It turned out that the source of Jones's warning came from David Oates, an electronics enthusiast from Australia, then living in Dallas. Oates had coauthored a 1987 book in Australia on reverse speech therapy, whatever that is. Oates told Emery that when he played backward the Persian Gulf War speeches of the three political leaders he heard "simone" five times. Jones thought the repetition of "simone" was significant enough to send a warning to Cheney about the possibility of unintentionally disclosing a top secret code word.

"Interest in psi phenomena and other New Age folderol has always been part of the circus inside the Beltway."

sists of six speeches he gave at UFO conferences from 1988 through 1994.

Jones said he is certain that for decades the Earth has been visited by extraterrestrials. He dislikes calling them aliens, preferring the term *Visiting Others*. He has no idea who they are; or whether they come from distant regions of our universe, from parallel worlds in higher dimensions, or from the future. He said he is persuaded that the executive branch of our government, as well as top Russian officials, has information about the Visiting Others, which it is keeping from Congress and the public. "If I knew what was going on," he added, "I'm not sure I would tell you." For years he has urged the executive branch to stop its campaign of secrecy, disinformation, and cover-up. In one speech Jones said that if the president ever reveals what he (the president) knows, Congress would call for his impeachment.

"The government . . . may have painted itself into a corner," he said in 1988, "and after some forty-odd years the paint is still wet. . . . It is the nation's

with their crude sketches of what the Tunguska crashed object looked like. The pictures are in wild disagreement. Some of the psychics saw the object as unmanned, and called it "self-conscious." Others described it as manned by humanoids. All five agreed, however, that it came from a very distant world of sentient beings, perhaps from another dimension, entering our space-time through a wormhole. One psychic, who saw the object as egg-shaped, said it came from the future.

In 1984 Jones invited Pell to a seminar organized by parapsychologists. A self-proclaimed believer in psi since his college days, Pell was convinced by the seminar, he said, that it was essential for the Senate to have someone in a position to persuade the government to take psi phenomena more seriously. In 1985 Pell hired Jones as his aide.

On one occasion Jones and a psychic visited an aquarium in Texas where they tried to communicate by telepathy with a dolphin. The results were inconclusive. Jones has since suggested that dol-

Emery wrote:

When I asked Oates for an example of a "simone" message, he cited an August 8, 1990, news conference by Bush, where the backwards phrase that caught his interest was "Simone in the sands." He played the tape for me. Like most backwards messages, the phrase isn't very clear, but you can hear it if you're told what to listen for.

What were listeners actually hearing when Bush said "Simone in the sands?" Oates said the president's words were "Iraq has massed an enormous war machine." "Simone," he said, came from the sounds in the word *enormous*.

Columnist Philip Terzian said the affair reminded him of the Beatles' white album, where listeners heard the backwards message "I bury Paul." "I've been reading [Jones's] letter to Richard Cheney backwards," Terzian wrote, "and [I] am certain I can hear a voice say: 'I bury Pell.'"

Oates told Emery he had been researching backward speech for seven years, and considered his discovery that subconscious thoughts emerge in reverse speech to be one of "tremendous value." The backward phrases are of course highly symbolic and have to be carefully interpreted. For example, the phrase "I am Sir Lancelot" turned up on one of Oates's backward tapes. It signified, he said, that the speaker subconsciously thought of himself as a knight or savior. Oates said he moved to the United States in the hope of getting academic recognition for his great work.

When he first heard "simone" in Bush's speech, Oates said, he thought it might refer to a friend or relative, but after hearing it again in Gulf crisis speeches by Baker and Cheney, he began to suspect it was a secret code word. The phrase that emerged in Baker's backward speech was "simone won't shine."

At the time of this letter from Jones to Cheney, Pell was running for reelection against Congresswoman Claudine Schneider. She was unable to capitalize on the "simone" flap, Emery wrote, because she too is a believer in the

paranormal. Pell easily won reelection. Uri Geller took partial credit for this victory. "I will beam my energy to him to win," he had told a reporter. (See the *Denver Post*, February 2, 1990, and "The Flip Side of Simone is Enormous," by C. Eugene Emery, Jr., in the *Providence Journal-Bulletin*, February 10, 1990.)

Jones left his job with Pell in 1991 to devote himself full-time as president of his Human Potential Foundation. Its offices are in Falls Church, Virginia, where Jones now lives. The foundation was originally financed by Laurance Spelman Rockefeller. Pell serves on its board. From 1985 until recently Jones had been a trustee of the American Society for Psychical Research, serving as its president from 1989 until 1992.

It is not known what Pell plans to do after retiring. In reporting his decision not to run again, *Time* (September 18, 1995) headed its article, "Senator Oddball." For decades, said *Time*, Pell has been "Capitol Hill's most eccentric denizen," an inhabitant of the "Pell zone." Among many Pellisms is his way of saying "formal greetings" when he meets someone, and "too peachy" to describe a flowery speech. His clothes are baggy tweeds, he seldom shaves, and he tends to mumble when in doubt. As a tribute to his wealthy father, he wears his father's belt, which is so long that he has to wrap it twice around his waist. He even wears it jogging. Among his nicknames, said *Time*, are Stillborn Pell, Wellborn Pell, Senator Magoo, and the Senator from Outer Space.

When he planned one of his annual parties for staffers, Pell tried to borrow two camels from tobacco heiress Doris Duke, who also lived in Newport. He wanted the camels to graze on his lawn as a bizarre, special attraction. Doris dissuaded him on the grounds that camels like to spit at people they don't know.

Another member of Congress who is tireless in promoting psi is Rep. Charles Grandison Rose III from North Carolina. He has been in Congress since 1973, and has served since 1977 on the House Select Committee on Intelligence. Like Pell, Rose said he firmly believes the military should spend much more money developing weapons that

use psi powers—weapons that could make the old explosives obsolete.

Rose founded the Congressional Clearinghouse on the Future to give psychics a chance to address political leaders in Washington. He has advocated a government-funded "psychic Manhattan Project" to develop clairvoyant and psychokinetic techniques for foiling enemies. But Charlie Rose's career is another story.

Postscript

In late November 1995, the Defense Intelligence Agency disclosed the existence of its top secret program code-named *Stargate*, which was declassified and suspended in Spring 1995. Over twenty years \$20 million was spent on the program that included studying six psychics who claimed to have powers of clairvoyance, called "remote viewing," that was supposedly used for spying. The CIA, which monitored *Stargate*, decided on the basis of reports by psychologist Ray Hyman and others that remote viewing was useless for intelligence work and no more public funds should be wasted on such research.

From 1985 *Stargate* was directed by Edwin May. His star performer was former Army intelligence officer Joe McMoneagle, who now runs a company, Intuitive Intelligence Applications, with his astrologer wife. They charge clients \$1,500 a day.

On November 28, 1995, Ted Koppel's "Nightline" program on ABC-TV interviewed May, former CIA director Robert Gates, statistician Jessica Utts, a psi researcher introduced only as "Norm," and Hyman. Gates said the CIA monitored *Stargate* only because the Russians were doing similar research, and because of pressure from a few unnamed congressmen. The results of *Stargate's* research were of no value, he said, and no CIA decisions were based on them.

May, Utts, and Norm all stoutly defended *Stargate* as validating remote viewing. Hyman, the token skeptic, was allowed only a few seconds to say that in his opinion remote viewing remains unconfirmed. (For more, see Hyman's Special Report in this issue.) □



When the Media Miss Real Messages in Subliminal Stories

People worried about subliminal messages controlling their minds found plenty to fret about recently, and the media did little to let the public know how small the threat of subliminal messages actually is.

The Christian anti-abortion group American Life League (ALL) of Stafford, Virginia, kicked off subliminal silly season when it accused the Walt Disney Company of sneaking sexual imagery into its films *The Little Mermaid*, *The Lion King*, and *Aladdin*. Then several media outlets such as the *Washington Post* helped spread the allegations by widely reporting the claims apparently without watching the movies or talking to Disney to see if the claims were true, or investigating whether overactive imaginations were at work.

Any discerning viewers who examined the film *The Little Mermaid*, looking for the minister's erection (an ALL claim), instead saw a knobby knee that was clearly visible when the scene appeared at another angle. If they fast-forwarded *The Lion King* to the spot where a cloud of dust appears over young Simba, they would have had a hard time making out the word *sex* in the cloud (another ALL claim). And instead of hearing Aladdin whisper, "Good teenagers, take off your clothes" amid the other voices in the balcony scene, they probably would have heard him whisper to Princess Jasmine's pet tiger, "Scat good tiger. Take off and go."

Wall Street Journal reporter Lisa Bannon traced the Aladdin rumor to two young men—one in Lakewood, Colorado, the other at the University of Northern Iowa—who independently claimed to have heard the "take off your clothes" line. The story eventually made its way to the Christian magazine *Movie Guide*, which ran the rumor without looking at the film. *Movie Guide* later retracted the allegation when the publisher finally got around to examining the film, but by then the accusation had been picked up by ALL, which prompted a story in the *Daily Press* in Newport News, Virginia, which prompted an Associated Press story, which led to massive publicity about the brouhaha.

While the Walt Disney Company was denying the use of subliminal sexual imagery, film director William Friedkin was trying to hype his new movie, *Jade*, by announcing that he had intentionally added subliminal images to heighten the emotional impact of the film, a thriller about a renowned psychologist who is a murder suspect. But apparently a turkey is a turkey, no matter how much pseudoscience you pump into it. *Jade* bombed at the box office.

Another company that tried to make a profit on subliminal messages also ended up with disappointing sales. Time Warner Interactive marketed a computer software game called "Endorfun," which the company openly boasted of as having 93 subliminal uplifting mes-

sages, such as "You create joyous thought," "It's OK for me to have everything I want," and "In my own way I am a genius," hidden in the game's spiritual jazz soundtrack.

Time Warner tried to sell the computer game with the slogan "Play More. Feel Better." It listed all the messages and noted that players could turn them off by turning off the sound track, which would be the responsible thing to do if subliminal messages actually worked.

But the real message of research in the field of subliminal seduction is that subliminal messages don't have the power that some people attribute to them. If you can't hear a subliminal message no matter how hard you try, the research indicates, it can't affect you. And even if you perceive it without consciously realizing it, it's probably no more persuasive than an overt message. (See the SKEPTICAL INQUIRER special issue on "Myths of Subliminal Persuasion," Spring 1992.)

Nonetheless, the *Los Angeles Times* ran a front-page story on October 1, 1995, by Amy Harmon warning that "the relative ease with which messages can be inserted into computer code, combined with the increasing hours people are spending in front of computer screens, leads some psychologists and media experts to believe that the potential for mind control—voluntary or involuntary—is greater in the new media than in any that came before."

Harmon's story, which claimed that

some software companies have already put subliminal messages in their products and that other companies were thinking of following suit, cited no research and quoted Wilson Bryan Key, author of the 1971 book *Subliminal Seduction* and other books. Key has said he can find the word "sex" on many things, including a Ritz cracker.

The real lesson of the *Los Angeles Times* piece: The subliminal message issue is not going away as long as reporters and editors don't do their homework and are willing to let their own and the public's primal fear of magical messages override good editorial judgment.

* * *

A New Age magazine has been caught practicing deceptive journalism.

The November 1995 issue of *Body Mind Spirit* had a cover story on Hillary Rodham Clinton by Diane Loomans that appeared to be based on an interview conducted by the writer (but was not billed as such). It turns out that Loomans has never spoken with the first lady.

Although Mrs. Clinton seemed to be directly answering questions, and Loomans described how Mrs. Clinton "speaks glowingly" and "is emphatic," all the quotes came from speeches, Internet material, and an appearance on "Oprah Winfrey." None of it was credited.

Body Mind Spirit publisher James T. Valliere apologized when confronted by Maria Miro Johnson at the *Providence Journal-Bulletin*, saying, "This is a fault, definitely." But he also said that previous cover stories on Richard Gere and Tom Hanks were done the same way, and no one complained.

The magazine, formerly known as *Psychic Guide*, once carried an "in-depth and candid interview" with John Lennon, who had been murdered three years earlier.

Lennon's words, the magazine said, came from a trance medium. When

Gene Emery is the science writer for the Providence Journal-Bulletin, 75 Fountain St., Providence, RI 02902.

then-editor Paul Zuromski asked if Lennon, would "like to pass along a tidbit of information that might help people believe this is you," Lennon's response supposedly was, "First, I got to vacate this body right now because it needs to take a leak."

* * *

The television program "Entertainment Tonight" featured a two-part "special report" November 2 and 3, 1995, on the \$300-million-a-year psychic hot-line business, saying it would show viewers whether the hot lines "really deliver" on their promises, and what the service costs.

Did the "E.T." staff test psychics to see if they could really see into the future? Did they interview skeptics



about the tricks psychics use? Nope. The program didn't raise the slightest doubts about the ability of "real" psychics.

In fact, their only on-air sources were self-professed psychics and astrologers.

Among the shocking revelations in the program:

- People who call a 900-number (toll) hoping to speak to a psychic sometimes end up with a numerologist or tarot-card reader.

- Psychics who are getting weary from long hours sometimes keep customers on the line, in part because the psychics are bitter at making only thirty-five cents a

minute while the companies they work for get nearly four dollars a minute.

- Not all of the people on the hot lines are psychic. "Entertainment Tonight's" source of the claim: a Hollywood astrologer.

- Psychic Friends Network spokeswoman Linda Georgian was suing the network for \$10 million for fraud, breach of contract, and emotional distress. The "Entertainment Tonight" folks never raised the obvious question of why a true psychic could have been fooled by the Psychic Friends Network.

Nor did the "E.T." staff apparently bother to give any measure of informed, objective scrutiny to any of Georgian's past predictions. They might have discovered, for example, that in the January 3, 1995, issue of the supermarket tabloid *National Examiner* she predicted that in 1995: David Letterman and Madonna would begin dating; Beverly Hills madam Heidi Fleiss would "convert to Catholicism, become a nun, and join a cloistered convent"; "a devastating hurricane will sweep across Florida, wiping out Disney World as it passes over Orlando"; and Tonya Harding (who usually skates in an indoor ice rink) would "become America's sweetheart after she saves a young girl who falls through the ice."

* * *

Another psychic who seems to have gotten a free ride from the media these days is Ron Mangum of Springfield, Illinois, who bills himself as "the psychic of the '90s" and who has a special 900-number for people seeking winning lottery numbers.

During an appearance October 6, 1995, on a Rhode Island radio station, Mangum claimed that he predicted the acquittal of O. J. Simpson on "over 400 radio stations all over the country."

But in the January 3, 1995, issue of the *National Examiner*, Mangum gave this prediction for 1995: "O. J. Simpson: Innocent! But a jury will still find him guilty."

Mangum also predicted that in 1995 Fidel Castro would be overthrown, and

Messages continued on page 56



Reichean Disciples, Restless Statues

Paranormal events continue to shape the news in unseen ways. According to a number of on-line UFOlogists scattered across the Internet, there is a very good reason that the Bosnian peace talks were held in the unlikely location of Wright-Patterson Air Force Base near Dayton, Ohio. That, they say, is where the famous "Hangar 18" is, containing the bodies of the "little gray men" recovered from saucer crashes. Some say the United States wanted to intimidate the warring factions by revealing to them the awesome extraterrestrial findings that we have at our disposal, suggesting a level of technological prowess that would be futile to resist.

Reichean critic Joel Carlinsky notes that James Nichols, accused in 1995 (charges were later dropped) of storing and detonating bombs on his Decker, Michigan, farm, kept a "cloud buster" there. James Nichols reportedly discussed with an FBI informant in 1988 ways to "level" the Federal Building in Oklahoma City, a crime for which his brother Terry Nichols now stands indicted. Wilhelm Reich, psychiatrist and biophysicist, and inventor of the cloud buster, believed, as do his disciples now, that droughts are caused by dangerous levels of "deadly orgone radiation" building up in the clouds, so the disciples build these implausible contraptions, which they point at the sky, trying to zap the drought away.

Typically one or more of the Reicheans will claim credit whenever a drought ends, although none has yet owned up to being responsible for a destructive flood. The disciples of Reich keep each other in a perpetual state of froth, endlessly deploring the Food and Drug Administration's heavy-handed actions during the 1950s against Reich for his quack cancer cures, painting him as a latter-day Galileo, hounded and destroyed by fanatical inquisitors.

At the October 16, 1995, Million Man March in Washington, the controversial Nation of Islam minister Louis Farrakhan delivered a long oration that included a confusing harangue on the numerological significance of the number nineteen. "When you have a nine you have a womb that is pregnant," Farrakhan explained, "and when you have a one standing by the nine, it means that there is something secret that has to be unfolded." He said the nearby statues of Lincoln and Jefferson are nineteen feet high; Jefferson was the third president and Lincoln was the sixteenth—add them together, and you get nineteen. Truly astonishing! Those with a long memory will recall Farrakhan's earlier claim to have been whisked up in a vision to a wheel-shaped UFO while in Mexico in 1985 (*Psychic Vibrations, SI*, Summer 1990, p. 360). While on board he said he received advance warning of the impending United States air raid against Libyan targets, and he

claims that the UFO occupants (who are on his side) caused electromagnetic interference with a United States aircraft carrier.

* * *

In the predictions department, Jeane Dixon's crystal ball is as cloudy as ever. She foresaw in the *Star* that "solar-powered lawn mowers will run clean and quiet—and be extremely popular." Even more interesting, her other *Star* predictions for 1995 included: "Pope John Paul II will have a hand in liberating Cuba from Castro" (Dixon has predicted Castro's downfall practically every year since Castro came to power); and "A whole new world of dinosaurs will be discovered in Central Asia."

Other prognosticators did equally well. The *Washington Post* noted (September 2, 1995) that the prominent Japanese newsweekly *Aera* was reporting that two astrologers credited with forecasting the extremely destructive Kobe earthquake in early 1995 were warning that Tokyo would be struck on September 9, 1995; the "most dangerous time" was said to be thirty-seven minutes after midnight, at which time nothing at all happened. And some interesting second-half-of-the-year predictions from the *National Enquirer* (June 20, 1995) were: Prince Charles will become king

Statues continued on page 56



Miracle Photographs

On Friday, October 27, 1995, the television program "Unsolved Mysteries" aired a segment, "Kentucky Visions," that included investigative work by the Committee for the Scientific Investigation of Claims of the Paranormal. The popular, prime-time television series had requested CSICOP's opinion of some "miraculous" photographs taken at a recent Virgin Mary sighting at a hillside spot in central Kentucky. This was my first significant case as Senior Research Fellow—or as the narrator termed me, "Paranormal Investigator" (a "P.I." nonetheless).

The photographs were made by a Sunday school teacher who had visited the Valley Hill site (near Bardstown, Kentucky) with eight girls from her class. I did not see the photographs until the day I was brought on location for filming, but I was sent color photocopies of them in advance. The lack of reproductive quality put me at more of a disadvantage with some photos than with others. I did recognize that the claimed "faces of Jesus and Mary" in one photo were simply due to random, out-of-focus patterns of light and shadow caused by mishandling of the film pack. (More on that later.)

I also recognized in another photo the now common effect at Marian apparition sites, a phenomenon known as the "golden door." This is an arched

door shape, filled with golden light and believed by some to be the doorway to heaven mentioned in Revelation 4:1. In fact, as explained in an earlier *SKEPTICAL INQUIRER* (Winter 1993), it is simply an artifact of the Polaroid OneStep camera, which, when flooded with bright light, as when pointed at the sun or a halogen

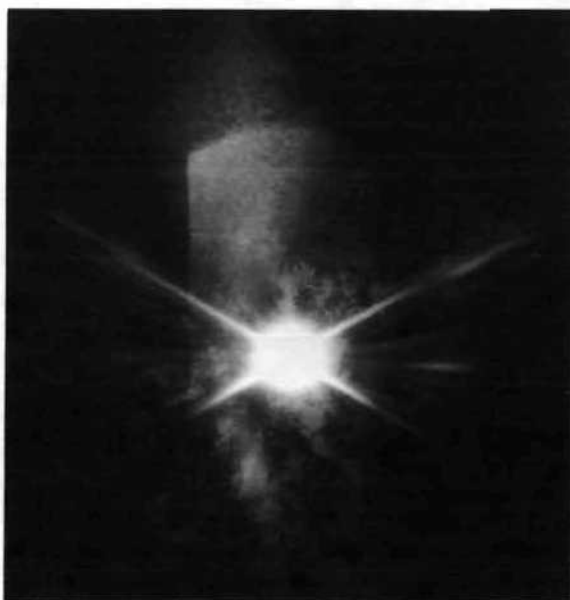


Figure 1. "Golden door" photo.

lamp, produces a picture of the camera's own aperture (Nickell 1993a) (Figure 1). This was codiscovered by Georgia Skeptics members Dale Heatherington and Anson Kennedy, who tutored me in making such photos. (Together we have wasted much Polaroid film, all in the interest of scientific experimentation.)

I telephoned Kennedy about two of the other "miracle" effects, and he was already familiar with one of them. Sight unseen, simply from my description of the alleged "angel wings," he diagnosed light leakage into the Polaroid film pack. My subsequent experimentation confirmed his explanation and showed how the leakage could have occurred (Figure 2).

Fortunately, my experimentation also provided an explanation for the remaining effect—one that had at first puzzled both Kennedy and me as well as some professional photographers and film processors I consulted. The effect was that of a *chart* superimposed on one picture. The chart was slightly out of focus, but nevertheless unmistakable. One of the girls at the site thought she could see in the blurred printing the name of a deceased friend. Where had the chart come from? It appeared to have resulted from a double exposure, although the Polaroid OneStep camera should not ordinarily permit that to occur.

Suddenly, I realized that the card atop the film pack, which protects the film from light and which is ejected when the pack is first loaded into the camera, has a chart printed on its underside! Indeed, that was clearly the mysterious chart in question, somehow appearing in mirror image in the pho-



Figure 2. "Angel wings" effect.

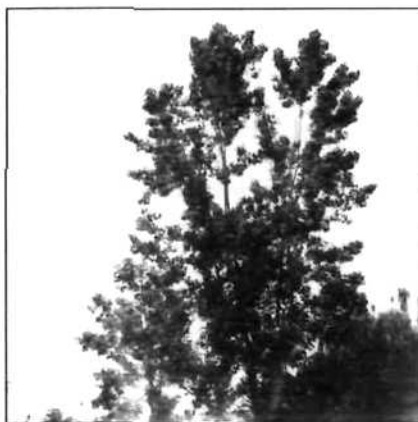


Figure 3. "Miracle" chart.



Figure 4. Detail of chart superimposition.

Complete card to order copies, enlargements and/or accessories.
Print name, quantity and copy size on the back of each photo.
Mail to: Polaroid Copy Services
PO Box 911
El Segundo, CA 90245-0911

Number of original Photos enclosed

Name _____
Address _____
City _____ State _____ Zip _____

Method of payment: Check MasterCard VISA AMEX

Signature of customer _____ Expiration date _____

Quantity	PRICE PER UNIT	AMOUNT
Regular-size Copy (4" x 4")	\$ 1.10	
8" x 8" Enlargement	\$ 3.95	
8" x 8" Framed Enlargement	\$ 6.95	
8" x 8" Framed Enlargement	\$ 14.45	
8" x 8" Framed Enlargement	\$ 17.45	
(A) Deluxe Camera Bag	\$ 19.95	
(B) Basic Camera Bag	\$ 12.00	
(C) Photo File - holds 20 photos	\$ 9.95	
(D) Photo Album - holds 104 photos	\$ 18.00	
SUBTOTAL		\$
DEDUCT 10% IF OVER \$12.00		\$
ADD HANDLING CHARGE (over \$95 - no charge)		\$ 2.00
ADD SALES TAX		\$
TOTAL AMOUNT		\$

Permit to reprint if not satisfied. Please request to change without notice. Liability for lost or damaged pictures is limited to replacement film and excludes consequential damages. Printed in USA. 1088

Figure 5. Chart from film pack.

tograph taken by the Sunday school teacher. But how had it gotten onto one photo? My subsequent experiments showed it was possible to produce such an effect by light leakage (the same culprit that produced the "angel wings"). The light had leaked in, between the card and the first potential photograph, bouncing off the white card and onto the light-sensitized surface of the film, thus making an exposure of a portion of the chart. In this way it was superimposed on the first photograph made from that pack (Figures 3 and 4).

Taken together, the evidence from all four photographs, some of which had multiple effects, provided corroborative evidence that the film pack was somehow mishandled and admitted light, maybe by the front having been pulled down with the thumb on being inserted into the camera, or even by someone having sat on the pack. Since the other major effect, the golden door, was due to the construction of the camera, there was therefore no indication of hoaxing with any of the pictures.

On the television program, my comments were edited down to very brief, but sufficient explanations. The treatment of the photographs was uneven from a skeptical point of view. The "faces" were greatly enhanced to make them look more realistic. Commendable was the use of an effective graphics technique whereby the chart was placed on the screen beside the chart-bearing photo, then flopped so as to superimpose it on the photo.

Skeptics who watched the segment with me laughed loudly at the conclusion of my interview when the narrator commented, "Rational explanations

may satisfy some people, but. . . ." This comment was followed by various "miracle" claims that went unchallenged. I had not only explained how the "golden door" photos are made, but I showed several of them for the "Unsolved Mysteries" camera (Figure 1); but this was omitted from the program even though such photos were described as "mysterious." Also omitted were my explanations for silver rosaries supposedly turning to gold—either due to tarnishing or the rubbing off of the silver plating to expose the copper or brass beneath (Nickell 1993b). I included an explanation for a new claim: Glass-beaded rosaries were supposedly turning, momentarily, a golden color; I theorized that the faceted beads were reflecting the golden light of the sun.

Much ado was made about people reportedly seeing the sun pulsate, spin, or exhibit other phenomena—all due to optical effects resulting from staring at the sun, which I discussed at some length in my *Looking for a Miracle* (1993b). Many pilgrims also had claimed to see showers of golden flakes, which I attributed to their having looked at the bright sun (even though some insisted they had not looked directly at the sun), or to a dappling of sunlight through the canopy of tree leaves, or to the power of suggestion—or a combination. All of my comments about such other phenomena, including faith healing, ended up on the cutting-room floor.

The program did end on a rather skeptical note, with program host Robert Stack stating: "It is interesting to note that the local Catholic church has declined to recognize Valley Hill as anything out of the ordinary. The rest of us will have to decide for ourselves." Unfortunately, they will have to decide without the benefit of all of the skeptical evidence. That's why I sometimes refer to the television show as "Unsolving Mysteries."

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—, 1993b. *Looking for a Miracle: Weeping Icons, Relics, Stigmata, Visions and Healing Cures*. Pp.177-178, 196-197. Amherst, N.Y.: Prometheus Books. □

Evaluation of the Military's Twenty-Year Program on Psychic Spying

RAY HYMAN

In 1995 the Central Intelligence Agency contracted for an outside evaluation of 20 years of until-then classified government-funded programs in "remote viewing" (ESP). Psychologist Ray Hyman was one of two experts asked to review the research. Beginning on this page Hyman presents an overview of the program and of the evaluation. In a second article (pages 24-26), Hyman criticizes statements by some paranormal proponents about the evaluation and provides valuable critical perspective not just on this government-sponsored "Stargate" program, but also on the latest claims about parapsychology overall. On page 27, we print a major portion of the Conclusions section of the report commissioned by the CIA.—EDITOR

In the early 1970s the Central Intelligence Agency supported a program to see if a form of extrasensory perception (ESP) called "remote viewing" could assist with intelligence gathering. The program consisted of laboratory studies conducted at Stanford Research Institute (SRI) under the direction of Harold Puthoff and Russel Targ. In addition to the laboratory research, psychics were employed to provide information on targets of interest to the intelligence community.

The CIA abandoned this program in the late 1970s because it showed no promise. The Defense Intelligence

Agency (DIA) took over the program and continued supporting it until it was suspended in the spring of 1995. Under the DIA the program was named *Stargate* and consisted of three components. One component kept track of what foreign countries were doing in the area of psychic warfare and intelligence gathering. A second component, called the "Operations Program," involved six, and later three, psychics on the government payroll who were available to any government agency that wanted to use their services. The third component was the laboratory research on psychic phenomena first carried out at SRI and later transferred to Science Applications International Corporation (SAIC) in Palo Alto, California.

This program was secret until it was declassified in early 1995. The declassification was done to enable an outside evaluation of the program. Because of some controversies within the program, a Senate committee decided to transfer the program from the DIA back to the CIA. The CIA, before deciding the fate of the program, contracted with the American Institutes for Research (A.I.R.), Washington, D.C., to conduct the evaluation. The A.I.R. hired Jessica Utts, a statistician at the University of California at Davis, and me, a psychologist at the University of Oregon, as the evaluation panel.

The idea was to have a balanced evaluation by hiring an expert who was known to support the reality of psychic phenomena and one who was skeptical about the existence of psi. Utts, in addition to being a highly regarded statistician, has written and argued for the existence of psychic phenomena and has been a consultant to the SRI and SAIC remote-viewing experiments.

Most recently, I served on the National Research Council committee that issued a report stating that the case for psychic phenomena had no scientific justification (*SI*, Fall 1988). In the January 1995 issue of *Psychological Bulletin* I supplied a skeptical commentary on the article by Daryl Bem and Charles Honorton that argued that the recent ganzfeld studies provided evidence for replicable experiments on ESP (See *SI*, Fall 1985).

At the beginning of last summer, Utts and I were each supplied with copies of all the reports that had been generated by the remote-viewing program during the 20 years of its existence. This consisted of three large cartons of documents.

We met with Edwin May, the principal investigator who took over this remote-viewing research project (after Puthoff and Targ left SRI in the 1980s); representatives of the CIA; and

Ray Hyman is a cognitive psychologist and professor of psychology at the University of Oregon, Eugene. He was one of the two members of the panel hired to evaluate for the CIA the remote-viewing program for intelligence gathering.

representatives of A.I.R. The purpose of the meeting was to coordinate our efforts as well as to focus our efforts on those remote-viewing studies that offered the most promise of being scientifically respectable. May helped identify the ten best studies for Utts and me to evaluate.

While Utts and I focused on the best laboratory studies, the two psychologists from A.I.R. conducted an evaluation of the recent operational uses of the three remote viewers (psychics) then on the government payroll. We all agreed that any scientifically meaningful evaluation of these operational psychic intelligence uses was impossible. The operational program had been kept separate from the laboratory research, and the work of the remote viewers was conducted in ways that precluded meaningful evaluation. Nevertheless, we all cooperated in developing a structured interview that the A.I.R. staff could use on the program officer, the three psychics, and the individuals or agencies that had used the services of these remote viewers.

The users said, through the interviews, that the remote viewers did not supply information that was useful in intelligence or other contexts.

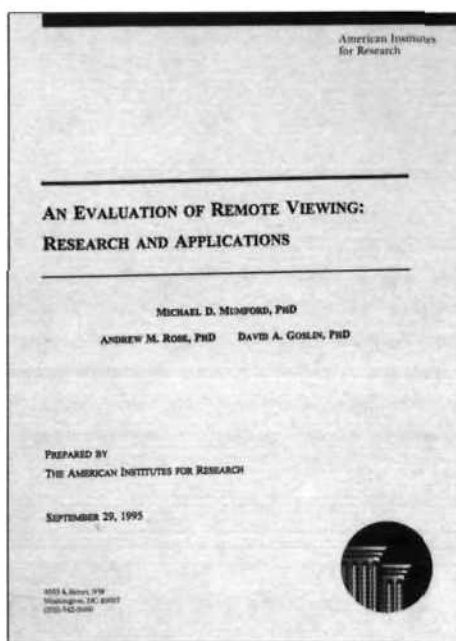
The remote-viewing experiments that Utts and I evaluated had, for the most part, been conducted since 1986 and presumably had been designed to meet the objections that the National Research Council and other critics had aimed at the remote-viewing experiments conducted before 1986. These experiments varied in a number of ways but the typical experiment had these components:

1. The remote viewers were always selected from a small pool of previously "successful" viewers. May emphasized that, in his opinion, this ability is possessed by approximately one in every 100 persons. Therefore, they used the same set of "gifted" view-

ers in each experiment.

2. The remote viewer would be isolated with an experimenter in a secure location. At another location, a sender would look at a target that had been randomly chosen from a pool of targets. The targets were usually pictures taken from the *National Geographic*. During the sending period the viewer would describe and draw whatever impressions came to mind. After the session, the viewer's description and a set of five pictures (one of them being the actual target picture) would be given to a judge. The judge would then decide which picture was closest to the viewer's description. If the actual target was judged closest to the description, this was scored as a "hit."

In this simplified example I have presented, we would expect one hit by chance 20 percent of the time. If a viewer consistently scored more hits than chance, this was taken as evidence for psychic functioning. This description captures the spirit of the experimental evidence although I have simpli-



fied matters for convenience of exposition. In fact, the judging was somewhat more complex and involved rank ordering each potential target against the description.

A hit rate better than the chance baseline of 20 percent can be considered evidence for remote viewing, of course, only if all other nonpsychic possibilities have been eliminated. Obvious nonpsychic possibilities would be inadequacies of the statistical model, inadequacies of the randomization procedure in selecting targets or arranging them for judging, sensory leakage from target to viewer or from target to judge, and a variety of other sources of bias.

The elimination of these sources of above-chance hitting is no easy task. The history of physical research and parapsychology presents example after example of experiments that were advertised as having eliminated all nonpsychic possibilities and that were discovered by subsequent investigators to have had subtle and unsuspected biases. Often it takes years before the difficulties with a new experimental design or program come to light.

Utts and I submitted separate evaluations. We agreed that the newly unclassified experiments seemed to have eliminated the obvious defects of the earlier remote-viewing experiments. We also agreed that these ten best experiments were producing hit rates consistently above the chance baseline. We further agreed that a serious weakness of this set of studies is the fact that only one judge, the principal investigator, was used in all the remote-viewing experiments. We agreed that these results remain problematical until it can be demonstrated that significant hitting will still occur when independent judges are used.

Beyond this we disagreed dramatically. Utts concluded that these results, when taken in the context of other contemporary parapsychological experiments—especially the ganzfeld experiments—prove the existence of psychic functioning. I find it bizarre to jump from these cases of statistically significant hitting to the conclusion that a paranormal phenomenon has been proven. As I pointed out, we both agreed that the results of the new remote-viewing experiments have to be independently judged. If independent judges cannot produce the same significant hit rates, this alone would suffice to discard these experiments as evidence of psychic abilities. More to the point, just because these experiments are less than 10 years old and have only recently been opened to public scrutiny, we do not know if they contain hidden and subtle biases or if they can be independently replicated in other laboratories. The history of parapsychology is replete with “successful” experiments that subsequently could not be replicated.

Utts is obviously impressed with consistencies between the new remote-viewing experiments and the current ganzfeld experiments. Where she sees consistencies, I see inconsistencies. The ganzfeld experiments all use the subjects as their own judges. The claim is that the results do not show up when independent judges are used. The exact opposite is true of remote-viewing experiments. When subjects are used as their own judges in remote-viewing experiments, the outcome is rarely, if

ever, successful. Successful results come about only when the judges are someone other than the remote viewer. The recent ganzfeld experiments get successful results only with dynamic (animated video clips) rather than static targets. The remote-viewing experiments mostly use static targets. I could go on spelling out such inconsistencies, but this would be futile.

Even if the consistent hit rate above chance can be replicated with independent remote-viewing experiments, this would be a far cry from having demonstrated something paranormal. Parapsychologist John Palmer has argued that the successful demonstration of an above-chance statistical anomaly is insufficient to prove a paranormal cause. This is because remote viewing and ESP are currently only defined negatively.

“The ‘Operations Program’ involved six, and later three, psychics on the government payroll who were available to any government agency.”

ESP is what is left after the experimenter has eliminated all obvious, normal explanations.

Several problems are created by trying to establish the existence of a phenomenon on the basis of a negative definition. For one thing, if ESP is shown by any departure from chance that has no obvious normal explanation, there is no way to show that the observed departures are due to one or several causes. Also, the claim for psi can never be falsified, because any glitch in the data can be used as evidence for psi. What is needed, of course, is a positive theory of psychic functioning that enables us to tell *when psi is present* and *when it is absent*. As far as I can tell, every other discipline that claims to be a science deals with phenomena whose presence or absence can clearly be decided.

The evidence for N-rays, mitogenetic radiation, polywater, cold fusion, and a host of other “phenomena” that no longer are considered to exist was much clearer and stronger than the current evidence for psychic functioning. In these cases of alleged phenomena, at least we were given criteria to decide when the reputed phenomena were supposed to be present and when they were not. Nothing like this exists in parapsychology. Yet the claim is being made that a phenomenon has been clearly demonstrated.

Fortunately, we do not have to squabble over whether the current remote-viewing experiments do or do not prove the existence of an anomalous phenomenon. We can follow the normal and accepted scientific process of (1) waiting to see if independent laboratories can replicate the above chance hitting conditions using appropriate controls; (2) seeing whether the researchers can devise positive tests to enable us to decide when psi is present and when it is absent; (3) seeing whether they can specify conditions under which we can reliably observe the phenomenon; (4) showing that the phenomenon varies in lawful ways with specifiable variables. Every science—except parapsychology—has met this accepted procedure. So far, parapsychology has not even come close to meeting any of these criteria. It is premature to draw any conclusions. We will simply have to wait and see. If history is a guide, then this will be a long wait, indeed. □

The Evidence for Psychic Functioning: Claims vs. Reality

RAY HYMAN

The recent media frenzy over the Stargate report violated the truth. Sober scientific assessment has little hope of winning in the public forum when pitted against unsubstantiated and unchallenged claims of "psychics" and psychic researchers—especially when the claimants shamelessly indulge in hyperbole. While this situation may be depressing, it is not unexpected. The proponents of the paranormal have seized an opportunity to achieve by propaganda what they have failed to achieve through science.

Most of these purveyors of psychic myths should not be taken seriously. However, when one of the persons making extreme claims is Jessica Utts, who is a professor of statistics at the University of California at Davis, this is another matter. Utts has impressive credentials and she marshals the evidence for her case in an effective way. So it is important to look at the basis for what I believe are extreme claims, even for a parapsychologist. Here is what Utts writes in her report on the Stargate program:

Using the standards applied to any other area of science, it is concluded that psychic functioning has been well established. The statistical results of the studies examined are far beyond what is expected by chance. Arguments that these results could be due to methodological flaws in the experiments are soundly refuted. Effects of similar magnitude to those found in government-sponsored research at SRI [Stanford Research Institute] and SAIC [Science Applications International Corporation] have been replicated at a number of laboratories across the world. Such consistency cannot be readily explained by claims of flaws or fraud. . . . [Psychic functioning] is reliable enough to be replicated in properly conducted experiments, with sufficient trials to achieve the long-run statistical results needed for replicability. . . . Precognition, in which the answer is known to no one until a future time, appears to work quite well. . . . There is little benefit to continuing experiments designed to offer proof, since there is little more to be offered to anyone who does not accept the current collection of data.

For what it is worth, I happen to be one of those "who does not accept the current collection of data" as proving psychic functioning. Indeed, I do not believe that "the current collection of data" justifies that an anomaly of any sort has been demonstrated, let alone a paranormal anomaly. Although Utts and I—in our capacities as coevaluators of the Stargate pro-

ject—evaluated the same set of data, we came to very different conclusions. If Utts's conclusion is correct, then the fundamental principles that have so successfully guided the progress of science from the days of Galileo and Newton to the present must be drastically revised. Neither relativity theory nor quantum mechanics in their present versions can cope with a world that harbors the psychic phenomena so boldly proclaimed by Utts and her parapsychological colleagues.

So, it is worth looking at the evidence that Utts uses to buttress her case. Unfortunately, many of the issues that this evidence raises are technical or require long and tedious refutations. This is not the place to develop this lengthy rebuttal. Instead, I will briefly list the sources of Utts's evidence and try to provide at least one or two simple reasons why they do not, either singly or taken together, justify her conclusions. As I understand it, Utts supports her conclusion with the following sources of evidence:

1. Meta-analyses of Previous Parapsychological Experiments

In a meta-analysis, an investigator uses statistical tools to pool the data from a series of similar experiments published over a period of time that may involve several different investigators and laboratories. Although some or many of the individual experiments might have yielded weak or nonsignificant results, the pooled data can be highly significant from a statistical viewpoint. In addition to getting an overall measure of significance, the meta-analyses typically also grade each study for quality on one or more dimensions. The idea is to see if the successful outcomes are correlated with poor quality. If so, this counts against the evidence for paranormal functioning. If not, then this is proclaimed as evidence that the successful outcomes were not due to flaws.

In the four major meta-analyses of previous parapsychological research, the pooled data sets produced astronomically significant results while the correlation between successful outcome and rated quality of the experiments was essentially zero.

Much can be written at this point. The major point I would make, however, is that drawing conclusions from meta-analytic studies is like having your cake and eating it too. The same data are being used to generate and test a hypothesis. The proper use of meta-analysis is to generate hypotheses, which then must be independently tested on new data. As far as I know, this has yet to be done. The correlation between quality and outcome also must be suspect because the ratings are not done blindly.

As far as I can tell, I was the first person to do a meta-analysis on parapsychological data. I did a meta-analysis of the original ganzfeld experiments as part of my critique of those experiments. My analysis demonstrated that certain flaws, especially quality of randomization, did correlate with outcome. Successful outcomes correlated with inadequate methodology. In his reply to my critique, Charles Honorton did his own meta-analysis of the same data. He too scored for flaws, but he devised scoring schemes different from mine. In his analysis, his quality ratings did not correlate with outcome. This came about because, in part, Honorton found more flaws in unsuc-

successful experiments than I did. On the other I found more flaws in successful experiments than Honorton did. Presumably, both Honorton and I believed we were rating quality in an objective and unbiased way. Yet, both of us ended up with results that matched our preconceptions.

So far, other than my meta-analysis, all the meta-analyses evaluating quality and outcome have been carried out by parapsychologists. We might reasonably expect that the findings will differ with skeptics as raters.

These are just two, but very crucial, reasons why the meta-analyses conducted so far on parapsychological data cannot be used as evidence for psi.

2. The Original Ganzfeld Experiments

These consisted of 42 experiments (by Honorton's count) of which 55 percent had been claimed as producing significant results in favor of ESP. My meta-analysis and evaluation of these experiments showed that this database did not justify concluding that ESP was demonstrated. Honorton's meta-analysis and rebuttal suggests otherwise. Utts naturally relies on Honorton's meta-analysis and ignores mine. In our joint paper, both Honorton and I agreed that there were sufficient problems with this original database that nothing could be concluded until further replications, conducted according to specified criteria, appeared.

3. The Autoganzfeld Experiments

This series of experiments, conducted over a period of six years, is so named because the collection of data was partially automated. When this set of experiments was first published in the *Journal of Parapsychology* in 1990, it was presented as a successful replication of the original ganzfeld experiments. Moreover, these experiments were said to have been conducted according to the criteria set out by Honorton and me. This indeed seemed to be the case with the strange exception of the procedure for randomizing targets at presentation and judging. Even in writing our joint paper, Honorton argued with me that careful randomization was not necessary in the ganzfeld experiments because each subject appears only once. I disagreed with Honorton, but even by his own reasoning, randomization is not as important if you believe that the subject is the sole source of the final judgment. But this was blatantly not the case in the autoganzfeld experiments. The experimenter, who was not so well shielded from the sender as the subject, interacted with the subject during the judging process. Indeed, during half of the trials the experimenter deliberately prompted the subject during the judging procedure. This means that the judgments from trial to trial were not strictly independent.

However, from the original published report, I had little reason to question the methodology of these experiments. What I did question was the claim that they were consistent with the original ganzfeld experiments. I pointed out a number of ways that the two outcomes were inconsistent. Not until I was asked to write a response to a new presentation of these experiments in the January 1994 issue of the *Psychological Bulletin* did I get

an opportunity to scrutinize the raw data. Unfortunately, I did not get all of the data, especially the portion that I needed to make direct tests of the randomizing procedures. But my analyses of what I did get uncovered some peculiar and strong patterns in the data. All of the significant hitting was done on the second or later appearance of a target. If we examined the guesses against just the first occurrences of targets, the result is consistent with chance. Moreover, the hit rate rose systematically with each additional occurrence of a target. This suggests to me a possible flaw. Daryl Bem, the coauthor with Honorton of the *Psychological Bulletin* paper, responded that it might reveal another peculiarity of psychic phenomena. The reason why my finding is of concern is that all the targets were on videotape and played on tape players during presentation. At the very least, the peculiar pattern I identified suggests that we need to require that when targets and decoys are presented to the subjects for judging, they all have been run through the machine the exact same number of times. Otherwise there might be nonparanormal reasons why one of the video clips appears different to the subjects.

Subsequent to my response, I have learned about other possible problems with the autoganzfeld experiments. The point of this is to show that it takes time and critical scrutiny to realize that what at first seems like an airtight series of experiments has a variety of possible weaknesses. I concluded, and do so even more strongly now, that the autoganzfeld experiments constitute neither a successful replication of the original ganzfeld experiments nor a sufficient body of data to conclude that ESP has finally been demonstrated. This new set of experiments needs independent replication with tighter controls.

4. Apparent Replications of the Autoganzfeld Experiments

Utts points to some apparent replications of the ganzfeld experiments that have been reported at parapsychological meetings. The major one is a direct attempt to replicate the autoganzfeld experiments with better controls, done at the University of Edinburgh. The reported results were apparently significant but were due to just one of the three experimenters. The two experienced experimenters produced only chance hitting. There are some inconsistencies in these unpublished reports. Utts points to three different replications that were apparently successful. I have heard of at least two large-scale replications that were unsuccessful. None of these replications, however, has been reported in a refereed journal and none has had the opportunity to be critically scrutinized. So we cannot count these one way or the other at this time until we know the details.

5. The SAIC Experiments

Utts and I were hired as the evaluation panel to assess the results of 20 years of previously classified research on remote viewing and related ESP phenomena. In the time available to us, it was impossible to scrutinize carefully all the documents generated by this program. Instead, we focused our efforts on evaluating the ten studies done at Science Applications

International Corporation (SAIC) during the early 1990s. These were selected, in consultation with the principal investigator, as representing the best experiments in the set. These ten experiments included two that examined physiological correlates of ESP. The results were negative. Another study found a correlation between when a subject was being observed (via remote camera) and galvanic skin reactions. The remaining studies, in one way or another, dealt with various target and other factors that might influence remote viewing ability. In these studies the same set of viewers produced descriptions that were successfully matched against the correct target consistently better than chance (with some striking exceptions).

Neither Utts nor I had the time or resources to fully scrutinize the laboratory procedures or data from these experiments. Instead, we relied on what we could glean from reading the technical reports. Two of the experiments had recently been published in the *Journal of Parapsychology*. The difficulty here is that these newly declassified experiments have not been in the public arena for a sufficient time to have been carefully and critically scrutinized. As with the original ganzfeld data base and the autoganzfeld experiments, it takes careful scrutiny and a period of a few years to find the problems of newly published or revealed parapsychological experiments. One obvious problem with the SAIC experiments is that the remote viewing results were all judged by one person—the director of the program. I believe that Utts agrees with me that we have to withhold judgments on these experiments until it can be shown that independent judges can produce the same results. Beyond this, we would require, as with any other set of newly designed experiments, replication by independent laboratories before we decide that the reported outcomes can be trusted.

6. *Prima Facie* Evidence

Utts and other parapsychologists also talk about *prima facie* evidence in connection with the operational stories of the psychics (or remote viewers) employed by the government. Everyone agrees there is no way to evaluate the accounts of these attempts to use input from remote viewers in intelligence activities. This is because the data were collected in haphazard and nonsystematic ways. No consistent records are available; no attempt was made to interrogate the viewers in nonsuggestive ways; no contemporary systematic attempts to evaluate the results are there, etc.

The attempts to evaluate these operational uses after the fact are included in the American Institutes for Research (A.I.R.) report and they do not justify concluding anything about the effectiveness or reality of remote viewing. Some stories, especially those involving cases that occurred long ago and/or that are beyond actual verification, have been put forth as evidence of apparently striking hits. The claim is that these remote viewers are right on—are actually getting true psychic signals—about 20 percent of the time.

Call it *prima facie* or whatever, none of this should be considered as evidence for anything. In situations where we do have some control comparisons, we find the same degree of hitting for wrong targets (when the judge does not realize it is

the wrong target) as for the correct targets. A sobering example of this with respect to remote viewing can be found in David Marks and Richard Kammann's book *The Psychology of the Psychic* (Prometheus Books, Amherst, New York, 1980).

Psychologists, such as myself, who study subjective validation find nothing striking or surprising in the reported matching of reports against targets in the Stargate data. The overwhelming amount of data generated by the viewers is vague, general, and way off target. The few apparent hits are just what we would expect if nothing other than reasonable guessing and subjective validation are operating.

7. Consistency Among the Different Sources

Utts points to consistencies in effect sizes across the studies. More important, she points out several patterns such as bigger effect sizes with experienced subjects, etc. I do not have time or space to detail all the problems with these apparent consistencies. Many of them happen to relate to the fact that the average effect sizes in these cases are arbitrary combinations of heterogeneous sources. Moreover, where Utts detects consistencies, I find inconsistencies. I have documented some of these elsewhere; I will do so again in the near future.

Conclusions

When we examine the basis of Utts's strong claim for the existence of psi, we find that it relies on a handful of experiments that have been shown to have serious weaknesses after undergoing careful scrutiny, and another handful of experiments that have yet to undergo scrutiny or be successfully replicated. What seems clear is that the scientific community is not going to abandon its fundamental ideas about causality, time, and other principles on the basis of a handful of experiments whose findings have yet to be shown to be replicable and lawful.

Utts does assert that the findings from parapsychological experiments can be replicated with well-controlled experiments given adequate resources. But this is a hope or promise. Before we abandon relativity and quantum mechanics in their current formulations, we will require more than a promissory note. We will want, as is the case in other areas of science, solid evidence that these findings can, indeed, be produced under specified conditions.

Again, I do not have time to develop another part of this story. Because even if Utts and her colleagues are correct and we were to find that we could reproduce the findings under specified conditions, this would still be a far cry from concluding that psychic functioning has been demonstrated. This is because the current claim is based entirely upon a negative outcome—the sole basis for arguing for ESP is that extra-chance results can be obtained that apparently cannot be explained by normal means. But an infinite variety of normal possibilities exist and it is not clear than one can control for all of them in a single experiment. You need a positive theory to guide you as to what needs to be controlled, and what can be ignored. Parapsychologists have not come close to this as yet. □

'Remote Viewing . . . Has Not Been Shown to Have Value in Intelligence Operations'

Here are the final paragraphs from the Conclusions section of the report of the study conducted for the Central Intelligence Agency evaluating government-funded work on remote viewing.*

"Our conclusion is that at this juncture it would be premature to assume that we have a convincing demonstration of a paranormal phenomenon. In fact, until a plausible causal mechanism has been identified, and competing explanations carefully investigated, we cannot interpret the set of anomalous observations localized to one laboratory with one set of methods. Given these observations, and the methodological problems noted above, we must conclude that

- Adequate experimental and theoretical evidence for the existence of remote viewing as a parapsychological phenomenon has not been provided by the research component of current program. A significant change in focus and methods would be necessary to justify the additional laboratory research within the current program.

This is not to say definitely that paranormal phenomena do not exist. At some point in time, adequate evidence might be provided for the existence of remote viewing. With this point in mind, we considered the potential applications of remote viewing in intelligence gathering.

The first consideration involves

**An Evaluation of Remote Viewing: Research and Applications, by Michael D. Mumford, Andrew M. Rose, and David A. Goslin. The American Institutes for Research, 3333 K Street NW, Washington, DC 20007, September 1995.*

the conditions under which remote viewing occurs and if those conditions constrain its application for intelligence purposes. Prior research suggests that distance is not a constraint and, indeed, that a sender or "beacon" may not be necessary. However, other characteristics of intelligence gathering indicate that remote viewing is of little value. Intelligence operations do not provide targets of a fixed bandwidth; rather, targets and target types are highly variable. Moreover, the apparent necessity for feedback to the remote viewers would preclude its use in intelligence gathering operations. Finally, intelligence information is most valuable if it is concrete and specific, and reliably interpretable. Unfortunately, the research conducted to date indicates that the remote viewing phenomenon fails to meet those preconditions. Therefore, we conclude that

- Remote viewing, as exemplified by the efforts in the current program, has not been shown to have value in intelligence operations.

This point was also graphically illustrated in the user interviews, where it was found that remote viewings have never provided an adequate basis for "actionable" intelligence operations—that is, information sufficiently valuable or compelling so that action was taken as a result. If a phenomenon does not contribute to intelligence operations, it is difficult to see what justification exists for its continued application. This is particularly true in the case of remote viewing, where a large amount of irrelevant, erroneous information is provided and little agreement is observed among viewers' reports.

Particularly troublesome from

the perspective of the application of paranormal phenomena is the fact that the remote viewers and project managers reported that remote viewing reports were changed to make them consistent with known background cues. While this was appropriate in that situation, it makes it impossible to interpret the role of the paranormal phenomenon independently. Also, it raises some doubts about some well publicized cases of dramatic hits, which, if taken at face value, could not easily be attributed to background cues. In at least some of these cases, there is reason to suspect, based on both subsequent investigations and the viewers' statement that reports had been "changed" by previous program managers, that substantially more background information was available than one might at first assume. Give[n] these observations, it is difficult to argue that available evidence justifies application of remote viewing in intelligence operations.

In summary, two clear-cut conclusion[s] emerge from our examination of the operational component of the current program. First, as stated above, evidence for the operational value of remote viewing is not available, even after a decade of attempts. Second, it is unlikely that remote viewing—as currently understood—even if its existence can be unequivocally demonstrated, will prove of any use in intelligence gathering due to the conditions and constraints applying in intelligence operations and the suspected characteristics of the phenomenon. We conclude that

- Continued support for the operational component of the current program is not justified." □

Does Truth Matter?

Science, Pseudoscience, and Civilization

Science has beauty, power, and majesty that can provide spiritual as well as practical fulfillment. But superstition and pseudoscience keep getting in the way, providing easy answers, casually pressing our awe buttons, and cheapening the experience.

CARL SAGAN

Do we care what's true? Does it matter?

*... where ignorance is bliss,
'Tis folly to be wise*

wrote the poet Thomas Gray. But is it? Edmund Way Teale in his 1950 book *Circle of the Seasons* understood the dilemma better:

It is morally as bad not to care whether a thing is true or not, so long as it makes you feel good, as it is not to care how you got your money as long as you have got it.

It's disheartening to discover government corruption and incompetence, for example; but is it better *not* to know

This article and the four shorter excerpts accompanying it are from Carl Sagan's forthcoming book, *The Demon-Haunted World: Science As a Candle in the Dark*, to be published in early April by Random House. Excerpted by permission of the author and publisher.

about it? Whose interest does ignorance serve? If we humans bear, say, hereditary propensities toward the hatred of strangers, isn't self-knowledge the only antidote? If we long to believe that the stars rise and set for us, that we are the reason there *is* a Universe, does science do us a disservice in deflating our conceits?

In *The Genealogy of Morals*, Friedrich Nietzsche, as so many before and after, decries the "unbroken progress in the self-belittling of man" brought about by the scientific revolution. Nietzsche mourns the loss of "man's belief in his dignity, his uniqueness, his irreplaceability in the scheme of existence." For me, it is far better to grasp the Universe as it really is than to persist in delusion, however satisfying and reassuring. Which attitude is better geared for our long-term survival? Which gives us more leverage on our future? And if our naïve self-confidence is a little undermined in the process, is that altogether such a loss? Is there not cause to welcome it as a maturing and character-building experience?

To discover that the Universe is some 8 to 15 billion and not 6 to 12 thousand years old¹ improves our appreciation of its sweep and grandeur; to entertain the notion that we are a particularly complex arrangement of atoms, and not some breath of divinity, at the very least enhances our respect for atoms; to discover, as now seems probable, that our planet is one of billions of other worlds in the Milky Way Galaxy and that our galaxy is one of billions more, majestically expands the arena of what is possible; to find that our ancestors were also the ancestors of apes ties us to the rest of life and makes possible important—if occasionally rueful—reflections on human nature.

Plainly there is no way back. Like it or not, we are stuck with science. We had better make the best of it. When we finally come to terms with it and fully recognize its beauty and

its power, we will find, in spiritual as well as in practical matters, that we have made a bargain strongly in our favor.

But superstition and pseudoscience keep getting in the way, distracting us, providing easy answers, dodging skeptical scrutiny, casually pressing our awe buttons and cheapening the experience, making us routine and comfortable practitioners as well as victims of credulity. Yes, the world *would* be a more interesting place if there were UFOs lurking in the deep waters off Bermuda and eating ships and planes, or if dead people could take control of our hands and write us messages. It would be fascinating if adolescents were able to make telephone handsets rocket off their cradles just by thinking at them, or if our dreams could, more often than can be explained by chance and our knowledge of the world, accurately foretell the future.

These are all instances of pseudoscience. They purport to use the methods and findings of science, while in fact they are faithless to its nature—often because they are based on insufficient evidence or because they ignore clues that point the other way. They ripple with gullibility. With the uninformed cooperation (and often the cynical connivance) of newspapers, magazines, book publishers, radio, television, movie producers, and the like, such ideas are easily and widely available. Far more difficult to come upon are the alternative, more challenging, and even more dazzling findings of science.

Pseudoscience is easier to contrive than science because distracting confrontations with reality—where we cannot control the outcome of the comparison—are more readily avoided. The standards of argument, what passes for evidence, are much more relaxed. In part for these same reasons, it is much easier to present pseudoscience to the general public than science. But this isn't enough to explain its popularity.

Naturally people try various belief systems on for size, to see if they help. And if we're desperate enough, we become all too willing to abandon what may be perceived as the heavy burden of skepticism. Pseudoscience speaks to powerful emotional needs that science often leaves unfulfilled. It caters to fantasies about personal powers we lack and long for (like those attributed to comic book superheroes today, and earlier, to the gods). In some of its manifestations, it offers satisfaction of spiritual hungers, cures for disease, promises that death is

Science as a Source of Spirituality

In its encounter with Nature, science invariably elicits a sense of reverence and awe. The very act of understanding is a celebration of joining, merging, even if on a very modest scale, with the magnificence of the Cosmos. And the cumulative worldwide buildup of knowledge over time converts science into something only a little short of a transnational, transgenerational metamind.

"Spirit" comes from the Latin word "to breathe." What we breathe is air, which is certainly matter, however thin. Despite usage to the contrary, there is no necessary implication in the word "spiritual" that we are talking of anything other than matter (including the matter of which the brain is made), or anything outside the realm of science. On occasion, I will feel free to use the word. Science is not only compatible with spirituality; it is a profound source of spirituality. When we recognize our place in an immensity of light-years and in the passage of ages, when we grasp the intricacy, beauty, and subtlety of life, then that soaring feeling, that sense of elation and humility combined, is surely spiritual. So are our emotions in the presence of great art or music or literature, or of acts of exemplary selfless courage such as those of Mohandas Gandhi or Martin Luther King, Jr. The notion that science and spirituality are somehow mutually exclusive does a disservice to both.

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not the end. It reassures us of our cosmic centrality and importance. It vouchsafes that we are hooked up with, tied to, the Universe.² Sometimes it's a kind of halfway house between old religion and new science, mistrusted by both.

At the heart of some pseudoscience (and some religion also, New Age and Old) is the idea that wishing makes it so. How satisfying it would be, as in folklore and children's stories, to fulfill our heart's desire just by wishing. How seductive this notion is, especially when compared with the hard work and good luck usually required to achieve our hopes. The enchanted fish or the genie from the lamp will grant us three wishes—anything we want except more wishes. Who has not pondered—just to be on the safe side, just in case we ever come upon and accidentally rub an old, squat brass oil lamp—what to ask for?

I remember, from childhood comic strips and books, a top-hatted, mustachioed magician who brandished an ebony walking stick. His name was Zatara. He could make anything happen, anything at all. How did he do it? Easy. He uttered his commands backwards. So if he wanted a million dollars, he would say "srallo noillim a em evig." That's all there was to it. It was something like prayer, but much surer of results.

I spent a lot of time at age eight experimenting in this vein, commanding stones to levitate: "esir, enots." It never worked. I blamed my pronunciation.

* * *

Pseudoscience is embraced, it might be argued, in exact proportion as real science is misunderstood—except that the language breaks down here. If you've never heard of science (to say nothing of how it works), you can hardly be aware you're embracing pseudoscience. You're simply thinking in one of the ways that humans always have. Religions are often the state-protected nurseries of pseudoscience, although there's no reason why religions have to play that role. In a way, it's an artifact from times long gone. In some countries nearly everyone believes in astrology and precognition, including government leaders. But this is not simply drummed into them by religion; it is drawn out of the enveloping culture in which everyone is comfortable with these practices, and affirming testimonials are everywhere.

Most of the case histories I will relate are American—because these are the cases I know best, not because pseudoscience and mysticism are more prominent in the United States than elsewhere. But the psychic spoonbender and extraterrestrial channeler Uri Geller hails from Israel. As tensions rise between Algerian secularists and Moslem fundamentalists, more and more people are discreetly consulting the country's 10,000 soothsayers and clairvoyants (about half of whom operate with a license from the government). High French officials, including a former president of France, arranged for millions of dollars to be invested in a scam (the Elf-Aquitaine scandal) to find new petroleum reserves from the air. In Germany, there is concern about carcinogenic

"Earth rays" undetectable by science; they can be sensed only by experienced dowers brandishing forked sticks. "Psychic surgery" flourishes in the Philippines. Ghosts are something of a national obsession in Britain. Since World War II, Japan has spawned enormous numbers of new religions featuring the supernatural. An estimated 100,000 fortunetellers flourish in Japan; the clientele are mainly young women. Aum Shinrikyo, a sect thought to be involved in the release of the nerve gas sarin in the Tokyo subway system in March 1995, features levitation, faith healing, and ESP among its main tenets. Followers, at a high price, drank the "miracle pond" water—from the bath of Asaraha, their leader. In Thailand, diseases are treated with pills manufactured from pulverized sacred Scripture. "Witches" are today being burned in South Africa. Australian peace-keeping forces in Haiti rescue a woman tied to a tree; she is accused of flying from rooftop to rooftop, and sucking the blood of children. Astrology is rife in India, geomancy widespread in China.

Perhaps the most successful recent global pseudoscience—by many criteria, already a religion—is the Hindu doctrine of transcendental meditation (TM). The soporific homilies of its founder and spiritual leader, the Maharishi Mahesh Yogi, can be seen on television. Seated in the yogi position, his white hair here and there flecked with black, surrounded by garlands and floral offerings, he has a *look*. One day while channel surfing we came upon this visage. "You know who that is?" asked our four-

The Metaphysicist Has No Laboratory

The truth may be puzzling or counterintuitive. It may contradict deeply held beliefs. Experiment is how we get a handle on it.

At a dinner many decades ago, the physicist Robert W. Wood was asked to respond to the toast, "To physics and metaphysics." By "metaphysics," people then meant something like philosophy, or truths you could recognize just by thinking about them. They could also have included pseudoscience. Wood answered along these lines:

The physicist has an idea. The more he thinks it through, the more sense it seems to make. He consults the scientific literature. The more he reads, the more promising the idea becomes. Thus prepared, he goes to the laboratory and devises an experiment to test it. The experiment is painstaking. Many possibilities are checked. The accuracy of measurement is refined, the error bars reduced. He lets the chips fall where they may. He is devoted only to what the experiment teaches. At the end of all this work, through careful experimentation, the idea is found to be worthless. So the physicist discards it, frees his mind from the clutter of error, and moves on to something else.

The difference between physics and metaphysics, Wood concluded as he raised his glass high, is not that the practitioners of one are smarter than the practitioners of the other. The difference is that the metaphysicist has no laboratory.

Note

1. As the pioneering physicist Benjamin Franklin put it, "In going on with these experiments, how many pretty systems do we build, which we soon find ourselves obliged to destroy?" At the very least, he thought, the experience sufficed to "help to make a vain Man humble."

year-old son. "God." The worldwide TM organization has an estimated valuation of \$3 billion. For a fee they promise through meditation to be able to walk you through walls, to make you invisible, to enable you to fly. By thinking in unison they have, they say, diminished the crime rate in Washington, D.C., and caused the collapse of the Soviet Union, among other secular miracles. Not one smattering of real evidence has been offered for any such claims. TM sells folk medicine, runs trading companies, medical clinics and "research" universities, and has unsuccessfully entered politics. In its oddly charismatic leader, its promise of community, and the offer of magical powers in exchange for money and fervent belief, it is typical of many pseudosciences marketed for sacerdotal export.

At each relinquishing of civil controls and scientific education another little spurt in pseudoscience occurs. Leon Trotsky described it for Germany on the eve of the Hitler takeover (but in a description that might equally have applied to the Soviet Union of 1933):

Not only in peasant homes, but also in city skyscrapers, there lives along side the twentieth century the thirteenth. A hundred million people use electricity and still believe in the magic powers of signs and exorcisms. . . . Movie stars go to mediums. Aviators who pilot miraculous mechanisms created by man's genius wear amulets on their sweaters. What inexhaustible reserves they possess of darkness, ignorance and savagery!

Russia is an instructive case. Under the tsars, religious superstition was encouraged, but scientific and skeptical thinking—except by a few tame scientists—was ruthlessly expunged. Under Communism, both religion and pseudoscience were systematically suppressed—except for the superstition of the state ideological religion. It was advertised as scientific, but fell as far short of this ideal as the most unself-critical mystery cult. Critical thinking—except by scientists in hermetically sealed compartments of knowledge—was recognized as dangerous, was not taught in the schools, and was punished where expressed. As a result, post-Communism, many Russians view science with suspicion. When the lid was lifted, as was also true of virulent ethnic hatreds, what had all along been bubbling subsurface was exposed to view. The region is now awash in UFOs, poltergeists, faith healers, quack medi-

cines, magic waters, and old-time superstition. A stunning decline in life expectancy, increasing infant mortality, rampant epidemic disease, subminimal medical standards, and ignorance of preventative medicine all work to raise the threshold at which skepticism is triggered in an increasingly desperate population. As I write, the electorally most popular member of the Duma, a leading supporter of the ultranationalist Vladimir Zhirinovksy, is one Anatoly Kashpirovsky—a faith healer who remotely cures diseases ranging from hernias to AIDS by glaring at you out of your television set. His face starts stopped clocks.

A somewhat analogous situation exists in China. After the death of Mao Zedong and the gradual emergence of a market economy, UFOs, channeling, and other examples of Western

pseudoscience emerged, along with such ancient Chinese practices as ancestor worship, astrology, and fortune telling—especially that version that involves throwing yarrow sticks and working through the hoary tetragrams of the *I Ching*. The government newspaper lamented that "the superstition of feudal ideology is reviving in our countryside." It was (and remains) a rural, not primarily an urban, affliction.

Individuals with "special powers" gained enormous followings. They could, they said, project Qi, the "energy field of the Universe," out of their bodies to change the molecular structure of a chemical 2000 kilometers away, to communicate with aliens, to cure diseases. Some patients died under the ministrations of one of these "masters of Qi Gong" who was arrested and convicted

The Siren Song of Unreason

A Candle in the Dark is the title of a courageous, largely Biblically-based, book by Thomas Ady, published in London in 1656, attacking the witchhunts then in progress as a scam "to delude the people." Any illness or storm, anything out of the ordinary, was popularly attributed to witchcraft. Witches must exist, Ady quoted the "witchmongers" as arguing—"else how should these things be, or come to pass?" For much of our history, we were so fearful of the outside world, with its unpredictable dangers, that we gladly embraced anything that promised to soften or explain away the terror. Science is an attempt, largely successful, to understand the world, to get a grip on things, to get hold of ourselves, to steer a safe course. Microbiology and meteorology now explain what only a few centuries ago was considered sufficient cause to burn women to death.

Ady also warned of the danger that "the Nations [will] perish for lack of knowledge." Avoidable human misery is more often caused not so much by stupidity as by ignorance, particularly our ignorance about ourselves. I worry that, especially as the Millennium edges nearer, pseudoscience and superstition will seem year by year more tempting, the siren song of unreason more sonorous and attractive. Where have we heard it before? Whenever our ethnic or national prejudices are aroused, in times of scarcity, during challenges to national self-esteem or nerve, when we agonize about our diminished cosmic place and purpose, or when fanaticism is bubbling up around us—then, habits of thought familiar from ages past reach for the controls.

The candle flame gutters. Its little pool of light trembles. Darkness gathers. The demons begin to stir.

in 1993. Wang Hongcheng, an amateur chemist, claimed to have synthesized a liquid, small amounts of which, when added to water, would convert it to gasoline or the equivalent. For a time he was funded by the army and the secret police, but when his invention was found to be a scam he was arrested and imprisoned. Naturally the story spread that his misfortune resulted not from fraud, but from his unwillingness to reveal his "secret formula" to the government. (Similar stories have circulated in America for decades, usually with the government role replaced by a major oil or auto company.) Asian rhinos are being driven to extinction because their horns, when pulverized, are said to prevent impotence; the market encompasses all of East Asia.

The government of China and the Chinese Communist Party

were alarmed by certain of these developments. On December 5, 1994, they issued a joint proclamation that read in part:

[P]ublic education in science has been withering in recent years. At the same time, activities of superstition and ignorance have been growing, and antiscience and pseudoscience cases have become frequent. Therefore, effective measures must be applied as soon as possible to strengthen public education in science. The level of public education in science and technology is an important sign of the national scientific accomplishment. It is a matter of overall importance in economic development, scientific advance, and the progress of society. We must be attentive and implement such public education as part of the strategy to modernize our socialist country and to make our nation powerful and prosperous. Ignorance is never socialist, nor is poverty.

So pseudoscience in America is part of a global trend. Its causes, dangers, diagnosis, and treatment are likely to be similar everywhere. Here, psychics ply their wares on extended television commercials, personally endorsed by entertainers. They have their own channel, the "Psychic Friends Network"; a million people a year sign on and use such guidance in their everyday lives. For the CEOs of major corporations, for financial analysts, for lawyers and bankers there is a species of astrologer/soothsayer/psychic ready to advise on any matter. "If people knew how many people, especially the very rich and powerful ones, went to psychics, their jaws would drop through the floor," says a psychic from Cleveland, Ohio. Royalty has traditionally been vulnerable to psychic frauds. In ancient China and Rome astrology was the exclusive property of the emperor; any private use of this potent

art was considered a capital offense. Emerging from a particularly credulous Southern California culture, Nancy and Ronald Reagan relied on an astrologer in private and public matters—unknown to the voting public. Some portion of the decision-making that influences the future of our civilization is plainly in the hands of charlatans. If anything, the practice is comparatively muted in America; its venue is worldwide.

* * *

As amusing as some of pseudoscience may seem, as confident as we may be that we would never be so gullible as to be swept up by such a doctrine, we know it's happening all around us. Transcendental Meditation and Aum Shinrikyo seem to have attracted a large number of accomplished people, some with advanced degrees in physics or engineering. These are not doctrines for nitwits. Something else is going on.

What's more, no one interested in what religions are and how they begin can ignore them. While vast barriers may seem to stretch between a local, single-focus contention of pseudoscience and something like a world religion, the partitions are very thin. The world presents us with nearly insurmountable problems. A wide variety of solutions are offered, some of very limited worldview, some of portentous sweep. In the usual Darwinian natural selection of doctrines, some thrive for a time, while most quickly vanish. But a few—sometimes, as history has shown, the most scruffy and least prepossessing among them—may have the power to profoundly change the history of the world.

An Absence of Alien Artifacts

Some [alleged UFO] abductees say that tiny implants, perhaps metallic, were inserted into their bodies—high up their nostrils, for example. These implants, alien abduction therapists tell us, sometimes accidentally fall out, but "in all but a few of the cases the artifact has been lost or discarded." These abductees seem stupefyingly incurious. A strange object—possibly a transmitter sending telemetered data about the state of your body to an alien spaceship somewhere above the Earth—drops out of your nose; you idly examine it and then throw it in the garbage. Something like this is true, we are told, of the majority of abduction cases.

A few such "implants" have been produced and examined by experts. None has been confirmed as of unearthly manufacture. No components are made of unusual isotopes, despite the fact that other stars and other worlds are known to be constituted of different isotopic proportions than the Earth. There are no metals from the transuranic "island of stability," where physicists think there should be a new family of nonradioactive chemical elements unknown on Earth.

What abduction enthusiasts considered the best case was that of Richard Price, who claims that aliens abducted him when he was eight years old and implanted a small artifact in his penis. A quarter century later a physician confirmed a "foreign body" embedded there. After eight more years, it fell out. Roughly a millimeter in diameter and 4 millimeters long, it was carefully examined by scientists from MIT and Massachusetts General

Hospital. Their conclusion? Collagen formed by the body at sites of inflammation plus cotton fibers from Price's underpants.

On August 28, 1995, television stations owned by Rupert Murdoch ran what was purported to be an autopsy of a dead alien, shot on 16-millimeter film. Masked pathologists in vintage radiation-protection suits (with rectangular glass windows to see out of) cut up a large-eyed 12-fingered figure and examined the internal organs. While the film was sometimes out of focus, and the view of the cadaver often blocked by the humans crowding around it, some viewers found the effect chilling. The *Times* of London, also owned by Murdoch, didn't know what to make of it, although it did quote one pathologist who thought the autopsy performed with unseemly and unrealistic haste (ideal, though, for television viewing). It was said to have been shot in New Mexico in 1947 by a participant, now in his eighties, who wished to remain anonymous. What appeared to be the clincher was the announcement that the leader of the film (its first few feet) contained coded information that Kodak, the manufacturer, dated to 1947. However, it turns out that the full film magazine was not presented to Kodak, but at most the cut leader. For all we know, the leader could have been cut from a 1947 newsreel, abundantly archived in America, and the "autopsy" staged and filmed separately and recently. There's a dragon footprint all right—but a fakable one. If this is a hoax, it requires not

much more cleverness than crop circles and the MJ-12 document.

In none of these stories is there anything strongly suggestive of extraterrestrial origin. There is certainly no retrieval of cunning machinery far beyond current technology. No abductee has filched a page from the captain's logbook, or an examining instrument, or taken an authentic photograph of the interior of the ship, or come back with detailed and verifiable scientific information not hitherto available on Earth. Why not? These failures must tell us something.

Since the middle of the twentieth century, we've been assured by proponents of the extraterrestrial hypothesis that physical evidence—not star maps remembered from years ago, not scars, not disturbed soil, but real alien technology—was in hand. The analysis would be released momentarily. These claims go back to the earliest crashed saucer scam of Newton and GeBauer. Now it's decades later and we're still waiting. Where are the articles published in the refereed scientific literature, in the metallurgical and ceramics journals, in publications of the Institute of Electrical and Electronic Engineers, in *Science* or *Nature*?

Such a discovery would be momentous. If there were real artifacts, physicists and chemists would be fighting for the privilege of discovering that there are aliens among us—who use, say, unknown alloys, or materials of extraordinary tensile strength or ductility or conductivity. The practical implications of such a finding—never mind the confirmation of an alien invasion—would be immense. Discoveries like this are what scientists live for. Their absence must tell us something. □

The continuum stretching from ill-practiced science, pseudoscience, and superstition (New Age or Old), all the way to respectable mystery religion, based on revelation, is indistinct. I try not to use the word "cult" in its usual meaning of a religion the speaker dislikes, but try to reach for the headstone of knowledge—do they really know what they claim to know? Everyone, it turns out, has relevant expertise.

I am critical of the excesses of theology, because at the extremes it is difficult to distinguish pseudoscience from rigid, doctrinaire religion. Nevertheless, I want to acknowledge at the outset the prodigious diversity and complexity of religious thought and practice over the millennia; the growth of liberal religion and ecumenical fellowship during the last century; and the fact that—as in the Protestant Reformation, the rise of Reform Judaism, Vatican II, and the so-called higher criticism of the Bible—religion has fought (with varying degrees of success) its own excesses. But in parallel to the many scientists who seem reluctant to debate or even publicly discuss pseudoscience, many proponents of mainstream religions are reluctant to take on extreme conservatives and fundamentalists. If the trend continues, eventually the field is theirs; they can win the debate by default.

One religious leader writes to me of his longing for "disciplined integrity" in religion:

We have grown far too sentimental. . . . Devotionalism and cheap psychology on one side, and arrogance and dogmatic intolerance on the other distort authentic religious life almost beyond recognition. Sometimes I come close to despair, but then I live tenaciously and always with hope. . . . Honest religion, more familiar than its critics with the distortions and absurdities perpetrated in its name, has an active interest in encouraging a healthy skepticism for its own purposes. . . . There is the possibility for religion and science to forge a potent partnership against pseudo-science. Strangely, I think it would soon be engaged also in opposing pseudo-religion.

Pseudoscience differs from erroneous science. Science thrives on errors, cutting them away one by one. False conclusions are drawn all the time, but they are drawn tentatively. Hypotheses are framed so they are capable of being disproved. A succession of alternative hypotheses is confronted by experiment and observation. Science gropes and staggers toward improved understanding. Proprietary feelings are of course offended when a scientific hypothesis is disproved, but such disproofs are recognized as central to the scientific enterprise.

Pseudoscience is just the opposite. Hypotheses are often framed precisely so they are invulnerable to any experiment that offers a prospect of disproof, so even in principle they cannot be invalidated. Practitioners are defensive and wary. Skeptical scrutiny is opposed. When the pseudoscientific hypothesis fails to catch fire with scientists, conspiracies to suppress it are deduced.

Motor ability in healthy people is almost perfect. We rarely stumble and fall, except in young and old age. We can learn tasks such as riding a bicycle or skating or skipping, jumping rope or driving a car, and retain that mastery for the rest of our lives. Even if we've gone a decade without doing it, it comes back to us effortlessly. The precision and retention of our motor

skills may, however, give us a false sense of confidence in our other talents. Our perceptions are fallible. We sometimes see what isn't there. We are prey to optical illusions. Occasionally we hallucinate. We are error-prone. A most illuminating book called *How We Know What Isn't So: The Fallibility of Human Reason in Everyday Life*, by Thomas Gilovich, shows how people systematically err in understanding numbers, in rejecting unpleasant evidence, in being influenced by the opinions of others. We're good in some things, but not in everything. Wisdom lies in understanding our limitations. "For Man is a giddy thing," teaches William Shakespeare. That's where the stuffy skeptical rigor of science comes in.

Perhaps the sharpest distinction between science and pseudoscience is that science has a far keener appreciation of human imperfections and fallibility than does pseudoscience (or "inerrant" revelation). If we resolutely refuse to acknowledge where we are liable to fall into error, then we can confidently expect that error—even serious error, profound mistakes—will be our companion forever. But if we are capable of a little courageous self-assessment, whatever rueful reflections they may engender, our chances improve enormously.

If we teach only the findings and products of science—no matter how useful and even inspiring they may be—without communicating its critical method, how can the average person possibly distinguish science from pseudoscience? Both then are presented as unsupported assertion. In Russia and China, it used to be easy. Authoritative science was what the authorities taught. The distinction between science and pseudoscience was made *for* you. No perplexities needed to be muddled through. But when profound political changes occurred and strictures on free thought were loosened, a host of confident or charismatic claims—especially those that told us what we wanted to hear—gained a vast following. Every notion, however improbable, became authoritative.

It is a supreme challenge for the popularizer of science to make clear the actual, tortuous history of its great discoveries and the misapprehensions and occasional stubborn refusal by its practitioners to change course. Many, perhaps most, science textbooks for budding scientists tread lightly here. It is enormously easier to present in an appealing way the wisdom distilled from centuries of patient and collective interrogation of Nature than to detail the messy distillation apparatus. The method of science, as stodgy and grumpy as it may seem, is far more important than the findings of science.

Notes

1. "No thinking religious person believes this. Old hat," writes one of the referees of this book. But many "scientific creationists" not only believe it, but are making increasingly aggressive and successful efforts to have it taught in the schools, museums, zoos, and textbooks. Why? Because adding up the "begats," the ages of patriarchs and others in the Bible, gives such a figure, and the Bible is "inerrant."

2. Although it's hard for me to see a more profound cosmic connection than the astonishing findings of modern nuclear astrophysics: Except for hydrogen, all the atoms that make each of us up—the iron in our blood, the calcium in our bones, the carbon in our brains—were manufactured in red giant stars thousands of light-years away in space and billions of years ago in time. We are, as I like to say, starstuff. □

Like Goes with Like:

The Role of Representativeness in Erroneous and Pseudoscientific Beliefs

The misguided premise that effects should resemble their causes underlies a host of erroneous beliefs, from folk wisdom about health and the human body to elaborate pseudoscientific belief systems.

THOMAS GILOVICH and KENNETH SAVITSKY

It was in 1983, at an infectious-disease conference in Brussels, that Barry Marshall, an internal-medicine resident from Perth, Australia, first staked his startling claim. He argued that the peptic ulcer, a painful crater in the lining of the stomach or duodenum, was not caused by a stressful lifestyle as everyone had thought. Instead, the malady that afflicts millions of adults in the United States alone was caused by a simple bacterium, and thus could be cured using antibiotics (Hunter 1993; Monmaney 1993; Peterson 1991; Wandycz 1993).

Although subsequent investigations have substantiated Marshall's claim (e.g., Hentschel et al. 1993), his colleagues initially were highly skeptical. Martin Blaser, director of the Division of Infectious Diseases at the Vanderbilt University School of Medicine, described Marshall's thesis as "the most

preposterous thing I'd ever heard" (Monmaney 1993).

What made the idea so preposterous? Why were the experts so resistant to Marshall's suggestion? There were undoubtedly many reasons. For one, the claim contradicted what most physicians, psychiatrists, and psychologists knew (or thought they knew): Ulcers were caused by stress. As one author noted, "No physical ailment has ever been more closely tied to psychological turbulence" (Monmaney 1993, p. 64). In addition, science is necessarily and appropriately a rather conservative enterprise. Although insight, creativity, and even leaps of faith are vital to the endeavor, sound empirical evidence is the true coin of the realm. Much of the medical establishment's hesitation doubtless stemmed from the same healthy skepticism that readers of the *SKEPTICAL INQUIRER* have learned to treasure. After all, Marshall's results at the time were suggestive at best—no cause-effect relationship had yet been established.

But there may have been a third reason for the reluctance to embrace Marshall's contention, a reason we explore in this article. The belief that ulcers derive from stress is particularly seductive—for physicians and laypersons alike—because it flows from a general tendency of human judgment, a tendency to employ what psychologists Amos Tversky and Daniel Kahneman have called the "representativeness heuristic" (Kahneman and Tversky 1972, 1973; Tversky and Kahneman 1974, 1982). Indeed, we believe that judgment by representativeness plays a role in a host of erroneous beliefs, from beliefs about health and the human body to handwriting analysis and astrology (Gilovich 1991). We consider a sample of these beliefs in this article.

The Representativeness Heuristic

Representativeness is but one of a number of heuristics that people use to render complex problems manageable. Heuristics are often described as judgmental shortcuts that generally get us where we need to go—and quickly—but at the cost of occasionally sending us off course. Kahneman and Tversky liken them to perceptual cues, which generally enable

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BRAD

Brad Marshall

us to perceive the world accurately, but occasionally give rise to misperception and illusion. Consider their example of using clarity as a cue for distance. The clarity of an object is one cue people use to decide how far away it is. The cue typically works well because the farther away something is, the less distinct it appears. On a particularly clear day, however, objects can appear closer than they are, and on hazy days they can appear farther away. In some circumstances, then, this normally accurate cue can lead to error.

Representativeness works much the same way. The representativeness heuristic involves a reflexive tendency to assess the similarity of objects and events along salient dimensions and to organize them on the basis of one overarching rule: "Like goes with like." Among other things, the representativeness heuristic reflects the belief that a member of a given category ought to resemble the category prototype, and that an effect ought to resemble the cause that produced it. Thus, the representativeness heuristic is often used to assess whether a given instance belongs to a particular category, such as whether an individual is likely to be an accountant or a comedian. It is also used in assigning causes to effects, as when deciding whether a meal of spicy food caused a case of heartburn or determining whether an assassination was the product of a conspiracy.¹

Note that judgment by representativeness often works well. Instances often resemble their category prototypes and causes frequently resemble their effects. Members of various occupa-

tional groups, for example, frequently do resemble the group prototype. Likewise, "big" effects (such as the development of the atomic bomb) are often brought about by "big" causes (such as the Manhattan Project).

Still, the representativeness heuristic is only that—a heuristic or shortcut. As with all shortcuts, the representativeness heuristic should be used with caution. Although it can help us to make some judgments with accuracy and ease, it can also lead us astray. Not all members fit the category prototype. Some comedians are shy or taciturn, and some accountants are wild and crazy. And although causes are frequently representative of their effects, this relationship does not always hold: Tiny viruses give rise to devastating epidemics like malaria or

"Heuristics are often described as judgmental shortcuts that generally get us where we need to go—and quickly—but at the cost of occasionally sending us off course."

AIDS; and splitting the nucleus of an atom releases an awesome amount of energy. In some cases, then, representativeness yields inaccuracy and error. Or even superstition. A nice example is provided by craps shooters, who roll the dice gently to coax a low number, and more vigorously to encourage a high one (Hanslin 1967). A small effect (low number) requires a small cause (gentle roll), and a big effect (high number) requires a big cause (vigorous roll).

How might the belief in a stress-ulcer link derive from the conviction that like goes with like? Because the burning feeling of an ulcerated stomach is not unlike the gut-wrenching, stomach-churning feeling of extreme stress (albeit more severe), the link seems natural: Stress is a representative cause of an ulcer.² But as Marshall suggested (and subsequent research has borne out), the link may be overblown. Stress alone does not appear to cause ulcers (Glavin and Szabo 1992; Soll 1990).

Representativeness and the Conjunction Fallacy

One of the most compelling demonstrations of how the representativeness heuristic can interfere with sound judgment comes from a much-discussed experiment in which participants were asked to consider the following description (Tversky and Kahneman 1982, 1983):

Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations.

Now, based on the above description, rank the following statements about Linda, from most to least likely:

- a. Linda is an insurance salesperson.
- b. Linda is a bank teller.
- c. Linda is a bank teller and is active in the feminist movement.

If you are like most people, you probably thought it was more likely that "Linda is a bank teller and is active in the feminist movement" than that "Linda is a bank teller." It is easy to see why: A feminist bank teller is much more representative of the description of Linda than is "just" a bank teller. It reflects the political activism, social-consciousness, and left-of-center politics implied in the description.

It may make sense, but it cannot be. The category "bank teller" subsumes the category "is a bank teller and is active in the feminist movement." The latter therefore cannot be more likely than the former. Anyone who is a bank teller and is active in the feminist movement is automatically also a bank teller. Indeed, even if one thinks it is impossible for someone with Linda's description to be solely a bank teller (that is, one who is not a feminist), being a bank teller is still *as* likely as being both. This error is referred to as the "conjunction fallacy" because the probability of two events co-occurring (i.e., their conjunction) can never exceed the individual probability of either of the

constituents (Tversky and Kahneman 1982, 1983; Dawes and Mulford 1993).

Such is the logic of the situation. The psychology we bring to bear on it is something else. If we start with an unrepresentative outcome (being a bank teller) and then add a representative element (being active in the feminist movement), we create a description that is at once more psychologically compelling but objectively less likely. The rules of representativeness do not follow the laws of probability. A detailed description can seem compelling precisely because of the very details that, objectively speaking, actually make it less likely. Thus, someone may be less concerned about dying during a trip to the Middle East than about dying in a terrorist attack while there, even though the probability of death due to a *particular* cause is obviously lower than the probability of death due to the set of all possible causes. Likewise, the probability of global economic collapse can seem remote until one sketches a detailed scenario in which such a collapse follows, say, the destruction of the oil fields in the Persian Gulf. Once again, the additional details make the outcome less likely at the same time that they make it more psychologically compelling.

Representativeness and Causal Judgments

Most of the empirical research on the representativeness heuristic is similar to the work on the conjunction fallacy in that the judgments people make are compared to a normative standard—in this case, to the laws of probability. The deleterious effect of judgment by representativeness is thereby established by the failure to meet such a standard. Previous work conducted in this fashion has shown, for example, that judgment by representativeness leads people to commit the "gambler's fallacy," to overestimate the reliability of small samples of data, and to be insufficiently "regressive" in making predictions under conditions of uncertainty.

The ulcer example with which we began this article does not have this property of being obviously at variance with a clear-cut normative standard. The same is true of nearly all examples of the impact of representativeness on causal judgments: It can be difficult to establish with certainty that a judgmental error has been made. Partly for this reason, there has been less empirical research on representativeness and causal judgments than on other areas, such as representativeness and the conjunction fallacy. This is not because representativeness is thought to have little impact on causal judgments, but because without a clear-cut normative standard it is simply more difficult to conduct research in this domain. The research that has been conducted, furthermore, is more suggestive than definitive. Nonetheless, the suggestive evidence is rather striking, and it points to the possibility that representativeness may exert at least as much influence over causal judgments as it does over other, more exhaustively researched types of judgments. To see how much, we discuss some examples of representativeness-thinking in medicine, in pseudoscientific systems, and in psychoanalysis.

Representativeness and Medical Beliefs

One area in which the impact of representativeness on causal judgments is particularly striking is the domain of health and medicine. Historically, people have often assumed that the symptoms of a disease should resemble either its cause or its cure (or both). In ancient Chinese medicine, for example, people with vision problems were fed ground bat in the mistaken belief that bats had particularly keen vision and that some of this ability might be transferred to the recipient (Deutsch 1977). Evans-Pritchard (1937) noted many examples of the influence of representativeness among the African Azande (although he discussed them in the context of magical-thinking, not representativeness). For instance, the Azande used the ground skull of the red bush monkey to cure epilepsy. Why? The cure should resemble the disease, so the herky-jerky movements of the monkey make the essence of monkey appear to be a promising candidate to settle the violent movements of an epileptic seizure. As Evans-Pritchard (quoted in Nisbett and Ross 1980, p. 116) put it:

Generally the logic of therapeutic treatment consists in the selection of the most prominent external symptoms, the naming of the disease after some object in nature it resembles, and the utilization of the object as the principal ingredient in the drug administered to cure the disease. The circle may even be completed by belief that the external symptoms not only yield to treatment by the object which resembles them but are caused by it as well.

Western medical practice has likewise been guided by the representativeness heuristic. For instance, early Western medicine was strongly influenced by what was known as the "doctrine of signatures," or the belief that "every natural substance

which possesses any medicinal virtue indicates by an obvious and well-marked external character the disease for which it is a remedy, or the object for which it should be employed" (quoted in Nisbett and Ross 1980, p. 116). Thus, physicians prescribed the lungs of the fox (known for its endurance) for asthmatics, and the yellow spice turmeric for jaundice. Again, disease and cure are linked because they resemble one another.

Or consider the popularity of homeopathy, which derives from the eighteenth century work of the German physician Samuel Hahnemann (Barrett 1987). One of the bedrock principles of homeopathy is Hahnemann's "law of similars," according to which the key to discovering what substance will cure a particular disorder lies in noting the effect that various substances have on healthy people. If a substance causes a particular reaction in an unafflicted person, then it is seen as a likely cure for a disease characterized by those same symptoms. As before, the external symptoms of a disease are used to identify a cure for the disease—a cure that manifests the same external characteristics.

Of course, there are instances in which substances that cause particular symptoms *are* used effectively as part of a therapeutic regimen to cure, alleviate, or prevent those very symptoms. Vaccines deliver small quantities of disease-causing viruses to help individuals develop immunities. Likewise, allergy sufferers sometimes receive periodic doses of the exact substance to which they are allergic so that they will develop a tolerance over time. The problem with the dubious medical practices described above is the *general* assumption that the symptoms of a disease should resemble its cause, its cure, or both. Limiting the scope of possible cures to those that are representative of the disease can seriously impede scientific discovery. Such a narrow focus, for example, would have

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inhibited the discovery of the two most significant developments of modern medicine: sanitation and antibiotics.

Representativeness-thinking continues to abound in modern "alternative" medicine, a pursuit that appears to be gaining in perceived legitimacy (Cowley, King, Hager, and Rosenberg 1995). An investigation by Congress into health fraud and quackery noted several examples of what appear to be interventions inspired by the superficial appeal of representativeness (U.S. Congress, House Subcommittee on Health and Long-Term Care 1984). In one set of suggested treatments, patients are encouraged to eat raw organ concentrates corresponding to the dysfunctional body part: e.g., brain concentrates for mental disorders, heart concentrates for cardiac conditions, and raw stomach lining for ulcers. Similarly, the fingerprints of representativeness are all over the practice of "rebirthing," a New Age

therapeutic technique in which individuals attempt to reenact their own births in an effort to correct personality defects caused by having been born in an "unnatural" fashion (Ward 1994). One person who was born breech (i.e., feet first) underwent the rebirthing procedure to cure his sense that his life was always going in the wrong direction and that he could never seem to get things "the right way round." Another, born Caesarean, sought the treatment because of a lifelong difficulty with seeing things to completion, and always relying on others to finish tasks for her. As one author quipped, "God knows what damage forceps might inflict . . . a lifelong neurosis that you're being dragged where you don't want to go?" (Ward 1994, p. 90).

A more rigorous examination of the kind of erroneous beliefs about health and the human body that can arise from the appeal of representativeness has dealt with the adage, "You are what you eat." Just how far do people take this idea? In certain respects, the saying is undeniably true: Bodies are composed to a large extent of the molecules that were once ingested as food. Quite literally, we are what we have eaten. Indeed, there are times when we take on the character of what we ingest: People gain weight by eating fatty foods, and a person's skin can acquire an orange tint from the carotene found in carrots and tomatoes. But the notion that we develop the characteristics of the food we eat sometimes goes beyond such examples to almost magical extremes. The Hua of Papua New Guinea, for example, believe that individuals will grow quickly if they eat rapidly growing food (Meigs 1984, cited by Nemeroff and Rozin 1989).

But what about a more "scientifically minded" population? Psychologists Carol Nemeroff and Paul Rozin (1989) asked college students to consider a hypothetical culture known as the "Chandorans," who hunt wild boar and marine turtles. Some of the students learned that the Chandorans hunt turtles for their shells, and wild boar for their meat. The others heard the opposite: The tribe hunts turtles for their meat, and boar for their tusks.

After reading one of the two descriptions of the

"The representativeness heuristic should be used with caution. Although it can help us to make some judgments with accuracy and ease, it can also lead us astray."

Chandorans, the students were asked to rate the tribe members on numerous characteristics. Their responses reflected a belief that the characteristics of the food that was eaten would "rub off" onto the tribe members. Boar-eaters were thought to be more aggressive and irritable than their counterparts—and more likely to have beards! The turtle-eaters were thought to live longer and be better swimmers.

However educated a person may be (the participants in Nemeroff and Rozin's experiment were University of Pennsylvania undergraduates), it can be difficult to get beyond the assumption that like goes with like. In this case, it leads to

the belief that individuals tend to acquire the attributes of the food they ingest. Simple representativeness.

Representativeness and Pseudoscientific Beliefs

A core tenet of the field of astrology is that an individual's personality is influenced by the astrological sign under which he or she was born (Huntley 1990). A glance at the personality types associated with the various astrological signs reveals an uncanny concordance between the supposed personality of someone with a particular sign and the characteristics associated with the sign's namesake (Huntley 1990; Howe 1970; Zusne and Jones 1982). Those born under the sign of the goat (Capricorn) are said to be tenacious, hardworking, and stubborn; whereas those born under the lion (Leo) are proud, forceful leaders. Likewise, those born under the sign of Cancer (the crab) share with their namesake a tendency to appear hard on the outside; while inside their "shells" they are soft and vulnerable. One treatment of astrology goes so far as to suggest that, like the crab, those born under the sign of Cancer tend to be "deeply attached to their homes" (Read et al. 1978).

What is the origin of these associations? They are not empirically derived, as they have been shown time and time again to lack validity (e.g., Carlson 1985; Dean 1987; for reviews see Abell 1981; Schick and Vaughn 1995; Zusne and Jones 1982). Instead, they are conceptually driven by simple, representativeness-based assessments of the personalities that *should* be associated with various astrological signs. After all, who is more likely to be retiring and modest than a Virgo (the virgin)? Who better to be well balanced, harmonious, and fair than a Libra (the scales)? By taking advantage of people's reflexive associations, the system gains plausibility among those disinclined to dig deeper.

And it doesn't stop there. Consider another elaborate "scientific" system designed to assess the "secrets" of an individual's personality—graphology, or handwriting analysis. Corporations pay graphologists sizable fees to help screen job applicants by developing personality profiles of those who apply for jobs (Neter and Ben-Shakhar 1989). Graphologists are also called upon to provide "expert" testimony in trial proceedings, and to help the Secret Service determine if any real danger is posed by threatening letters to government officials (Scanlon and Mauro 1992). How much stock can we put in the work of handwriting analysts?

Unlike astrology, graphology is not worthless. It has been, and continues to be, the subject of careful empirical investigation (Nevo 1986), and it has been shown that people's handwriting can reveal certain things about them. Particularly shaky writing can be a clue that an individual suffers from some neurological disorder that causes hand tremors; whether a person is male or female is often apparent from his or her writing. In general, however, what handwriting analysis can determine most reliably tends to be things that can be more reliably ascertained through other means. As for the "secrets"

of an individual's personality, graphology has yet to show that it is any better than astrology.

This has not done much to diminish the popularity of handwriting analysis, however. One reason for this is that graphologists, like astrologers, gain some surface plausibility or "face validity" for their claims by exploiting the tendency for people to employ the representativeness heuristic. Many of their claims have a superficial "sensible" quality, rarely violating the principle that like goes with like. Consider, for instance, the "zonal theory" of graphology, which divides a person's handwriting into the upper, middle, and lower regions. A person's "intellectual," "practical," and "instinctual" qualities supposedly correspond to the different regions (Basil 1989). Can you guess which is which? Could our "lower" instincts be reflected anywhere other than the lower region, or our "higher" intellect anywhere other than the top?

The list of such representativeness-based "connections" goes on and on. Handwriting slants to the left? The person must be holding something back, repressing his or her true emotions. Slants to the right? The person gets carried away by his or her feelings. A signature placed far below a paragraph suggests that the individual wishes to distance himself or herself from what was written (Scanlon and Mauro 1992). Handwriting that stays close to the left margin belongs to individuals attached to the past, whereas writing that hugs the right margin comes from those oriented toward the future.

What is ironic is that the very mechanism that many graphologists rely upon to argue for the persuasive value of their endeavor—that the character of the handwriting resembles the character of the person—is what ultimately betrays them: They call it "common sense"; we call it judgment by representativeness.

Representativeness and Psychoanalysis

Two prominent social psychologists, Richard Nisbett and Lee Ross, have argued that "the enormous popularity of Freudian theory probably lies in the fact that, unlike all its competitors among contemporary views, it encourages the layperson to do what comes naturally in causal explanation, that is, to use the representativeness heuristic" (Nisbett and Ross 1980, p. 244). Although this claim would be difficult to put to empirical test, there can be little doubt that much of the interpretation of symbols that lies at the core of psychoanalytic theory is driven by representativeness. Consider the interpretation of dreams, in which the images a client reports from his or her dreams are considered indicative of underlying motives. An infinite number of potential relationships exist between dream content and underlying psychodynamics, and it is interesting that virtually all of the "meaningful" ones identified by psychodynamically oriented clinicians are ones in which there is an obvious fit or resemblance between the reported image and inner dynamics. A man who dreams of a snake or a cigar is thought to be troubled by his penis or his sexuality. People who dream of policemen are thought to be concerned about their fathers or

authority figures. Knowledge of the representativeness heuristic compels one to wonder whether such connections reflect something important about the psyche of the client, or whether they exist primarily in the mind of the therapist.

One area of psychodynamic theorizing in which the validity of such superficially plausible relationships has been tested and found wanting is the use of projective tests. The most widely known projective test is the Rorschach, in which clients report what they "see" in ambiguous blotches of ink on cards. As in all projective tests, the idea is that in responding to such an unstructured stimulus, a person must "project," and thus reveal, some of his or her inner dynamics. Countless studies, however, have failed to produce evidence that the test is valid—that is, that the assessments made about people on the basis of the test correspond to the psychopathological conditions from which they suffer (Burros 1978).³

The research findings notwithstanding, clinicians frequently report the Rorschach to be extremely helpful in clinical practice. Might representativeness contribute to this paradox of strongly held beliefs coexisting with the absence of any real relationship? You be the judge. A person who interprets the whole Rorschach card, and not its specific details, is con-

"Although skepticism is a vital component of critical thought, it should not be based on an excessive adherence to the principle that like goes with like."

sidered by clinicians to suffer from a need to form a "big picture," and a tendency toward grandiosity, even paranoia. In contrast, a person who refers only to small details of the ink blots is considered to have an obsessive personality—someone who attends to detail at the expense of the more important holistic aspects (Dawes 1994). Once again, systematic research has failed to find evidence for these relationships, but the sense of representativeness gives them some superficial plausibility.

Conclusion

We have described numerous erroneous beliefs that appear to derive from the overuse of the representativeness heuristic. Many of them arise in domains in which the reach for solutions to important problems exceeds our grasp—such as the attempt to uncover (via astrology or handwriting analysis) simple cues to the complexities of human motivation and personality. In such domains in which no simple solutions exist, and yet the need or desire for such solutions remains strong, people often let down their guard. Dubious cause-effect links are then uncritically accepted because they satisfy the principle of like goes with like.

Representativeness can also have the opposite effect, inhibiting belief in valid claims that violate the expectation of resemblance. People initially scoffed at Walter Reed's suggestion that malaria was carried by the mosquito. From a representativeness standpoint, it is easy to see why: The cause (a tiny mosquito) is not at all representative of the result (a dev-

astating disease). Reed's claim violated the notion that big effects should have big causes, and thus was difficult to accept (Nisbett and Ross 1980). Although skepticism is a vital component of critical thought, it should not be based on an excessive adherence to the principle that like goes with like.

Indeed, it is often those discoveries that violate the expected resemblance between cause and effect that are ultimately hailed as significant breakthroughs, as with the discovery of *Helicobacter pylori*, as the ulcer-causing bacterium is now named. As one author put it, "The discovery of *Helicobacter* is no crummy little shift. It's a mindblower—tangible, reproducible, unexpected, and, yes, revolutionary. Just the fact that a bug causes peptic ulcers, long considered the cardinal example of a psychosomatic illness, is a spear in the breast of New Age medicine" (Monmaney 1993, p. 68). Given these stakes, one might be advised to avoid an overreliance on the shortcut of representativeness, and instead to devote the extra effort needed to make accurate judgments and decisions. (But not too much effort—you wouldn't want to give yourself an ulcer.)

Notes

We thank Dennis Regan for his helpful comments on an earlier draft of this article.

1. The reason that the heuristic has been dubbed "representativeness" rather than, say, "resemblance" or "similarity" is that it also applies in circumstances in which the assessment of "fit" is not based on similarity. For example, when assessing whether a series of coin flips was produced by tossing a fair coin, people's judgments are influenced in part by whether the sequence is representative of one produced by a fair coin. A sequence of five heads and five tails is a representative outcome, but a sequence of nine heads and one tail is not. Note, however, that a fifty-fifty split does not make the sequence "similar" to a fair coin, but it does make it representative of one.

2. Some theories of the link between stress and ulcers are even more tinged with representativeness. Since the symptoms of an ulcer manifest themselves in the stomach, the cause "should" involve something that is highly characteristic of the stomach as well, such as hunger and nourishment. Thus, one theorist asserts, "The critical factor in the development of ulcers is the frustration associated with the wish to receive love—when this wish is rejected, it is converted into a wish to be fed," leading ultimately "to an ulcer." Echoing such ideas, James Masterson writes in his book *The Search for the Real Self* that ulcers affect those who are "hungry for emotional supplies that were lost in childhood or that were never sufficient to nourish the real self" (both quoted in Monmaney 1993).

3. Actually, a nonprojective use of the Rorschach, called the Exner System, has been shown to have some validity (Exner 1986). The system is based on the fact that some of the inkblots do look like various objects, and a person's responses are scored for the number and proportion that fail to reflect this correspondence. Unlike the usual Rorschach procedure, which is subjectively scored, the Exner system is a standardized test.

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Staking Claims:

The Vampires of Folklore and Fiction

*We know about Dracula and the would-be vampires in the news,
but what were the "real" vampires all about?*

PAUL BARBER

People who learn that I wrote a book on vampire lore often say, "Oh, you mean like Vlad Drakul?"

"Not actually," I tell them. "Vlad Drakul was a figure in Romanian history whose only association with the vampire lore is that Bram Stoker named the character Dracula after him. Until *Dracula* came out, no one ever associated the historical figure with the vampire lore." This has been pointed out many times, and the Romanians have often expressed their dismay over the way we have expropriated their national hero and made him into a vampire. But in the media the sensational always has an edge on the prosaic, and by being associated with vampires—even if only via fiction—Vlad Drakul has become the only figure in Romanian history that Americans have ever heard about. If the Romanians began to make movies portraying George Washington as a ghoul, we would know what they feel like.

Here we see fiction becoming "historical fact," while the



Andy Tubbesing

scholars who try to correct the "facts" find that they have no hope of getting equal time with the people who purvey

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mythologies. One of these is Stephan Kaplan, who I think—but I'm never sure—is a notoriety freak who is putting us on and having a wonderful time doing it. For example, he was quoted recently as saying that vampires can come out in the daytime, they just need to wear a sunblock of 15 or higher. As wit, this ranks among the best things I've heard recently, right up there with the story that the Florida citrus industry is trying to get O. J. Simpson to change his first name to Snapple. I suspect that Kaplan will one day call a press conference, wearing a silly hat, and say, "I was just fooling, and you fell for it!" I got a call from the BBC a while back asking me for my reaction to Kaplan's announcement that Los Angeles is awash in vampires. To me this is like an adult asking me what Santa Claus brought me this year: The question had better be ironic, and the answer may as well be. So I told the interviewer that it was true that vampires are everywhere in Los Angeles, but because of the muggers they're afraid to go out at night.

The folklore of the vampire has only a slight connection with the fiction, much the way the folklore of ghosts has little to do with the movie *Ghostbusters*. Most people aren't aware that, throughout European history, there have been extensive and detailed accounts of bodies in graveyards being dug up, declared to be vampires, and killed. I took some years out of my life to study these accounts and find out what in the world could have caused people to set out to kill dead bodies. And here we encounter our first real/non-real boundary: the digging up of the bodies was unquestionably real—indeed, beyond any doubt. We know this because we have a vast array of evidence to that effect, both archaeological and documentary, including highly detailed accounts written by literate outsiders, who gave information that they could not possibly have made up. For example, unless you are a forensic pathologist, you probably don't know that decomposing bodies may undergo a process called

"skin slippage," in which the epidermis flakes away from the dermis. The following account, from the eighteenth century, tells of the exhumation of a man named Peter Plogojowitz and remarks on this phenomenon: "The hair and beard—even the nails, of which the old ones had fallen away—had grown on [the corpse]; the old skin, which was somewhat whitish, had peeled away, and a new fresh one had emerged under it. . . . Not without astonishment, I saw some fresh blood in his mouth, which, according to the common observation, he had sucked from the people killed by him." When we see remarks about skin slippage, we know that the author has either (a) read a text on forensic pathology or (b) looked at, or heard about, a decomposing corpse.

Yet here we are confronted with a predicament: If our source is right about skin slippage, what are we to make of his evidence that the dead body had been drinking blood from the living? The answer, of course, is that we are not obliged to believe our informant's interpretations, let alone those of *his* informants, just because he is giving us an accurate description of a corpse. Scholars have always thrown out the observations because they didn't believe the interpretations. This is not as odd as it might seem, for often description and interpretation are run together, as in such a statement as "the body came to life and cried out when it was staked." But we'll get to that in a moment.

For now, let's slow down and look carefully at the observations in the account we have quoted:

1. "The hair and beard have grown on the corpse." Sorry, this just doesn't happen, even though many people believe it even today. It can *appear* to happen, however, because the skin may shrink back after death and make hair and beard more visible.

2. "The nails have fallen off and new ones have grown." The nails do in fact fall off as a body decomposes. The Egyptians were aware of this and dealt with it either by tying the nails to the fingers and toes or by putting metal thimbles over the tip of each finger or toe. The "new nails," according to Thomas Noguchi, former medical examiner for Los Angeles, were probably an interpretation of the nail bed.

3. "The old skin has peeled away and new skin has emerged under it." This is skin slippage: epidermis and dermis. Many accounts remark also on the "ruddy" or "dark" color of the corpse, a phenomenon that may be caused by decomposition and a variety of other things as well. Contrary to popular belief, the face of a corpse is not necessarily pale at all, since pallor results from the blood draining from the tissues. If the person was supine when he or she died, the face of the corpse may be pale; if prone, the face may be dark. Those parts of the corpse that are lower than the rest may be gorged with blood that, having lost its oxygen, is dark and causes the skin to appear dark as well. And the parts that are under pressure—where the weight of the body is distributed—may be light in color because the (now dark) blood has been forced away from the tissues. The dark coloration resulting from the saturation of the tissues with blood is called "livor mortis" or "lividity." It is

this phenomenon that allows medical examiners to determine whether a body has been moved after death: If lividity is present where it shouldn't be, or not present where it should, then the body has been moved.

4. "There is fresh blood at the mouth." The adjective "fresh" is less puzzling if we suppose that the author hasn't actually tested the blood for freshness. What he was surely observing, and confused by, was the fact that the blood was *liquid*. This was remarked on many times by people who observed such exhumations. It is simply not unusual. In fact, blood normally coagulates at death, then either remains coagulated or becomes liquid again.¹ The reason the blood migrates to the mouth is that the body, as it decomposes, bloats from the gases produced by decomposition, and this bloating puts pressure on the lungs, which are rich in blood and deteriorate early on, so that blood is forced to the mouth and nose.

And did you notice that we were just told why people believed that the dead sucked blood from the living? The standard theory about death was that it came from the dead, and when people dug up the first victim of an epidemic and found that he had blood at his mouth, they concluded that he had sucked the blood from the other people who had died. "Not without astonishment," says our author, "I saw some fresh blood in his mouth, which, according to the common observation, he had sucked from the people killed by him." Moreover, the bloating of the body was taken for evidence that it was full to bursting with the blood of its victims.

So we have cleared up an old mystery merely by paying attention to the people who, centuries ago, tried to tell us about it. From here on things will be easier: If our informants tell us that the vampire "came to life and cried out" when they drove a stake through him, we shall accept the observation and reject the conclusion: Yes, a body would "cry out" if you drove a stake into it, because doing so forces air past the glottis—but this is not because the body is still alive. Among modern medical examiners, there is remarkable agreement on both points.

The vampire lore did not die when people worked out forensic pathology: by that time it had become part of literature. The

"The folklore of the vampire has only a slight connection with the fiction, much the way the folklore of ghosts has little to do with the movie *Ghostbusters*."

folkloric vampires had been peasants, but in the eighteenth century, authors were still reluctant to make peasants into major characters in stories, so the fictional vampire was moved into the upper classes. By the time of Bram Stoker's *Dracula* (1897), he had become a pallid count, rather than the ruddy peasant of the folklore. Along the way, Linnaeus named a Central American bat after the European vampire, since the bat lived on blood, and the fiction writers, noting this, added the bat to the store of their motifs. This is why, in modern movies, vampires are apt to turn into bats in the night, when they need to go somewhere quickly.

Oddly, when this material became fiction, it once again became "fact," for nowadays the media keep digging up not just scholars and pseudoscholars who talk about the folklore but also people who actually claim to *be* vampires. The scholars and the vampires are brought together by their common fate: The media trot them out every year around Halloween. The modern "vampires" derive their inspiration not from the perfectly good material from folklore, which in fact has been sadly neglected, but from the fiction, perhaps because it is more dramatic and coherent. The folklore is about cantankerous peasants who come back as spirits to torment their nearest and dearest, and this simply doesn't translate into a glamorous lifestyle. So our modern "vampires" drive hearses, cap their canine teeth, and wear cloaks when they go out at night. None of these things has anything whatever to do with the folklore of the vampire—even the canines are an artifact of the fictional tradition. Some modern "vampires" claim a taste for blood and tell stories of raids on bloodbanks and of obliging friends who let them open a vein.

The baffling part of this is that the modern "vampires" are claiming kinship not with the vampire that our ancestors actually believed in but with the *fictional* vampire derived from that one. This is like somebody claiming to be related to Rhett

"By the eighteenth century the vampire was a certifiably dead body that was believed to retain a kind of life and had to be 'killed' in order to prevent it from killing other people."

Butler in the movie *Gone with the Wind*. "You mean Clark Gable," you say. "No, no: Rhett Butler. You know, the character in the movie. He's my cousin." And, lacking anything further to say, you ask, "Do you and Rhett talk a lot?" But in its way, theirs is a successful lifestyle, for those of us who study the folklore have long since become accustomed to getting two minutes on television programs that then give ten minutes to a ditsy lady who sleeps in a coffin. And anyone can get media attention who will bring up Vlad Drakul or even the moribund porphyria theory, which supposes that people really *were* drinking blood to cure their rare disease, even though we have no evidence either that drinking blood would alleviate the symptoms of porphyria or that any live people were accused of drinking blood—it was always corpses. This theory never got beyond the wild hypothesis stage but has historical interest for following the trend that confuses folklore with fiction. I describe it as "moribund," but such theories seemingly never die in the media, no matter how often they are demolished by evidence and argument. By now you couldn't kill the porphyria theory with a stake.

The peculiarities of this subject have a way of compounding themselves with time. We have seen how confusing it is to have data in which accurate observation and inaccurate interpretation are all balled up together. As the discipline of anthropology formed and took shape, it looked back on its earlier indis-

cretions and made a firm resolution not to view other cultures as inferior to that of the anthropologist. Indeed, it took us many decades to figure out that "primitive" cultures aren't any younger than "advanced" ones. But their attempt at dispassion discouraged anthropologists from making distinctions: Now you're not supposed to notice when someone from another culture is simply wrong about something. Indeed, it's no longer politically correct to make distinctions at all between right and wrong ideas, unless of course they are the ideas of our own culture. So it doesn't bother us to say that Copernicus corrected Ptolemy, but it does bother us if I point out that nonliterate cultures typically misunderstand the events of decomposition. What is odd about our modern view is that it appears to be the very kind of patronizing that we are trying to get rid of.

One review of my book complained about my applying scientific discourse to my subject. The reviewer did not suggest an alternative mode of interpretation—intuition, perhaps? But the reason I studied this particular aspect of the folklore is that it is replete with evidence, and evidence lends itself to analysis better than hunches or intuition. One objective of the serious scholar, it seems to me, is to find likely subjects, ones where there is enough evidence to base an argument on. I have had several fruitless discussions with television directors who wanted me to tell them not just more about the vampire lore than I know, but more than can even *be* known. "What about the really early stuff?" one woman kept asking. "What about the Paleolithic?"

But we simply don't have any clear evidence from the Paleolithic. The literary evidence, going from present to past, continues to change subtly until finally you would be hard put to identify the "vampire" phenomenon at all. Early Greek views of the dead have much in common with the later vampire lore, but no one would identify Patroclus as a "vampire" simply because he appears to Achilles after his own death. And the early archaeological evidence is often ambiguous: People may put slabs of stone over graves either to keep the dead from returning or to keep animals from digging into a grave.

The fact is, no one leaves documents around explaining the things that everyone knows. It is only much later that it occurs to anyone to wonder about those things—when it is too late, and they are no longer known. So we will almost surely never know anything about the origins of the vampire lore. The most we can know is that by the eighteenth century the vampire was a certifiably dead body that was believed to retain a kind of life and had to be "killed" in order to prevent it from killing other people. And, of course, we now know that the misconceptions about the folklore have proved to be more viable than the folklore itself.

Note

1. There are other correlations here that I've dealt with in detail in a book: *Vampires, Burial, and Death: Folklore and Reality*. New Haven: Yale University Press, 1988. □

A Plague of Paranoia?

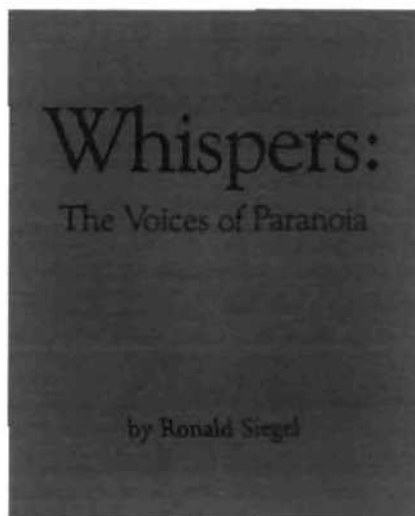
ROBERT BAKER

Whispers: The Voices of Paranoia. By Ronald Siegel.
Crown Publishers, New York. 1994.
310 pp. Hardcover, \$23.

Ronald Siegel is not only one of America's most distinguished psychologists—an expert in the effects of drugs on behavior (*Intoxication*, 1990, Pocket Books, New York) and on hallucinations (*Fire In the Brain*, 1992, Dutton, New York)—but he is also one of the nation's most entertaining storytellers. In his newest collection of clinical histories—all concerned with the “experience” of paranoia—we run the gamut of people who are beset by the mental demons of suspicion, hostility, projection, ideas of reference, persecution, and grandiosity that therapists define as “the paranoid mode of thinking.”

Occasionally wearing a bulletproof vest during the writing of this book, Siegel is well aware of how dangerous some paranoid people can be and, at the same time, how difficult they are to diagnose because many “paranoid delusions usually contain a grain of truth and are constructed logically.” Many textbooks on abnormal psychology tell the classic story of the husband who developed the paranoid delusion that his wife was unfaithful, and tried to kill her. After being confined and treated for more than a year, the husband convinced the therapeutic team he was well, and fully realized that his wife was faithful, that he had been mentally ill, and that he now clearly understood both his paranoia and his delusion. Convinced the husband's insight showed he was cured, the hospital team released him. Less than 24

hours later the husband murdered his faithful wife. Such are the dangers of these states of mind that lead us to believe we are being harassed and persecuted and cause us to interpret every event and aspect of the world around us as proof positive of this suspicion. Our failure to realize that our mind can play tricks on us can be deadly.



To help us better understand the mental state of the seriously disturbed—as well as that of the vast number of fear-motivated believers in government conspiracies, alien abductions, satanic-ritual abuses, and other public paranoid fears—Siegel first takes us into the deluded mind of a University of California at Los Angeles graduate student who believed that Hitler's brain was being kept alive in the basement of

the U.C.L.A. medical school. Siegel winds up interviewing “the brain” hidden in a computer program named Parry.

Next, Siegel discusses the case of a distinguished engineer and his bout with delusions of being mentally influenced by electrical transmissions from an orbiting satellite emitting microwaves that are controlling his own, as well as other people's, thinking. Siegel's next case, “Whispers,” concerns an elderly woman who believed her teeth whispered to her, but was mostly concerned with the fact that she couldn't clearly make out what they were saying. Siegel discovered that the sounds were real, but had trouble finding their source. Siegel's solution to this puzzle is an intriguing and classic example of good detective work. In fact, Siegel would have made a superb sleuth had he not chosen psychology as a profession.

His investigatory skills are at their best, however, in: (1) his study of the dancer who murdered her boyfriend; (2) his story of habitual users of cocaine who believe bugs are crawling through their bodies just under the skin, as well as cocaine paranoia that can lead to homicide; and (3) another tragic case involving a paranoid chess player who suffered from bizarre delusions involving blacks, the KGB, and the Mafia.

By far the most amusing of Siegel's cases deals with his clever use of a simple, \$15 magic trick, “The Floating

Dollar Bill," to astound, confound, and rehabilitate not only a paranoid and neglectful father, but the father's entire family as well. Siegel's expertise in drugs and hallucinatory behavior clearly is in evidence in his final two cases: one involving a mother who, high on a combination of metamphetamines, thyroid medication, and diet pills, murdered her seven-year-old daughter while watching the movie *The Ten Commandments*; the other, a paranoid who believed he was being pursued by dwarfs: small black men with little green beards.

Siegel's final case illustrates, chillingly, just how easy it is for the sanest of individuals—in this instance Siegel himself—to fall into the paranoia trap. During an Amtrak train trip from Jacksonville to New York, a cocaine addict named Mario developed the delusion he was being attacked by commandos out to kill him. Heavily armed as a result of his paranoia, Mario held off the police for three days after accidentally killing his sister and her infant son. Convinced there was more to the incident than cocaine effects alone, Siegel duplicated Mario's train ride. To enhance the verisimilitude of the reenactment Siegel ingested a "legal cocaine substitute" with cocainelike effects. When the police suggested that the Colombian cartel might send a hit man because Siegel's work endangered their operation, this, along with the noisy environment of the railroad car, plus someone trying to enter his compartment, was more than enough to trigger Siegel's own attack of paranoia.

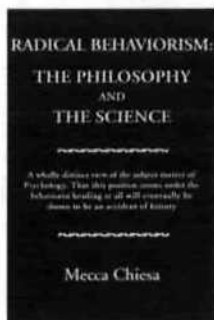
As Siegel notes in his summary, "Some of my patients got better, some got worse, and some got lost and are still out there." In every case in his book, however, Siegel makes it clear that the paranoid "inhabits a different realm of being . . . and views the world as if trapped in a cell or, yes, even a demon's lair." Siegel's final note about Ernest Hemingway's paranoia during his last

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days and Siegel's summary notes as to his famous client's fate are both fascinating and depressing.

If one didn't know better, and if one heeded everything the media have been trying to sell us recently, we, too, would be unalterably convinced that dead alien bodies are in government hands, that thousands of children are being sexually molested by satanists daily, that vast government conspiracies are afoot to take our freedoms away, and that all our fellow citizens are evil and corrupt. Once the demon of paranoia escapes it is almost impossible to capture and restrain. Last week I read another new book claiming once again that President Kennedy was the victim of a vast conspiracy headed by J. Edgar

Hoover, Lyndon Johnson, H. L. Hunt and other Texas billionaires, and the CIA. The book, *Killing Kennedy and the Hoax of the Century* by H. E. Livingstone (1995, Carroll and Graf Publishers, New York) also insists the famous Zapruder film is a fake and was used by the conspirators with the media's help to hide the true murderers and throw suspicion onto Lee Harvey Oswald, who had nothing to do with Kennedy's death. Siegel is correct! Someone has lifted the lid on Pandora's Box and the fiend of paranoia is now ravaging our land. From a clinical point of view, Siegel's study of this monster is both accurate and informative. As for sheer entertainment and readability, no one should come away displeased. □



Are We Skeptical Enough?

DENNIS R. WAHLGREN

Radical Behaviorism: The Philosophy and the Science. By Mecca Chiesa. Authors Cooperative, Boston, 1994. 241 pp. Paper, \$16.95.

SKEPTICAL INQUIRER investigates claims of paranormal events. Often this is actually an exercise in psychology—why might people's reports be biased or even fraudulent? What is often not appreciated in these accounts, however, is that psychology itself, as a system for explaining human behavior, commonly makes equally specious claims.

Laypersons and cognitive psychologists have invented fictional, non-testable, and often illogical entities to explain behavior. It is one's soul, mind, personality, motivation, intelligence, or God that "causes" us to behave as we do. Even the esteemed contributors to the SKEPTICAL INQUIRER are not immune: "We actively seek out information to satisfy our many needs" (Alcock 1995). But the only evidence for a "need" is the observation of the behavior it is supposed to explain. "Drive-reduction" the-

ory died long ago because too many drives were necessary for an adequate account. It also failed due to egregious circularity.

James Alcock also resurrected the "homunculus" in our heads. By claiming that we construct a representation of the world inside our heads, he leaves implicit the necessity for something inside our heads to then view that representation. Where is this thing? How can we explain what it sees, and how it then determines our behavior? I'm skeptical.

A current buzzword in cognitive psychology (and particularly its application to health psychology) is "self-efficacy." Self-efficacy, defined as the confidence one has in one's ability to perform a behavior, is taken to be a determinant of behavior. Now examine the logic of the following quote I recently came across in an esteemed journal: "To influence efficacy

expectations one would enhance confidence in engaging in the behaviors. . . ." (Strecher et al. 1993). Certainly.

The circularity of the above statement aside, perhaps we should concentrate less on people's expectations and instead work on changing the relevant behavior?

It is time to reevaluate our methods of explaining behavior. Explanatory fictions such as "needs" are circular at best, nonfalsifiable at worst. To explain behavior according to "beliefs" ignores the fact that beliefs are just more behavior to be explained.

In spite of claims to the contrary (usually by cognitive psychologists), the behavioral science pioneered by B. F. Skinner, Radical Behaviorism (RB), is alive and has served as the basis for what is one of the most effective *applied* behavioral sciences. RB provides a welcome alternative to the problems cited above by exploring functional relations between environmental events and behavior.

As the book jacket to Mecca Chiesa's *Radical Behaviorism: The Philosophy and the Science* states, "Misconceptions, misinterpretations, and misrepresentations have kept the humanity and the promise of this approach to behavioral science from those who would have welcomed and used it if they had been properly informed." This book would be highly valuable to its readership by repairing common misunderstandings of Skinner's science of behavior, and as an introduction to the science that offers a cogent alternative to accounts of behavior as cited above.

Skinner and RB have been criticized by the lay community as well as by other schools of psychology, but Chiesa demonstrates that the criticisms are nearly always in error, and are in many cases more applicable to contemporary psychology, not to RB.

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In defining the philosophy of RB, Chiesa dismantles three general errors with respect to it. The first error is the placement of RB alongside stimulus-response or input/output models of psychology. This error is based on the mistaken assumption that individuals included under the term *behaviorism*, as it is usually applied in introductory college texts, were ever unified on the subject matter of psychology, philosophy of science, and methodology. Chiesa describes the approach of several key individuals cited as behaviorists (Ivan Pavlov, John Broadus Watson, Edward Chace Tolman, and Clark Leonard Hull), and illustrates their many differences from Skinner and RB. Pavlov and Watson were convinced that behavior could be described as simple reflex chains; Skinner emphasized the probabilistic nature of nonreflexive behavior and the role of environmental events in altering its probability. Tolman and Hull inserted hypothetical mental variables between *environmental events and behavior*; Skinner focused only on the observed functional relationship.

Behaviorism was merely a historical marker for when an attempt was made to bring psychology closer to the rigor of the natural sciences. It is inappropriate, as it is commonly used, as a label to denote commonalities in philosophy and methodology among the cited individuals.

The second error is to say RB is a Newtonian, mechanical causal system. This error is also a result of mistakenly attributing RB to incorrect historical roots. The charge is actually truer of the rest of contemporary psychology. Tolman and Hull, both commonly cited as early behaviorists, advocated a stimulus-organism-response approach to psychology—environmental changes affect some structure in the organism, which in turn results in changed behavior. The "structure," Chiesa asserts, is always a hypothetical construct—"mind," or more esoteric cognitive entities, such as "visuo-spatial scratchpad." Given an observed functional relation between environmental context and

behavior, the hypothetical structure is inserted between the two and is said to cause the behavior. However, the structure serves only to maintain a contiguous mechanistic link, a superfluous link not necessitated by the data—it does not add to the functional relation. Such additions to accounts of behavior are inelegant by increasing their complexity, and divert attention away from the original topic of interest—functional relations between behavior and its context—toward the fictional entities said to account for the behavior.

While many skeptics are quick to condemn those who ascribe the origin of the universe to a hypothetical entity called "God," we are slow to give up our equally divine and equally hypothetical "Mind" in explanations of our behavior. Some people claim to have seen this god—no one has ever claimed to have seen a mind. Contemporary cognitive psychology, the psychology of mind, has frequently been hailed as the welcomed *response to behaviorism*—Chiesa illustrates clearly that cognitive psychology operates within the framework developed by the early "behaviorists" Tolman and Hull. Skinner's *radical* behaviorism seeks to identify functional relations between behavior and its context, without requiring spatial/temporal contiguity. Skinner has little in common with these early "behaviorists."

The third error is to say that RB accepts Cartesian mind/body duality but ignores the mind. This error is rooted in the assumption that RB follows directly from John B. Watson, who suggested that we set aside the mind until we have appropriate tools for the task. Chiesa demonstrates that Cartesian duality is standard fare in much of contemporary psychology, but *not* in RB. Skinner set out to develop a comprehensive theory of behavior that ignored *no* aspect of the behaving individual, one that would encompass private events such as thinking and feeling "without setting those apart as though belonging to another dimension" (p. 187). Perhaps the primary reason Skinner referred to his sys-

tem as *radical* behaviorism was his willingness (and requirement) to account for private events. He did not set these apart and require a separate explanatory system for them. He never denied that people think or feel, but he did question the assumption that these events are somehow different than overt behavior and require mentalistic/nonphysical accounts to explain them.

Chiesa makes very clear the rational bases for studying behavior from an RB perspective. In so doing she refutes many common criticisms of Skinner and RB that result from misunderstanding of the position, and from overgeneralizations from Skinner's predecessors with whom he actually held very little in common. Her discussion of the history of the philosophy of science, including a vivid parallel between Ernst Mach (and David Hume) and Skinner, is engaging. The net result is the conclusion that, within psychology, RB is the closest approximation to the modern natural sciences in philosophy and methodology.

Skinner often wrote of the many

problems that threaten us: pollution, overpopulation, warfare, violence, to name a few. To change the behavior that results in these threats requires an effective science. However, if the science employed consists of hypothetical constructs that are said to cause behavior (e.g., mind, intelligence, belief, motivation), there is no hope—there is no means by which to change hypothetical constructs. Chiesa's well-thought text will at least foster skepticism of these theories of behavior. Better yet, it may attract well-deserved interest in RB, which has generated numerous functional relations between behavior and its context, and it is the components of the context that can and should be changed.

References

- Alcock, J. E. 1995. The belief engine. *SKEPTICAL INQUIRER* 19(3) (May/June): 14-18.
- Strecher, V. J., K. E. Bauman, B. Boat, M. G. Fowler, R. Greenburg, and H. Stedman. 1993. The role of outcome and efficacy expectations in an intervention designed to reduce infants' exposure to environmental tobacco smoke. *Health Education Research: Theory and Practice* 8, 137-143. □

claims have helped Meier become a cult figure and leader of a Swiss commune known as the Semjase Silver Star Center. He has been promoted in the United States by such credulous writers as UFO buff Wendelle Stevens (who wrote two books advancing Meier's claims and edited two volumes of his "contact notes") and Gary Kinder (author of a naive book about Meier, *Light Years*, published in 1987 by Atlantic Monthly Press).

Over the years, UFO investigator Kal K. Korff has cast doubts on Meier's claims, first in a small, self-published book in 1981, then in subsequent articles in UFOlogical magazines, and with lectures at UFO meetings and conferences. Now he has produced his magnum opus on the Meier saga, *Spaceships of the Pleiades*, a 439-page tome that subsumes all previous writings on Meier.

To gather new evidence, Korff set out for Switzerland. To avoid being identified as the notorious Meier skeptic, he disguised himself by letting his hair and beard grow and adopted the undercover name "Steve Thomas." Armed with a hidden video camera, he and a female companion appeared at Meier's rural commune for six visits—three of which were "covert," including a nighttime visit by Korff who was dressed in an army camouflage outfit to collect soil samples from some "UFO landing tracks."

Later, back in the United States, Korff had analyses conducted on the soil samples, the myriad Meier photographs purchased at the commune gift shop, and other materials. Here is a brief synopsis of his findings:

UFO photographs. Based on certain known factors (such as the focal length of the camera Meier uses), a mathematical formula can be used to calculate the size of the spaceships in Meier's photos. Never are they the large size—"22.75 feet in diameter"—that Meier alleges; instead, they are invariably small models placed relatively close to the camera. Computer analyses of some photos reveal apparent strings or wires used to



Fakeships of the Pleiades

JOE NICKELL

Spaceships of the Pleiades: The Billy Meier Story. By Kal K. Korff. Prometheus Books, Amherst, N.Y., 1995. 439 pp. Hardcover, \$25.95.

Since 1975 a Swiss farmer named Eduard "Billy" Meier has claimed to have had more than seven hundred contacts with extraterrestrials from the star cluster Pleiades, particularly with a "Pleiadian female cosmonaut" named Semjase. The Pleiadians have chosen Meier to be a prophet of Humanity, he says, and to lead earthlings into the New Age and beyond. He has even time-traveled, once having saved Jesus from a beating, according to one UFO lecturer.

As "proof" of such claims Meier has not only produced voluminous "contact notes," but also collected alleged Pleiadean rock, mineral, and metal samples, and has taken more than a thousand UFO photos and films. This is made all the more remarkable, his supporters say, by the fact that he is a sixth-grade dropout and has only one arm, limitations that should have prevented the sophisticated hoaxes skeptics accuse him of perpetrating. Moreover, reports that laboratory tests verify his various

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hold up the models. One series involved ten photos that were deliberately double exposed, while additional photographs exhibited other problems (pp. 135–219).

Spaceship movies. In Meier's movie footage of "Pleiadian ships," the alleged craft rock back and forth in the wind like lightweight models tethered to helium balloons. Korff achieved the same effect with similarly tethered models. Indeed, he notes that "balloons can be seen in the background of many of Meier's pictures" (p. 220).

"Time-travel" photographs. Meier has produced various photos that supposedly prove he has traveled into space aboard Pleiadean spacecraft. Unfortunately, Korff establishes that Meier's photographs of Venus could not have been taken with his camera, as claimed: The atmospheric details could only be revealed by using special ultraviolet filters, filters that were used for photos taken by the NASA Mariner 10 spacecraft in 1974. In fact, as shown by iden-

tical cloud formations, Meier's Venus photos are actually "out-of-focus copies of the Mariner 10 images, taken seventeen months before his alleged 'contact'" (pp. 235–237).

Similarly, analysis of Meier photographs of three lovely alien "cosmonauts"—Asket, Nera, and Semjase—show they were copied from a television screen, as were shots of a "cave-man" and an alleged outer-space photograph of the Horsehead Nebula (pp. 245–58).

"Alien" metal samples. Received during his 105th contact with the alien Semjase, Meier claims, were "four metal, one biological, and nine mineral and crystal specimens" that supposedly verified the Pleiadean visits. Although analysis of the metal samples repeatedly showed they were consistent with origin on Earth, one scientist claimed that the components were fused by a technology that could not be achieved on Earth. Alas, before the claim could be independently verified, the sample conveniently disappeared. It turned out that not only was the scientist

a *chemist* rather than *metallurgist*, but that he lacked a doctorate and even had a "demonstrable record of *fraud* in his experimental work, especially when it involved psychic research" (p. 284).

Other evidence. Additional evidence of Meier's claims has not fared well either, Korff reports. Hair from the lovely Semjase was forensically analyzed and found to be human, while the alleged "landing-tracks" on Meier's property turned out to be nothing more than early (apparently man-made) crop circles. As for the soil samples Korff surreptitiously obtained, there was "no discernible difference" between them and control samples obtained from nearby areas (pp. 299–300).

This summary of the evidence against Meier's claims is not intended to substitute for the detailed analyses Korff provides. Readers will be intrigued by the series of puzzles Meier's photos and other evidence represent, as well as educated by the Sherlockian manner in which Korff solves each in turn. □

NEW BOOKS

Book of the Damned. Charles Fort. James Brown Publishing, Fortean Times, 20 Paul Street, Frome, Somerset, BA11 1DX, UK. 1995. ISBN 1-870870-53-0. 310 pp. \$24.00, paper. The first scholarly revision since the first edition in 1919, of Fort's classic collection of unevaluated notes on strange phenomena, observations, and experiences. With extensive data corrections. Introduction by Rob Rickard, editor of *Fortean Times*.

Cosmic Relief: Honoring and Celebrating the Global Paradigm Shift. Connie L. Schmidt. Brockton Publishing, 8326 Southwest Freeway, Houston, TX 77074. 1995. ISBN 1-887918-01-9. 107 pp. \$18.95, paper. If you are seeking relief from the glut of New Age, wholistic lifestyle publications, this high-spirited spoof is for you. In fact, all skeptics will enjoy it. The author ("who does not teach weekend workshops and has never tried to sell cosmetics or herbs or cleaning products to anyone") uses sharp wit, humor-laced skepticism, and computer graphics to create text and ads we'd all like to see: "All the Latest Poop on Quartz Crystals and Your Colon." "Isn't It Time You

Considered a Career as an Incest Survivor?" "The Recovery Channel." "Alien Implant Problems?" "Single Personality Disorder." And so on. A welcome breath of fresh air.

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. \$13.95, paper (also in hardcover). New edition of work first published in 1987 has a new chapter by the editors and Geertruida C. De Goede, "Cult Archaeology and Creationism in the 1990s and Beyond," summarizing what's been found since the first edition, and also a new chapter on Afrocentric creationism by Bernard Ortiz de Montellano.

Cult Rapture. Adam Parfrey. Feral House, P.O. Box 3466, Portland, OR 97208. 1995. ISBN 0-922915-22-9. 371 pp. \$14.95, paper. A journalistic collection delving into the "rapturously cultic experiences of groups you're going to wish you never heard of."

The common thread, according to the author, is how the "panic-stricken middle class escapes its apocalyptic nightmare." The opening chapter is on the Unarius cult. Several deal with militias.

Dinosaur in a Haystack: Reflections in Natural History. Stephen Jay Gould. Harmony Books, New York, 1995. ISBN 0-517-70393-9. 480 pp. \$25.00, hardcover. This is the seventh volume of Gould's continuing monthly *Natural History* essays, completing twenty years of superb intellectual contribution to the public understanding of evolutionary science by the modern master of the scientific essay. (He says he intends to continue writing them monthly until January 2001.) As always, the centering theme is evolution, with emphasis on issues in Darwinism and patterns in the recorded history of life. Or as Gould puts it, "The how and what of evolution's four-billion-year course on our planet." Filled with Gould's love of history, "not only of life itself but of science trying to understand life," and his joy at making links between past and present,

between fascinating individuals such as Linnaeus and Erasmus Darwin, and between the specific and the general, or again as he puts it, "the marriage of alluring detail with instructive generality."

Guidelines for Testing Psychic Claimants. Richard Wiseman and Robert L. Morris. Prometheus Books, 59 John Glenn Dr., Amherst, NY 14228. 1995. ISBN 1-57392-028-2. 109 pp. \$29.95, hardcover. Researchers have avoided working with indi-

viduals claiming strong psychic powers in part because no formal methodological guidelines existed as to how to proceed. This manual attempts to provide pragmatic and flexible guidelines to help researchers and others identify and resolve the problems that occur in assessing psychic claimants. Chapters deal with the problem of fraud, initial meetings, working with likely tricksters, general research policies, pilot studies, formal research, reporting recommendations, and proof vs. process-oriented research.

Science Without Limits. James S. Perlman. Prometheus Books, 59 John Glenn Dr., Amherst, NY 14228. 1995. ISBN 0-87975-962-3. 358 pp. \$29.95, hardcover. A scientist and teacher shows how science is not a dry, mechanistic process but a dynamic interplay between human beings and their surroundings, embodying attempts to understand, anticipate, and cope with natural events.

—Kendrick Frazier

ARTICLES OF NOTE

Aragones, Sergio. "A Mad Look at Alien Abductions." *Mad*, No. 341, December 1995, pp. 9-11. Alien abductions get the *Mad* magazine treatment. All you need to know, especially about the sex and money aspects of alien abductions.

Corlis, Richard. "Autopsy or Fraud-opsy?" *Time*, November 26, 1995, p. 105. Report on the debate over the TV show "Alien Autopsy: Fact or Fiction?"

de Duve, Christian. "The Constraints of Chance." *Scientific American*, January 1996, p. 112. Nobel laureate biologist says fashionable arguments that the origin and evolution of life are the products of highly improbable combinations of chance occurrences are "demonstrably false." To the contrary, "life and mind appear as cosmic imperatives, written into the fabric of the universe."

Enright, James T. "Water Dowsing: The 'Scheunen' Experiments." *Naturwissenschaften* 82:360-369, 1995. Under a program to investigate "unconventional methods of cancer control," the German government sponsored a large-scale experimental investigation of water dowsing, conducted by two physicists from universities in Munich. This was no doubt the largest careful study of its kind ever undertaken, with some 10,000 individual tests using some 500 dowsers. The central element in the research involved double-blind tests of whether some 50 selected dowsers could correctly locate a hidden, movable water pipe from a distance of 4 to 5 yards. At the end of the project (1990), the researchers concluded that the reality of the skill of some of the dowsers had been established beyond reasonable doubt, a conclusion widely reported in the German press. Enright's article describes a reexamination of the data underlying that interpretation. This analysis demonstrates that even the most "skillful" of the dowsers were unable to perform reproducibly at levels above chance.

Most of them could have done better, on average, just by always choosing a location exactly in the middle of the test line.

Lancaster, Don. "Pseudoscience Strikes Again." *Electronics Now*, December 1995, pp. 41-43. Column says "perpetual-motion folks and pseudoscience enthusiasts" are "coming out of the woodwork." Their schemes have "zero" chance for success and divert people from the "many new and exciting things you could be trying instead." Lancaster gives some examples in electronics.

Lemonick, Michael D. "Are the Bible's Stories True?" *Time*, December 18, 1995, pp. 62-69. Cover article focuses on results of recent archaeological research in Israel, where 300 digs are under way, that is helping shed new light on which of the stories in the Bible did—and didn't—occur.

Pollack, Andrew. "The Life Force in the Briefcase." *New York Times*, November 28, 1995, p. C1. Now that Japan's economy is in a long and harsh recession, more and more businessmen are seeking advice and solace in the supernatural and mysterious forces, according to this news report. Businessmen are taking lessons in "ki," a supposed fundamental life force, and the Sony Corporation has a four-member "esper" laboratory that is trying to prove and measure such phenomena as extrasensory perception and ki. A foundation affiliated with the powerful Ministry of International Trade and Industry has a committee, headed by a Tokai University biophysicist and supported by 16 companies, to try to produce ki artificially to heal the sick. The ministry also has a committee set up to look at telepathy and other phenomena to allow business to tap into these powers. Other businesses have turned to fortune-tellers to advise them on prospective employees and business decisions.

Putz, John F. "The Golden Section and the Piano Sonatas of Mozart." *Mathematics*

Magazine 68(4): 275-282, October 1995. Author looks at the claim that Mozart intentionally composed his sonatas so that the ratio of the two parts, exposition and development/recapitulation, would approximate the Golden Proportion [$a/b = b/(a+b)$]. He finds that to a great extent this ratio is well-approximated but goes on to point out that one should also look at the ratio $b/(a+b)$. Here the Golden Section is not so well approximated. He also notes that the basic form of the sonata was well established by Mozart's time and that the restrictions imposed by the form itself quite naturally lead to the ratio of the parts being close to the golden ratio phi. He concludes that it is unlikely that Mozart had the Golden Section in mind when he composed his sonatas.

Waller, Douglas. "The Vision Thing." *Time*, December 11, 1995, p. 48. *Time*'s report on the government's program, supported by several key congressmen over the years, to try to use psychics for spying gives several examples of its notable failures. The CIA funded an evaluation of the 20-year program, and as a result announced in November that the program was a waste of money and should be shut down. (See Ray Hyman's Special Report in this issue.)

Yam, Phillip. "Martin Gardner: The Mathematical Gamester." *Scientific American*, December 1995, pp. 38-41. Good profile of Martin Gardner at 81, with emphasis on his interests in philosophy and recreational mathematics (he wrote the "Mathematical Games" column for *Scientific American* for 25 years). Several famous mathematicians comment on how his columns helped inspire work on particular mathematical problems. Touches only briefly on his SKEPTICAL INQUIRER column and his criticisms of pseudoscience and fringe-science.

—Kendrick Frazier

Scientific Knowledge Is Money in the Bank

MARK BOSLOUGH

If you have ever driven across northern Arizona, you have probably seen the signs along Interstate 40: "Meteor Crater . . . the planet's most penetrating natural attraction."

Perhaps the slick promotional billboards enticed you to make a short excursion from your planned trip. As you neared the site you would have seen a low ridge rising from the flat desert ahead. An earlier generation called the ridge "Coon Butte," not realizing that it was actually the rim of a three-quarter-mile-wide crater.

When you stand on the rim, you look across an expansive circular cavity in solid rock that is so wide that it changes the wind patterns and attracts raptors that soar in the updrafts. This big hole truly should be listed as one of the natural wonders of the world.

What you may not know is that a century ago Meteor Crater was the subject of a great scientific controversy, and was a focal point for defining the scientific method and promoting scientific research at the dawn of twentieth-century American technological progress. One hundred years after that debate, Meteor Crater serves as a reminder of the importance of scientific knowledge and of the scientific method to our way of life.

In early 1896, the journal *Science* published an address that geologist Grove Karl Gilbert (1843-1918) had recently given to the Scientific Societies of

Washington. Gilbert was the retiring president of the Geological Society of Washington and one of the top scientific thinkers of his time. He had also been chief geologist of the U.S. Geological Survey until Congress slashed the Agency's budget in half, terminating his and others' positions. His lecture was titled the "Origin of Hypotheses," and was a description of the scientific method.

At the center of the scientific method, he said, is the hypothesis, or "the scientific guess." Gilbert used the origin of Coon Butte to illustrate how this works. Four scientific guesses had been made at the time. The first came from a shepherd named Mathias Armijo, who found pieces of iron near the crater and reasoned that an explosion had hurled the metal out of the ground and formed the big hole (one does not have to be a scientist to think scientifically). Geologists who came to visit the site offered two scientific guesses involving two types of volcanic processes. A fourth hypothesis was the radical idea that a meteorite had hit the Earth.

Gilbert traveled to this then-remote part of the country and made measurements to test the various ideas. Because so little was known at the time about the physics of meteorite impacts, he predicted that such a cosmic collision would have left a very large piece of iron buried under the crater. His tests failed to find the predicted iron, so Gilbert rejected the impact idea. The small

pieces of iron found on the surface by Armijo did prove to be meteorites but Gilbert concluded that they fell from the sky in an unrelated event (thereby also rejecting Armijo's idea that they came out of the ground).

Of the two volcanic ideas, one predicted that volcanic rocks would be found in the crater. But the crater had none, so there was only one hypothesis left that had not been eliminated: some type of volcanic steam explosion.

That was the idea that Gilbert accepted as the correct explanation, even though he had arrived at the crater expecting to demonstrate that it was formed by an impact. He already supported the then-unpopular notion that such craters on the moon were formed by impacts, not volcanoes, but a good scientist does not allow personal feelings to get in the way of evidence. However, Gilbert was very careful to point out that there was much that was still not known about *meteorites and impacts*. He recognized that new facts might be discovered that would overturn his conclusion.

That is exactly what happened. We now understand that Gilbert overestimated the size of the meteorite that would be needed to pack enough punch to blast out such a big hole: Hypervelocity impacts are much more powerful than he realized. Furthermore, even a large iron meteorite will mostly vaporize in a giant explosion, leaving very few traces. Gilbert had made a mis-

take by assuming that the impact would leave a lot of buried iron.

It would be many years before a young scientist named Eugene Shoemaker and his colleagues from the U.S. Geological Survey would discover a rare new mineral in the rocks at the crater, a mineral that had been predicted to form from an impact. This discovery finally settled the controversy, and partially vindicated a shepherd's original hunch that the hole was formed by some kind of colossal explosion involving iron.

The scientific process is sometimes slow, but it always involves making educated guesses that eventually lead to predictions that can be observed and put to a test. If the predictions turn out to be incorrect, the test is still successful as long as scientists learn enough to modify the theory, find a better one, or uncover mistaken assumptions. Unfortunately, even after the successes of twentieth-century science between Gilbert's time and now, there are a lot of people who still don't like (or don't understand) the scientific form of reasoning.

In fact, modern science is now under attack from many directions. On the left

Mark Boslough is a physicist in Albuquerque, New Mexico, who specializes in hypervelocity impact research. Using computer models, he and his colleagues predicted correctly that the Shoemaker-Levy 9 comet impact into Jupiter would produce a plume visible from Earth. He visits Meteor Crater on occasion to collect samples of shocked sandstone for a project to develop new methods for identifying impacts.

are those who twist legitimate multiculturalism by going way beyond it to extreme relativism. They dogmatically assert that all ways of seeking knowledge are equally valid, but still insist that the scientific method is flawed because it originated in a time and place that causes them to view it as a Eurocentric, white male endeavor. Such thinking has encouraged proliferation of belief in pseudoscientific and unscientific ideas ranging from crystal healing to flying saucers. Even worse, it has turned some women and minorities away from careers in science, not only to their own detriment but to the detriment of society.

Science is also under attack from the religious right, whose literal interpretation of the Bible supersedes scientific evidence, logical reasoning, and common sense. In this fundamentalist view, any fact that is at odds with their own reading of the scriptures must be ignored. Unfortunately, this faction is not satisfied merely to reject science for itself, but it now has an active campaign to remove scientifically validated subjects (such as evolution) from the classroom and have them replaced by their own unscientific opinions (such as creationism).

Worst of all, science is now under attack by a budget-cutting Congress in Washington for whom dollars have measurable value but scientific knowledge does not. Members of Congress think that spending on basic science is like throwing money into a big hole in the ground. They do not realize that a dollar saved may be two dollars (or more) worth of knowledge lost.

Gilbert closed his late-nineteenth-

century address by explaining that "fertility of invention implies a wide and varied knowledge of the causes of things," and that deep understanding of nature through scientific research is essential. Gilbert told his audience that our "material, social, and intellectual condition" advances in lockstep with our "knowledge of natural laws."

He concluded by comparing science to an investment: "Knowledge of nature is an account at [the] bank, where each dividend is added to the principal and the interest is ever compounded: And hence it is that human progress, founded on natural knowledge, advances with ever increasing speed!"

Since Gilbert spoke these words, our scientific bank account has led to inventions that his audience in Washington could not have imagined. Our investment has swollen with the advances we associate with modern living, with medical discoveries that have given us longer, healthier, happier lives, and with an unprecedented degree of national security.

We can thank Gilbert and his contemporaries for having the foresight to recognize 100 years ago the importance of this scientific bank account, and for making the effort to convince decision-makers to restore and increase funding for science. We should again ask those in Washington to pass along to future generations the American tradition of a strong investment in scientific knowledge, and trust in the scientific method. And we should remind them that research spending is money in the bank, not money in a hole. □

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A Response: African Contributions to Mathematics

BEATRICE LUMPKIN

As the author of "African and African-American Contributions to Mathematics" I believe Walter Rowe's article "School Daze: A Critical Review of the 'African-American Baseline Essays for Science and Mathematics,'" *SI*, September-October 1995, misses the main point. He concludes his article on the Portland Public Schools' "African American Baseline Essays" by quoting their stated goal: "To eliminate personal and national ethnocentrism so that one understands that a specific culture is not intrinsically superior or inferior to another." This goal he dismisses as "nothing but cant." Coupled with an offensive cartoon stereotype, the effect of the article is a defense of the "white is right" status quo. Rowe says he fears "growing tribalization of American culture," but does not admit that textbooks in the past have presented mathematics and science as purely European contributions, completely omitting contributions of people of color.

Casual readers of "School Daze" may get the false impression that my essay makes claims for paranormal sources of knowledge. On the contrary, my essay tries to show that mathematics developed in Africa as a human response to human needs. I believe that concept can be helpful in the teaching of mathematics.

After a personal attack on my credentials (which I ignore and forgive) Rowe opens with a discussion of the Ishango bone found in Zaire. He says my essay "is clearly intended to infer

that systems of numeration originated in Africa." To refute any such inference, Rowe cites Marshack (1972) who dates the bone to 6500 B.C. and gives examples of older numerical records found in Europe. Evidently Rowe was not aware of new work on this subject.

Recent scholarship, which Marshack includes in his 1991 revised edition, gives a much older date of 18,000 B.C. to 23,000 B.C. for the Ishango bone. It is based on work by Brooks and Smith (1987). The Ishango bone grouped numerical values recorded as tally marks and was probably preceded by simpler tally records. A simpler tally record on a fossil baboon bone has been found in Border Cave, between Namibia and South Africa. The bone was inscribed with 29 equally spaced tallies, perhaps a record of a lunar period. Dated about 35,000 B.C., it is the oldest numerical record known to date (Bogoshi, Naidoo, and Webb 1987).

It is possible that modern humans possessed a sophisticated tool kit by the time the species spread from Africa to other continents. Ages of 75,000 to 90,000 years are given for modern-looking toothed harpoon bones found by Yellen et al. (1995) on the Semliki River in Zaire, near the Ishango site on Lake Rutanzige. That discovery may require a correction of current textbooks, which say that such tools were first invented in Europe 40,000 years ago (Yellen et al. 1995).

Some early Egyptologists, who like

Rowe did not admit "that Egypt was an African civilization," invented a "dynastic race" invasion that was supposed to have brought civilization to Egypt. Many Egyptologists have discarded this theory because the evidence does not support it (Trigger 1983). Classification of ancient Egyptian civilization as African is based on cultural factors and has nothing to do with the cranial or "racial stock" classifications favored by Rowe.

I wonder if those who consider "Egyptian influence on Greek mathematics to be minimal," think classical Greek mathematicians were stupid to spend many years studying with the Egyptian priests. Heath (1921, 1981), whom Rowe identifies as "the leading expert on Greek mathematics," wrote: "Diodorus gives it as an Egyptian tradition that geometry and astronomy were the discoveries of Egypt, and says that the Egyptian priests claimed Solon, Pythagoras, Plato, Democritus, Oenopides of Chios, and Eudoxus as their pupils. But the Egyptian claim to the discoveries was never disputed by the Greeks." Heath shows that the claim made by the Egyptian priests was corroborated by Herodotus, Aristotle, Strabo, Socrates (according to Plato), and by Heron of Alexandria.

In the transmission of Islamic mathematics and science to Europe, Africa played a major role, notwithstanding Rowe's doubts. During African Islamic rule of Spain and Sicily, European scholars came to those countries to translate science

and mathematics books from Arabic to Latin (Boyer 1968). African-European trade provided another transmission route. Leonardo of Pisa (Fibonacci) spent years trading and studying mathematics in Algeria. On his return to Italy he used what he had learned in Africa to write influential books of mathematics, adding new material of his own (Gies and Gies 1969).

Finally, the Egyptian value of 3.16 for π remains a great achievement for

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1800 B.C. I agree that "Besides the value of 3 for π , the Babylonians occasionally used a better approximation, $3 \frac{1}{8}$ " (Bunt, Jones, and Bedient 1976).

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Response to Beatrice Lumpkin

WALTER F. ROWE

If Beatrice Lumpkin is offended by the suggestion that she is a purveyor of pseudoscience, she should be more careful in the future. Both she and Hunter Havelin Adams III have published articles in the *Journal of African Civilizations* and in the book *Blacks in Science* (ed. by Ivan van Sertima, New Brunswick: Transaction Books). Adams's articles contain the same sort of pseudoscience as his science essay in the Portland African-American Baseline Essays. I think under the circumstances a reader might be forgiven for assuming that Lumpkin endorses Adams's views (including his belief in the magical powers of melanin).

Lumpkin raises a number of issues in her response to my article. Space does not permit me to reply in detail to all of them. I will restrict my rejoinder to three issues: the interpretation of the Ishango bone, the racial and cultural affinities of the ancient Egyptians, and the extent to which Egypt influenced the development of Greek mathematics.

1. *The Interpretation of the Ishango bone*: Citing more recent research on the Ishango bone does not mitigate Lumpkin's

tendentious use of source materials in her original African-American Baseline Essay. The point of Lumpkin's discussion of the Ishango bone in the African-American Baseline Essays is to lend plausibility to a *non sequitur*: "Since Africa is widely believed to be the birthplace of the human race, it follows that Africa was the birthplace of mathematics and science." The limited nature of the archaeological record does not at this time permit any conclusion about where mathematics originated. It is instructive to compare Lumpkin's discussion of the Ishango bone in her mathematics essay with the discussions of such artifacts in David Nelson's essay "Teaching Mathematics from a Multicultural Standpoint" (Nelson 1993) and in George Gheverghese Joseph's book *The Crest of the Peacock* (1991). Nelson and Joseph (both prominent leaders in the international multicultural mathematics movement) acknowledge the provenance of similar notched bones in both Africa and Europe. In further contrast to Lumpkin, neither of these authors tries to draw from these artifacts any sweeping conclusions as to where mathematics first developed. Joseph ends

his discussion of the Ishango bone in *The Crest of the Peacock* with the following warning:

Finally, in the absence of records, conjectures about the mathematical pursuits of early man have to be examined in the light of their plausibility, the existence of convincing alternative explanations, and the quality of evidence available. A single bone may well collapse under the heavy weight of conjectures piled upon it.

2. *The racial and cultural affinities of the ancient Egyptians*: I do not see how Bruce Trigger's historical essay (Trigger 1983) has any relevance to a discussion of the scientific research of Brace et al. (1993), published ten years later. What is even more mystifying is that Trigger's essay contains not a single word about the biological relationship of the ancient Egyptians and sub-Saharan Africans, which is the subject of the article by Brace and his coworkers.

Lumpkin's citation of Trigger's essay raises troubling questions about her research methods. She asserts that ancient Egypt was an African culture.

The second sentence in Trigger's essay reads: "The aim of this chapter is to trace the development of this civilization from the introduction of a southwest Asian-style subsistence economy into the Nile Valley. . . ." Moreover, Trigger's essay details the extensive borrowings of the Egyptians from Southwestern Asia, including all domesticated plants, many domesticated animals, and even aspects of pre-dynastic funerary architecture. Trigger also points out that the Egyptian language is Afro-Asiatic.

3. *The alleged influence of ancient Egypt on the development of Greek mathematics:* Lumpkin's citation of the statement by Diodorus Siculus is yet another example of her research methods. Diodorus (*Library of History* i. 95) is reporting the tradition among the Egyptian priests that a number of illustrious Greeks studied in Egypt. The historical accuracy of this tradition is questionable. Diodorus's list includes not only historical figures such as Pythagoras, Plato, and Eudoxus, but also the mythical figures Orpheus and Daedalus; Diodorus also repeats the highly unlikely claim that Pythagoras derived his doctrine of the transmigration of souls from the Egyptians.

There are better sources that can be consulted on the question of the influence of Egypt on the development of Greek mathematics. Here, I confine my comments to the traditions that Pythagoras, Plato, and Eudoxus studied in Egypt. While the traditions surrounding the life of Pythagoras do have him studying in Egypt, neither Herodotus (*Histories*, iv. 95) nor Isocrates (*Busiris* 28), the very earliest witnesses to the career of Pythagoras, associate him with the study of mathematics. Furthermore, both Diogenes Laertius (*Lives of Eminent Philosophers*, viii. 1) and Iamblichos (*Life of Pythagoras*, iii.-iv.) report that Pythagoras spent a considerable length of time studying in Babylonia among the Magi.

Diogenes Laertius (iii. 6) also mentions Plato's visit to Egypt. According to this account, Plato went first to North

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Africa to visit the mathematician Theodorus of Cyrene (a Greek colony there), then to southern Italy to visit two Pythagorean philosophers, and finally to Egypt where he consulted "those who interpret the wills of the gods."

Readers of Plato's dialogues encounter a number of references to advanced mathematical concepts. They also encounter many references to Egypt. The only references in Plato's dialogues to Egyptian mathematics are in *Phaedrus* and *The Laws*. In *Phaedrus* Plato has Socrates make a passing reference to the tradition that Thoth discovered geometry, arithmetic, astronomy, and the alphabet. In *The Laws* Plato recommends Egyptian pedagogical methods for teaching children basic mathematics. A perceptive reader of Plato cannot escape the impression that by the time of Plato, Egypt held little interest for Greek mathematicians.

Diogenes Laertius (viii. 8) is the principal source for the life of Eudoxus of Cnidus. According to *Lives of Eminent Philosophers*, Eudoxus was taught geometry by Archytas of Tarentum. Subsequently, he traveled to Athens where he studied philosophy. Only then did he travel to Egypt. Strabo (*Geography*, xvii. 1. 29) reports a tradition that Eudoxus and Plato went to Egypt together and learned astronomy from the Egyptian priests. There is no ancient tradition that Eudoxus studied mathematics during the sixteen months he was in Egypt.

That the Egyptians contributed in some degree to the development of Greek mathematics is not at issue. The real issue is how much of Greek mathematics was the product of other cultures, especially that of ancient Egypt, and how much represents the original work of Greek mathematicians. The evidence of extant Egyptian and Greek mathematical texts is that the Egyptians contributed very little to Greek mathematics. A survey of the contents of Euclid's *Elements* reveals detailed treatments of a number of areas of mathematics that were foreign to both Egyptian and Babylonian mathematics: the solution of algebraic problems by geometry (Book II); the theory of proportions for commensurable and incommensurable quantities (Books V and VI); number

theory, including the concepts of primes and rational and irrational numbers (Books VII through X) and application of the method of exhaustion to circles and spheres (Book XII). All of the propositions in the *Elements* are established by deductive proofs; there is not a single deductive proof in all of the extant Egyptian mathematical writings.

Some scholars have argued that the Egyptians must have been aware of the Pythagorean theorem (Gillings 1972). Even if one were to grant that the Egyptians actually discovered the Pythagorean theorem, the Egyptian contribution to the mathematics in Euclid's *Elements* would still be very small: The Pythagorean theorem is proposition 47 in Book I of the *Elements*, a work containing thirteen books.

Lumpkin calls attention to what she regards as a personnel attack on her credentials. When I was preparing my article I was aware that my comments could be interpreted as an *ad hominem* attack. However, I felt that in light of the claim made in the foreword to the African-American Baseline Essays that the authors were experts on African and African-American history, a *critical examination* of her credentials and those of Hunter Havelin Adams III was in order.

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Messages from page 17

the Big Three automakers would begin mass-producing electric cars.

If Mangum is on those 400 radio stations and he's predicting the winning numbers for these multi-million-dollar lotteries, why haven't we heard stories about the thousands of lottery players who were forced to share a big jackpot because they all picked the same winning combination suggested by Mangum?

Apparently operators of those 400 radio stations aren't savvy enough to raise that kind of question, or they simply don't care if he has real psychic powers as long as he brings in listeners.

* * *

Are America's trashy talk shows getting skittish about the supernatural?

Halloween is usually the time when

shows like "Jenny Jones" or "Sally Jessy Raphael" and their ilk produce programs promoting the reality of ghosts, satanism, and psychic phenomena.

Last Halloween, as the talk shows were under attack for parading "any and every pathology and dysfunction into our living rooms" (Sen. Joseph Lieberman of Connecticut) and being "perpetrators of cultural rot" (former Education Secretary William Bennett), most of the talk shows avoided the occult and stuck with their usual fodder of novel people and dysfunctional relationships.

Halloween day topics included controlling husbands ("Sally Jessy Raphael"); incompatible sex drives ("Gabrielle"); and meddling mothers-in-law ("Gordon Elliott").

* * *

Finally, the only national television talk

show devoted to the supernatural bit the dust last fall.

"The Other Side"—whose topics included "Talking to the Dead," "Photographic Proof of the Paranormal," "Miraculous Cancer Treatments," and "America's Most Haunted"—was canceled after abysmal ratings, derisive attacks by some television critics, and a midsummer revamping.

The original host was Will Miller, who is a psychotherapist, an ordained minister, and a former stand-up comic. Despite the steady parade of bizarre guests with incredible claims, Miller prided himself on his nonconfrontational style. When he was replaced, Miller told *USA Today* that he objected to the show's exploitive nature. NBC complained that he couldn't empathize with the guests. With Miller gone, the program became less dependent on paranormal topics, but the show never got acceptable ratings. □

Statues from page 18

when his mother steps down (Laura Steele); a billionaire who thinks that our doom is near will lead a cult following to a secret underwater city (Leah Lusher); and "ER hunk George Clooney will be saved from a fiery death—by his pet pig!" (Barbara Donchess). In the rival tabloid the *Examiner* (January 3, 1995), Gary Spivey predicted that the ghost of Jackie Kennedy would appear to Hillary Clinton, urging her to run for president in 1996. Ron Mangum predicted that Liz Taylor would have a close call when stricken by the "flesh-eating virus" (actually a bacterium); and Linda Georgian, host of the Psychic Friends Network infomercial, predicted that after experiencing a vision of the Virgin

Mary, Hollywood madam Heidi Fleiss would convert to Catholicism and become a nun.

* * *

Meanwhile, something seems to have gotten into the world's statues to make them exceedingly restless during 1995. First, at least a dozen of Italy's statues of the Madonna started weeping tears of blood, according to a New York Times News Service story of April 1995. Some of these miraculous tears were discovered to be paint, others tinted olive oil.

Then, in September 1995, in India, statues of Ganesh, the Elephant God, developed a thirst for drinking milk. The faithful offer them milk on a teaspoon, which the statue appears to consume, in

miraculous fashion. James "The Amazing" Randi said that some of these statues, those made of plaster or ceramic, are simply soaking up the milk via capillary attraction, and he recommends offering them a teaspoon of ink to see if the statues can consume it as eagerly, while remaining unstained. Statues made of marble have milk slowly trickling down their front side which is not easy to see. Some statues made of metal seem to be capable of consuming several liters of milk. The self-described psychic Uri Geller, asked to comment on the phenomenon by British television, said "Miracles are very strange . . . almost paranormal." However, a Belfast newspaper noted that "priests at the temples would not allow anyone to inspect the statues for any devices that could consume the milk." □

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Viewers Find Flaws with 'Alien Autopsy' Film

I do most of the public Yerkes Observatory tours, as well as private programs, and so consider myself willing and able to answer questions about astronomy. During the question-and-answer period someone inevitably asks, "What about Roswell?" The SKEPTICAL INQUIRER has provided me both the methods and information necessary to answer the question.

People have been asking me about the so-called alien autopsy video.

None of the people interviewed could possibly be said to be experts in exobiology! Where were the real biologists? The astrophysicists? The pathologists?

Many of those interviewed assume the "film" was made in 1947 because that's what they were told, over and over. If, however, the film was made recently, all of their subsequent comments are worthless.

One of the nonexperts marvelled that the organs came out "like chunks of meat," and that there was no connecting tissue. Now that's a correct assessment. If the organs aren't connected, they would slide around every time the "alien" moved! I propose they were indeed "chunks" of something. The more I think about it, the more the "alien" resembles something that could have been half-baked in an oven.

There did not appear to be any sign of ribs or the equivalent. The poor creature's organs must have sloshed around every time it moved!

We are told over and over that no one in 1947 would have had the technology to make such a realistic film. We are told such an elaborate hoax could not be made today. Over and over we are told how well made the film is, as if by repetition we will come to believe it. Through sheer repetition, many watching may come to believe that the autopsy was real. However, it is really a rather shoddy piece of filming.

Since there are so many obvious flaws, the question about when the film was made is moot.

The film looks entirely too full of scratches and light leaks. It is as if someone were told to make a modern film appear old and went a bit too far.

The special effects people may be experts, but not in exobiology or science. They too were probably told they were watching the real autopsy of the real alien.

The Sharper Image catalog sells for more than \$1,000 an "authentic" fake "alien" made from the same mold that produced the "alien" in the movie *Roswell*. I find it fascinating that the Sharper Image "alien" looks quite different from that shown in the alien autopsy film.

The entire movie was filmed with the camera person moving continuously, much in the style of "N.Y.P.D. Blue" and indeed many modern commercials. I believe such motion is intended to convince viewers that they are watching a home movie. I think this is a dead giveaway: The anonymous camera person was filming in a modern style. Real autopsy films would not be made this way.

What's a telephone doing inside an operating theater?

There are almost too many "props," more than necessary. Most are inexpensive props one could find at a scientific or army surplus store (I have half in my darkroom). Where are the more sophisticated instruments one might expect to see?

No X rays appear to have been taken! How does the "surgeon" know how deep to cut into the cranium?

No bones were removed from the "alien." The insides of the "mouth" were never checked. No teeth were shown. A tracheotomy was not performed! All of these would be routine, especially if the "alien" were real. The lack of such examinations is consistent with the idea that the "alien" is not much more than a stuffed mask.

We are led to believe the blood dripping from the scalpel incisions is significant. Why is there no sign of blood coming from the right damaged leg? (Would a dead alien continue to bleed?) How dif-

ficult is it to copy methods used by psychic healers to fake blood? (Take a small hidden balloon or a hypodermic full of colored corn syrup and squirt it down the blade of a scalpel and you will get the very "realistic" appearance of real bleeding cuts.) I do not believe the special effects people when they say they can't imagine how such a thing could be faked.

At least one of the advertisements was for the "alien autopsy video," which suggests we are watching an "infomercial" designed to sell us the product.

Extraordinary claims require extraordinary proof. Not once are we given anything real, no knowledge we could only have gotten from an authentic extraterrestrial, no real artifacts.

In brief, the "alien autopsy film" was about the least likely candidate for proof that aliens exist that I have ever seen. It is not scary, not realistic, and it is poorly made (despite what we are told). For the same price of the video you can buy *The Day the Earth Stood Still* and be more thoroughly entertained.

Richard Dreiser
Lake Geneva, Wisc.

I had an opportunity to view "Alien Autopsy: Fact or Fiction?" on its November 25, 1995, rebroadcast. To me the most blatant Hollywood effect was the scalpel cut along the side of the neck from the ear to the shoulder/chest region. It was typical of a contemporary knife-cut effect, exhibiting the following characteristics:

(1) As the blade was drawn along the neck, the "blood" appeared immediately, adjacent to the blade. (2) The blood appeared in a uniformly wide line. (3) The blood appeared entirely to one side of the blade ("uphill" from the blade, at that). (4) The blood appeared only on the side of the blade away from the camera. (5) Once the blood appeared, it didn't drip or run, but stayed where it had first appeared, in a line of uniform width for the duration of the cut. Only in later shots did we see a couple runs of blood from this cut. Even then, the two drips had ceased

Readers continued on page 59

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running by the time they were seen.

These characteristics are the result of a tube hidden behind the blade that delivers stage blood from a syringe operated off-camera. Remember the times you've cut yourself with a sharp hobby knife or razor? Rather than appearing instantly, the blood seems to take a couple of seconds before it gushes up. For a corpse with no circulation, the blood appeared at the cut without delay, yet only in quantity sufficient to form a line without running. This would indicate that the source of blood had moved on with the blade, rather than originating from inside the body. At no time during this cut did the camera move around for position as it did in the rest of the film. This would be necessary to conceal the blood delivery tube on the far side of the scalpel.

People trying to launch careers in the motion picture industry must demonstrate their skills to the establishment. This often is accomplished through one or more demonstration films done as student film projects. George Lucas's *THX 1138* was one such student film project. If the participants demonstrate their skills adequately, they stand to land themselves careers in the industry. Remember Stan Winston's statement after viewing this film? "If you came to me and said that you created this illusion, you'd be working here [snaps fingers] like that!" It's my opinion that we've witnessed a skills demonstration film, and that the talents behind it soon will be coming forward to claim their new careers.

Wayne Orlicki
Hemet, Calif.

The Fox television network aired "Alien Autopsy: Fact or Fiction?" for the third time on November 25, 1995. However this time, in addition to showing an autopsy of an alien creature, they presented footage showing pieces of the alien craft that crashed near Roswell. Pieces of a control panel and an I beam were shown. Being a mechanical engineer, the shape of the I beam caught my attention.

The top and bottom cross sections of the beam were very thin and the middle vertical section was very thick. This is

the worst possible design of an I beam. I beams were invented as a more efficient way to carry a load. This is done by putting as much material as possible away from the center axis of the beam. The best design uses thick top and bottom cross sections and a thin vertical section. The middle section of an I beam does little to contribute to the load-carrying capacity of the structure. In fact, many times holes will be drilled through the middle section of an I beam to reduce its weight even more with little effect on its load-carrying capacity. The beam shown on this broadcast appears as though someone tried to make an I beam that "looked alien." But no matter what planet you're from, the laws of physics are the same. Only beings with subhuman knowledge of structural design would have designed an I beam like the one shown on this broadcast.

Since the first time I heard about the incident near Roswell, I had hoped that someday the truth would come out about what really happened, but this film is an obvious hoax.

Gene Schildmeier
Anderson, Ind.

There is no need to go into any fine detail to decide whether or not the Roswell alien autopsy film was a hoax. If it had been an autopsy of a genuine "alien" it would have been the most important autopsy in the history of medicine. Any official film would have been of the highest possible quality—but what we saw was pathetic.

Secondly, as pointed out in the *SKEPTICAL INQUIRER* (Nov./Dec. 1995, p. 16), it would have been attended by several *unmasked* official observers, but not one was seen. Why not? Because any faces seen would have been identifiable and the physical presence of these identified verifiable. Hoaxers could not risk this, so every person seen in the autopsy sequences had to be masked.

Stanley Shoop
Elstree, Herts., U.K.

Fox recently showed "Alien Autopsy" again—with "added footage" of pur-

ported alien wreckage and two purported alien "typewriters" designed for six-fingered hands. The program enthusiastically compared them to our most advanced ergonomic hand-shaped keyboard.

Only one problem. The alien "key-board" has two closely set "hands" angled *inward* toward the user, complete with depressions for the wrists. The aliens would have to glue their elbows together in front of their navels to use it!

The remainder of the wreckage in no way resembles the Roswell foil-and-balsa described by (for want of a better term) "witnesses."

I recently mailed to Barry Karr [publisher's representative, *SI*] a tape containing a mid-1950s episode of "Science Fiction Theater," titled "Bulletproof." The program concerned the discovery of bulletproof alien "foil" left in the desert by a damaged saucer. I wonder just when the Roswell story developed the "super-foil" detail. I suspect a check of the records will prove the television show came first.

R. D. Horton
Wilmore, Ky.

With regard to the "Alien Autopsy" film, I noticed in the still frames reproduced on pages 18 and 19 of *SI* (Nov./Dec. 1995), that the wall telephone clearly has a *coiled* handset cable. I thumbed through some old magazines (*National Geographic*) and found the earliest depiction of a coiled handset cable occurred in a Bell Telephone advertisement in December of 1954. Has anyone determined when coiled handset cables became available? If they were not made until the 1950s then the film, which purports to have been shot in 1947, is proven to be a hoax.

E. Vernon Buck
San Lorenzo, Calif.

Several other readers commented similarly. The phone and the coiled cord at first appeared to be obvious anachronisms, a "smoking gun" proving the film to be a hoax. But very recently several photos published in 1947 of such a phone and coiled cord have been found, and a similar wall phone (Western Electric Model 354) existed as early as 1937.—EDITOR

The "Alien Autopsy" Show-and-Tell: Long on Tell, Short on Show" report by C. Eugene Emery, Jr. reminded me of a story I read and enjoyed when it was published 20 years ago. Theodore Sturgeon's "Occam's Scalpel" (1971, U.P.D. Publishing) presages the present craze over the distorted mythology of that "Roswell Incident."

In contrast to the national news releases and "questionable" autopsy films on which *SI* dwells, Sturgeon's story is about a closely held conspiracy of silence between two physician brothers whose aim is to influence a single man into correcting world ecology disaster. They use one brother's highly refined *moulage* skills to create a convincing alien cadaver, along with the other's delicate sense of theater, to manipulate a man. Any sort of Roswell incident smoking gun of incriminating evidence is thoroughly destroyed by their immediate cremation of the model.

One of Sturgeon's characters quotes Occam's razor as a test of logical verity holding that, "Given an effect and a choice of possible causes, the simplest cause is always the one most likely to be true." Using this harmlessly erroneous rule (by which propounders of the "Roswell Incident" deceive), he manipulates a man into expending money and effort working to repel alien invaders. Could this fiction have inspired (or even tainted slightly) the phony autopsy on what appeared to experts as an apparently "standing lifecast" alien? "Roswellites" have obviously not adhered to the rigor of formal logic, but how can they be so gullible as to proclaim belief that "alien invasion" is the simplest solution under a perverted Occam's test when discovering twisted metallic reflectors and supporting braces?

Jonathan S. Hudson
La Luz, N.M.

Your coverage of the "Alien Autopsy" program in the November/December 1995 issue raised two points. On page 19, Joe Nickell writes that the illusion of a scalpel leaving a trail of blood on the skin was probably achieved using "a tube fastened to the far side of the blade." In fact, there is a more efficacious special effects tech-

nique available. Stage blood can be manufactured in two separate compounds, one of which resembles iodine, while the other dries invisibly on any surface. The clear element can be painted on a subject's skin and the brownish liquid on the ostensible "cutting" blade. When the two come into contact, realistic stage blood oozes forth. One advantage of this inexpensive and simple technique is that the "cutting" blade can be passed from hand to hand with no tubes for the filmmakers to conceal.

Second, on page 18, a Kodak spokesperson is quoted as saying that he was asked to authenticate the date of a *print* of the "autopsy" film. Shooting such a documentary event indoors without providing extensive artificial lighting would be best accomplished using a negative film, especially given the evident inexperience of the cinematographer. Making the reasoning assumption that the original film was a negative and not a reversal stock, it is meaningless to date the *print*. The "autopsy" could easily have been filmed recently on a new negative and then printed onto positive stock of the correct vintage.

As a longtime, yet nonscientist, reader, I am pleased to have finally found a subject on which I could comment.

David Kalat
Bloomington, Ind.

One aspect of the Roswell autopsy hoax that has inspired surprisingly little comment is the nature of the film itself. Why would a 1947 autopsy be filmed in *black and white*? The hoaxers, and most of their critics as well, seem to be under the mistaken impression that American military cameramen of that era used only black-and-white film. After all, wasn't World War II "the one in black and white"?

In fact, the Navy used color stock throughout the war, a fact that infuriated the Army when it discovered it had been one-upped in this aspect of the publicity wars. In John Ford's documentary of the *Battle of Midway*, gun-camera footage of blasted Zeroes and kamikazes plunging into or just missing carriers and other men of war blaze forth in vivid hues.

However, most of the documentaries using this film were produced for tele-

vision in the 1950s, before the advent of color or when it was still something of an expensive novelty. Thus, Navy and Marine Corps footage was transformed into black and white for documentaries such as *Victory at Sea*, *The Twentieth Century*, and *Air Power*. The networks apparently got into the habit of assembling their own libraries of stock footage—in black and white—so even when color became the standard, references to World War II continued to use the secondhand black-and-white stock footage rather than the color conversions in the government archives.

It was not until the English production *The World At War* was aired in the United States in the early 1970s that the public discovered that the familiar stock Pacific war footage was actually in color, a point driven home more emphatically with the movie *Midway*, which converted the 16mm originals, with incomplete success, into the standard 35mm Hollywood format.

The hoaxers, either unaware that military color photography was quite common in World War II or convinced that most audiences would accept that in 1947 black-and-white film was all that was available, used black-and-white film to lend an air of bogus authenticity and antiquity to their proceedings. Also, because color stock tends to degrade more quickly than black-and-white stock, it may have been next to impossible to find usable, 50-year-old, color film.

The use of black-and-white film is among the best evidence of a hoax. Why would scientists not document this remarkable "discovery" as best they could? Color film of an autopsy would have far more scientific value than black-and-white. The first atom bomb tests, two years earlier, were filmed in color. Why not this even more astounding event? Color stock was readily available. In short, to ask the question is also to answer it.

Edward B. Furey, Jr.
Woodhaven, N.Y.

Readers might wish to consult our subsequent article, "How to make an 'Alien' for 'Autopsy'" by Trey Stokes, a Hollywood creature effects artist (*SI*, January/February 1996).—EDITOR □

Why Creationists Don't Go to Psychic Fairs

I read with great interest John Taylor, Raymond Eve, and Francis Harrold's study on baseline cultural belief systems ("Why Creationists Don't Go to Psychic Fairs," *SI*, November/December 1995). I tend to agree, the rules one learns early act as filters and selectors later in life. In a way, information is like an infection, and some information is more virulent. What people become "infected" with early on may give an indication as to their susceptibility to ideas encountered later in life.

I found their methods acceptable, with one exclusion that I think needs to be addressed. That is, the degree to which these categories of base beliefs are supported-opposed in the university itself.

I write science fiction. This genre has a strangely ambivalent existence within academe. It is, ostensibly, an art. It is writing. Therefore, to pursue it as such, one would naturally select those courses in college designed to enable and facilitate one's art. Such courses are found in the humanities. However, if one is going to write science fiction with an emphasis on science, and elects to take courses in the sciences to facilitate that part of the endeavor, one finds consistent and oftentimes violent resistance on the part of the humanities instructors. One is told one doesn't need science, that technological studies are useless, that one will be "corrupted" by such courses. There is an antagonism toward the sciences and technologies within a large body of academics that cannot be dismissed as simply inter-departmental rivalry. What effect does this have on students already ambivalent about the kind of world they are matriculating into? If one is already biased toward one of the two nonrational belief systems Taylor, Eve, and Harrold describe, encountering this attitude in the university must certainly be taken into account in any analysis of how those belief systems function. It would be interesting to see a breakdown of course and career choices among these groups. Exactly how many of either choose to go into hard sciences?

It is possible that the ongoing debate between rational and nonrational belief systems has been worsened by a rhetoric of mutual antagonism. At some point in the

past thirty years, science has been solidly identified as a somehow inhuman practice, and all things technological, as unnatural. I see few attempts to challenge this paradigm.

Mark W. Tiedemann
St. Louis, Mo.

I was particularly delighted with the research report showing that creationists are not attracted to "fantastic science."

Over recent years I have argued in two (or three) letters to you that Christians and CSICOP are allies in contending against "fantastic science." Certainly there are many Christians who hold beliefs that I cannot hold. For example, I would not fit into Taylor et al.'s definition of a "creationist." Furthermore, there are people who use the mantle of Christianity to disguise self-serving "ministries." Nevertheless, this *SI* report documents empirically that traditional Christians reject "fantastic science" and the immodest claims of irrational postmodernism. Even though CSICOP is far from agreement with Christianity on some issues, CSICOP should not reject an ally. This is particularly critical because rational thought is losing ground to the irrationalism readily found in the entertainment media and increasingly found in humanities and social studies departments of many colleges and universities.

I support the SKEPTICAL INQUIRER's editorial practice of slapping religious charlatans who make ridiculous claims but refraining from criticism of religion in general. Those Christians who seek a foundation on which to base morality, who believe that "the heavens declare the glory of God," and who have found a reason to avoid living on a secular "what's-in-it-for-me?" basis are your allies in the struggle against the "claims of the paranormal."

Emil J. Posavac
Skokie, Ill.

Taylor, Eve, and Harrold say "So much for any optimism on our part that pseudoscientific beliefs are eliminated by exposure to higher education." I am sure that their conclusion would have been the same had their study been done in any liberal arts

college in the United States.

I wonder, however, if the conclusion would have been the same if similar studies were done at superior schools such as M.I.T. (where I received a Ph.D. in Physics in 1944), Harvard, Oxford, or Cambridge.

Henry F. Ivey
Philadelphia, Pa.

I am puzzled by a statement made in "Why Creationists Don't Go to Psychic Fairs." In discussing the correlations between the Fantastic Science scale and other variables (Figure 1 and the text on page 27), the authors cite Pearson product-moment correlations of -.20, -.16, -.15, and -.13. The first three are stated as significant (at $\alpha = .05$ level) but weak, while the last is dismissed as insignificant. Yet, with the large number of respondents ($N = 300+$), all four correlations would be statistically significant at the .05 level. As far as practical significance goes, all four correlations are extremely weak. With a large sample size, almost any correlation can be found to be "statistically significant"; practical significance usually requires a larger correlation coefficient than those provided. Some readers may misinterpret the text and Figure 1 and conclude that the Fantastic Science scale is practically related to the four variables (Biblical Literalism, Vitality, Abortion, and Crime). Am I missing something here? Are these correlations statistically significant? Practically significant?

Chris Migotsky
CIRCE
University of Illinois
at Urbana-Champaign
Champaign, Ill.

Freud's Theory of Dreams

The article by Martin Gardner, "Waking Up from Freud's Theory of Dreams" (*SI*, November/December 1995), depicted Freud essentially as a quack and his ideas without scientific merit. I consider that judgment a bit unfair and extreme.

Freud's psychological theories reflect the only society he knew, that of middle-class mid-Europe during the final decades of the nineteenth century. The therapeutic results of psychoanalytic treatment are difficult to test by double-blind methods, which seems

equally true of procedures that are currently popular. During the periods when Freudian concepts were in vogue, there were many patients who felt they had been helped and analysts who believed in efficacy of their methods. Of course the same applies to much of alternative medicine as currently practiced. No doubt the placebo effect is enhanced after much money and time have been spent on a procedure; nor can most practitioners ever admit even to themselves that they are charlatans.

So at worst Freud was not much different from many of our current "healers" except that he expressed considerable self-doubt and was probably sincere in believing that he had made important discoveries. At the very least he opened a previously tabu area and made discussion of human sexuality and its implications acceptable.

Furthermore, there is the Freud of his later years who wrote more as a sociologist and anthropologist. In his book *The Future of an Illusion*, published in 1927, he discusses religion, its origin, and why it persists despite its contradiction to reason and science. Freud writes as a fervent defender of logic and scientific truth. The book is entirely relevant today. It is brief, concise, and much of it is in the form of an elegant, Socratic dialectic between a skeptic and an advocate of belief. The final pages anticipate the attacks on science currently coming from the postmodernists and deconstructionists and answers them beautifully. The work ends with the following sentence: "No, our science is no illusion, but an illusion it would be to suppose that what science cannot give us we get elsewhere."

Interestingly enough, that little 56-page book is still in print as a paperback and inexpensively available. Skeptics will enjoy reading it and will conclude that an illusion it would be to call the author a charlatan.

Fred Kohler
Ashland, Ore.

As a new subscriber I was quite surprised to read the article by Martin Gardner. It left me skeptical of the SKEPTICAL INQUIRER.

The article derides Freud's dream theory, employing the words of others to call him a "quack." No empirical data are cited, and no competing theories are considered.

I do not understand how this article

merits a place in your journal, dedicated to scientific investigation of false claims. In style, content, and argument *ad hominem*, the report seems more appropriate for the *National Enquirer*.

Freud's theories of dreams, sexuality, and neuroses are regarded with skepticism today, but if we reject from the history of science all those who made errors, and if we judge them by our times rather than theirs, we have a short list indeed. A first-year student today knows more physics than did Newton. Science is constantly forming, testing, and accepting or rejecting hypotheses, and the basic Freudian hypothesis—that childhood influences adult personality—permeates Western thought today, stimulating research and practice throughout civilization.

L. Dodge Fernald
Assistant Dean and
Senior Lecturer on Psychology
Harvard University Extension
School
Cambridge, Mass.

I was thoroughly disgusted to see Martin Gardner's arrogant dismissal of Freud's (1900) *Interpretation of Dreams*. His citations of Freud's universal symbolism (e.g., "male sex symbols" such as guns) are taken out of context. Modern psychoanalytic dream interpretation uses the patient's own associations to determine any symbolism, but more importantly the dream's feeling states and behavioral patterns offer valuable clues to current conflicts. . . .

Gardner's citation of the writer Tom Wolfe as an expert on how modern neuroscience has proved Freud's concept of "neurosis" as merely a "laughable historicism" is absurd. The consensus of experts in the study of mental disorders is that brain physiology is an important component in understanding the origin of schizophrenia and other psychotic disorders, but the individual's social-psychological environment cannot be discarded. This is even more so the case for the psychiatric classifications of anxiety and somatoform disorders, dissociative and gender identity disorders, and personality disorders that were called "neurosis" in Freud's era.

Stephen Safran, Ph.D.
Clinical Psychologist
South Nyack, N.Y.

Reading Martin Gardner's article on Freud and his dream theory reminded me that even skeptical inquirers are as subject to the destructive aspects of emotional irrationality as are the rest of us, incidentally one of Freud's lasting contributions. Because Freud made many gross errors, the entire psychoanalytical movement is ridiculed by implication and quotes of "experts" on the "absurdity" of psychoanalysis. Sadly the date he chooses for its demise in the seventies is when psychoanalysis regained credibility for me through its infant-based experimental study from such people as Mahler, Emdee, Winnicott, etc., and its more sound reinterpretation by people such as Erich Fromm. I believe intelligent reevaluation is one hallmark of good science.

Most of the skeptical inquirers I have met not only do not seem to see any value in emotional irrationality, but do not know how to deal effectively with this aspect of man's nature. May I suggest that they could well use some of the techniques developed by psychoanalysis to acknowledge that value and deal with it effectively when it is destructive.

Warren A. Baker, M.D.
Denver, Colo.

It disturbs me to see Freud's work dismissed in so cavalier a way. Yes, Freud was wrong. Yes, his approaches were flawed. But it is unfair to use the vantage of hindsight to rebuke him for having been dishonest.

Let us be as charitable to Freud as we are to Lamarck; let us recognize him for his efforts to find a window into a realm of darkness. Instead of attacking him, the way some have found joy in attacking Christopher Columbus, I think it is more appropriate to celebrate Freud's role as a pioneer, an observer, and, more than anything else, a man who cared deeply and honestly for his patients and who sought to live up to the high moral standards of a doctor of medicine.

Jefferson Swycuffer
San Diego, Calif.

Martin Gardner's "Waking Up from Freud's Theory of Dreams" summoned up some painful memories (or were they just

dreams?) of my graduate school and internship experiences in clinical psychology and interactions with the psychiatric profession. My fellow interns and I, products of a strong behavioral/experimental orientation, endured the illogic and closed reasoning of several psychoanalytically oriented clinical mentors. The only solace from this reverie: We learned there was one object that absolutely could not be a phallic symbol: The penis.

Joseph C. Keating, Jr., Ph.D.
Professor
Los Angeles College
of Chiropractic
Whittier, Calif.

Roswell Briefing Paper

Phil Klass ("The GAO Roswell Report and Congressman Schiff," *SI*, November/December 1995) is a mite off base concerning the 130-page "Roswell incident" briefing paper provided to U.S. Rep. Steven H. Schiff (R-N.M.).

I did not provide the paper to Schiff, and it was not provided to him in December 1992. Dated December 1993, the paper was prepared by Fred Whiting of the Fund for UFO Research (I was one of a number of contributors of information included in the volume). The *Fund* provided the document to Schiff and other interested parties on Capitol Hill in December 1993.

Now what else do you suppose Phil got wrong?

Karl T. Pflock
Placitas, N.M.

Philip J. Klass replies:

An article published in the January 14, 1994, Albuquerque Journal, based on an interview with Karl Pflock, reported: "Pflock said he and other UFO researchers first made formal contact with Schiff's staff about the incident in August 1992. Pflock and fellow researcher Fred Whiting subsequently compiled a 130-page 'briefing paper.' . . . That paper was given to Schiff's office in December. . . . I erred in assuming it was December of 1992 rather than 1993. While Pflock suggests there were other errors, he fails to cite any

UFO Survey

So Scripps-Howard is surprised at the large number of positive responses to the question, "Some Americans feel that flying saucers are real and that the federal government is hiding the truth about them from us. Do you think this is very likely, somewhat likely, or unlikely?" (*News and Comment*, November/December 1995). Skeptic that I am, I would have answered, "Of course. The evidence is very strong that some large number of Americans, say more than one million, believe such nonsense." The question fails to distinguish between whether it is a question about the beliefs of Americans or about the existence of flying saucers. Survey questions must be very clear and unambiguous. Just how many of the responses were contaminated by this ambiguity is unknown, but the possibility exists.

John Forester
Sunnyvale, Calif.

Someone responds "very likely" to the question, "Some Americans feel that flying saucers are real and that the federal government is hiding the truth about them from us. Do you think that this is very likely, somewhat likely, or unlikely?" What does the respondent mean? Is the respondent saying that indeed some Americans feel as stated, or that the respondent personally feels this way? There is enough ambiguity in the Scripps-Howard News Service/Ohio University question quoted above to cause lack of confidence in any analysis of the responses. Suppose half the respondents interpreted the question one way, the other half interpreted it the other way. My complaint about that question is not so much that it is "leading," but rather that it is ambiguous.

Robert FitzGerald
University of New Haven
West Haven, Conn.

Blind Testing and Objectivity

Michael Mussachia ("Objectivity and Repeatability in Science," November/December 1995) missed describing a test that is valuable in many ways: blind test-

ing. Person A rates several razors; person B notes the ratings, devises a way to track the razors, and randomly assigns half the razor population to the pyramid and half to no pyramid. After an agreed-upon time, person B shuffles the razors (ouch), and then gives them to person A for post-pyramid rating, and recording of the answers. The statistical analysis is performed against the tracking labels, and then the labels are unblinded to see if the pyramid made the razors sharper.

This test is simpler and cheaper than microscopic analysis, and focuses on the quality of the shave, while excluding perceived bias (as long as B is honest). The edge analysis might miss some magical essence. Our family doesn't shave, but blind (or double-blind) testing is quite applicable for many situations.

Barbara Judd
Berkeley, Calif.

'Latah' Deceptive Behavior

I found Robert E. Bartholomew's skeptical inquiry into the deceptive nature of "latah" (Nov./Dec. 1995) a worthwhile critique of historical studies of that behavior but also a bit heartless and a tad reckless. True or not, identifying latah as simple deception is akin to identifying traumatic-memory repression as simple deception. I recognize that removing layers of misinterpretation and misdiagnosis is a necessary step in the healing process, but I recommend caution in the presentation of such an analysis. Bartholomew eschews the tendency among Western anthropologists and psychiatrists to soften their analyses of non-Western frauds without recognizing a sympathetic reason behind such softening. Speaking only for myself, the fact that people who exhibit latah behavior are self-aware does not disqualify them for the same kind of compassion I would feel for a person who has repressed a traumatic memory.

Although softening our analyses of fraud behavior in distant cultures on the basis of sympathy is an insidious kind of arrogance, still, compassion has its place beside skepticism in the healing process. That local culture accepts the deceptive nature of the taboo-breaking behavior may not be such a bad thing after all.

Malaysian women who exhibit latah behavior up until now have been able to deal with the hardships of their lives through that pressure valve, with societal sanction. To mindlessly and heartlessly rob them of that valve based on our foreign Mores of Truth may be still greater arrogance.

Richard Hogen
Boulder, Colo.

Who Is More Biased?

It does not appear from your report on the Flight from Science and Reason conference (November/December 1995) that it properly examined the political implications of science, nor the boundaries between differences of opinion, sloppy science, and pseudoscience. I am particularly perturbed by the apparent equating of militant or radical environmentalism with being a member of the Environmental Defense Fund (E.D.F.), and being pseudoscientific.

I am not a member of E.D.F., and your report unfortunately gives no specifics for Rothman's claim that E.D.F. biases statistics, but I am familiar with such claims against other environmental organizations. Anti-environmentalists commonly claim that risks are small, while not noting that those who benefit from a particular policy don't share in them. There are differences too in risks one accepts voluntarily, and risks that are shoved down one's throat. Many risk calculations are based on imperfect knowledge. In my experience, when environmentalists do the work of risk calculations they often do a far more objective and scientific job of it than their critics. Your article makes me far more suspicious of Rothman's objectivity than of E.D.F.'s

Robert Clear
Berkeley, Calif.

Parapsychology and Beloff's Beliefs

In his Letter to the Editor in the November/December 1995 issue, César Tort paints a very misleading picture of parapsychologists. He states, for example, that John Beloff is the only parapsycholo-

gist he knows who subscribes to the SKEPTICAL INQUIRER and that Beloff is "probably the only truly sane voice in the entire field of parapsychology." Let me state for the record that I have been a subscriber since Vol. 1, No. 1 (the magazine was called the *Zetetic* back then), and I know quite a few other parapsychologists who are also subscribers. (I imagine Richard Wiseman, for instance, might have purchased a copy of the November/December 1995 issue, as he contributed one of the articles in it.) While I have a great deal of affection and respect for John Beloff, it must be said that his enthusiastic embrace of some of the early mediumistic phenomena places him in a very small minority of parapsychologists. In this respect at least, he may be far more credulous than most of his parapsychological colleagues.

I am sympathetic with most of the views expressed in the SKEPTICAL INQUIRER if a little put off by the dogmatism, mediocre scholarship, and irrationality of many of the contributors to its pages. It was instructive to read Arlin Baldwin's (Letters, Nov./Dec. 1995) enthusiasm over having a "ringside experience with 'heavyweights' trading punches." This reveals the hunger of the readership of the SKEPTICAL INQUIRER for a real debate of the issues. But with Beloff as the sole defender of the field against five of CSICOP's top guns, what actually occurred bore a stronger resemblance to a gang mugging in an alley than to a heavyweight fight. How about a real debate on the issues? I stand ready, as do many of my parapsychological colleagues.

Douglas M. Stokes
Paoli, Pa.

César Tort is right in chiding me (Letters, November/December 1995) for referring to John Beloff's *The Relentless Question* as his latest book. I should have called it his "recent" book.

In reading Beloff's latest, *Parapsychology: A Concise History*, Tort says he was greatly disturbed by Beloff's credulity with respect to psychic claims of the distant past. Nevertheless, Tort calls Beloff "probably the only truly sane voice in the entire field of parapsychology. It is only in some cases of historical 'evidence' of psi that my former mentor went astray."

"Some cases" should be "almost all cases." In *The Relentless Question*, Beloff's credulity also extends to far more recent phenomena than such miracles as the levitations of St. Teresa, St. Joseph of Copertino, and D. D. Home. On page 59 he defends the probable genuineness of Ted Serios's psychic photography, Uri Geller's many teleportations, Arigo's psychic surgery, and the incredible phenomena produced by the discredited medium Helen Duncan who died in 1956. See my review of Beloff's book as reprinted in *On the Wild Side*. Beloff's reply, also reprinted, continues to defend Serios against "purported" explanations of how he performed his obvious trick. If Tort will check on Beloff's recent utterances he will find him still "going astray" on the most outlandish claims of modern psychics.

Martin Gardner
Hendersonville, N.C.

Lorenz and Sauerbruch

My thanks to Bradley K. Evans (Letters, January/February 1996) for the information he supplied concerning Konrad Lorenz and Ferdinand Sauerbruch. Lorenz's outspoken approval of Nazi eugenics is well known. Sauerbruch's position is more equivocal and must be balanced by his joining the resistance movement against Hitler; Lorenz denounced the Nazis only after the war. In both cases it's hard to know how much of a role plain self-preservation played. After the war both made great efforts to prove their lack of support for the Third Reich's ethics. There are many half-truths involved and no doubt some total lying.

Ralph Estling
Ilminster, Somerset
U.K.

Consciousness and Science

This is in response to several letters in the January/February 1996 SI about my article on consciousness that appeared in the September/October 1995 issue.

An article of limited length on a complex subject is very likely to have oversights. It

is welcome information that some behaviorists are studying subjective experience as internal behavior.

Dan Kritchevsky's points are well argued but not quite on target. Thought is a structure, and simulation of thought would be no different from duplication of thought, but it is difficult to imagine the sensation of pain or blueness as pure structure. The trajectory of an electric particle in a magnetic field can be duplicated in a computer display, but magnetic fields can only be simulated in the display. Any actual magnetic fields in the computer are in the electronic activity of its mechanism.

I understand David Richwerger's impatience with the concept of consciousness. Yet, on the face of it, it is remarkable to hold that the existence of consciousness needs to be proven. Its presence in surgical patients is the business of anesthesiologists. Epileptic automatism is a vivid case of complex behavior without consciousness. The difference between consciousness and psi, or the ether, is that the former is massively present to almost everyone everyday. Like magnetism, consciousness is neither a substance nor a total abstraction. Perhaps we are again having trouble with the very loose usage of the word. We certainly do not yet have any correlate in brain function to the integrated field of consciousness, but I believe that the new tools for observing activity in the living brain may lead to discoveries that can enlighten this very difficult problem.

Huntley Ingalls
Boulder, Colo.

Chi, China, and Culture

With great interest I have read "China, Chi, and Chicanery" by Peter Huston (September/October 1995). While his conclusions are generally tenable, in my view there are some misunderstandings in his argument.

Like other cultures, Chinese traditional culture is not so logically established that it is based on a bunch of well-defined concepts and principles. Thus the term *Chi* (*Qi*) has various meanings depending on the context. Is the "realism" of a scholastic the same as the "realism" of a novelist in the Western culture?

Huston's interpretation of *Qi* is quite right with respect to the modern *Qi Gong* (*Chi gong*), yet not with Traditional Chinese Medicine (TCM). The core concepts of TCM are the Five Elements (Five Xing) and the Yin-Yang Duality. While in the TCM system Yin and Yang are emphasized as two distinct components of *Qi*, in the modern *Qi Gong* system it is the unitary nature of *Qi* that is stressed. In fact, many contemporary theorists of *Qi Gong* do not adopt the Yin-Yang concept at all. I believe that Huston's argument would be improved if such distinctions were to be made.

Huston is quite correct in alluding to the Cultural Revolution in his discussion of acupuncture anesthesia. A TCM doctor who was a student at the time has told me that patients who felt pain were instructed to cry out "long live Chairman Mao," and did. However, acupuncture anesthesia effect does exist, and it is explained as the result of hypnotic and physical effects.

Wu Xianghong
Department of Philosophy
Renmin University of China
Beijing, China

Critical Opportunity

How can we make people think? I invite vivid examples for a book, *Teach Students To Think Critically*, about successful teachers. *Critical* thinking examples may include skeptical, applied science process and logic rules, and tests that jump-start students to choose to question, reflect, indulge curiosity, research, and *test* models, hypotheses, and assumptions . . . even prove their *model* not right, but wrong.

Maverick, flamboyant, reckless, zany, and eccentric examples are the most welcome, and may include any field or subject; but even conventional examples are most welcome for us of conventional persuasion. Draw on your teaching examples, your memory banks, or your unlimited imagination for ways you might teach learners to observe, examine, and test problems, solutions, and their world. I particularly want examples that might convince students to change their minds about something they always thought was true. All suggestions and contributors will be acknowledged upon publication.

Details please. Thank you.

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Visual Blue Shift Fallacy?

I write in belated response to Martin Gardner's request for more literary science blunders (*SI*, Notes of a Fringe-Watcher, January/February 1995). I am surprised that he has omitted what must be the most common scientific blunder in science fiction writing—what might be termed the "visual red/blue shift fallacy."

This says that at velocities that are a substantial fraction of the speed of light, stars in the forward direction appear blue to the moving observer, and stars in the backward direction appear red.

An example is in Greg Bear's *Anvil of Stars* (page 12):

At the ship's present speed . . . the true stars were gnarled and twisted, rotated and compressed into a scintillating ring that flexed around the ship like a loose bracelet, blue on one side—the direction in which they flew—and red on the other.

In fact, the blue (or red) shift is in the spectrographic lines. As one set of wavelengths falls off the visual spectrum, another set moves in at the other end. The visual spectrum remains full, and the color will remain relatively unchanged.

I pick on Bear only because I was reading him at the time of the *SI* article, and thus could find the reference. I admire and enjoy his work enormously.

Alistair Blennerhassett
Invercargill, New Zealand

The letters column is a forum for views on 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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