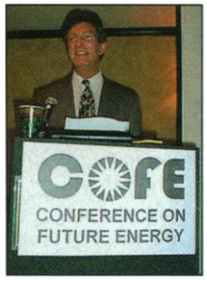
A News article about "new physics" patents being approved by the U.S. Patent Office drew strong protest from patent holders. A critic of such patents says, "[t]he seriousness of the situation should not be underestimated, and it may be time for the AAAS to start a concerted educational process on this issue, even to the extent of conducting its own investigation of some such patents." And Tulane University announces the result of an investigation prompted by the withdrawal of a 1996 paper.

"New Physics" Patents

The article "'New physics' finds a haven at the Patent Office" (in particular, the sidebar, "A free energy enthusiast seeks like-minded colleagues") by David Voss (News Focus, 21 May, p. 1252) misrepresents the recent Conference on Future Energy (COFE) (*1*), as a "conference on cold fusion" and other topics. Only one speaker, Edmund Storms (formerly with the Los Alamos National Laboratory), out of 14 plenary speakers, discussed chemically assisted nuclear reactions. With 86% of the world's energy coming from fossil-fuel burning (*2*), a conference emphasizing alternatives should have been welcome.



Thomas Valone at the podium of the COFE conference

The balanced roster of Ph.D.'s, scientists, and patent holders presented the physics of micron-sized charge clusters, betavoltaic batteries, release of chemical bond energy, biomass gasification, noncombustive helicopters, alternative vehicles, fuel processors, wind energy, flywheels, and fuel cells, as well as two briefings by Department of Energy (DOE) physicists, among others. One of the COFE workshop presenters, George Miley, just received a Nuclear Energy Research Institute grant from DOE to study low-energy nuclear reactions. Another, Paul Brown, has a promising "photoremediation of radioactive waste" technology that is being independently verified.

In one of only two completed reviews, science policy advisor of the Department of State (DOS), Peter Zimmerman, states, "What is interesting is Brown's selection of an electron linac rather than a proton one, and his use of photo-fission rather than relying on only neutron-induced reactions. Assuming that all of the engineering works out properly, he will certainly obtain a net gain in energy relative to the beam power in the accelerator" (*3*) .

This directly contradicts the disparaging allegations that "None of the dozen or so talks passed muster" and "Not one of them showed any understanding of modern science." The Integrity Research Institute (IRI) closely cooperated with DOS after receiving the Open Forum chairperson's written invitation of 16 October 1998 to present a 2-day conference that would expand future energy choices (*4*) to help reduce global warming. However, one reason that DOS might continue to be "bereft of [science and technology] competence" (A. K. Solomon, Policy Forum, *Science*'s Compass, 27 Nov. 1998, p. 1649) may be attributed to the American Physical Society (APS) Public Information Director, Bob Park. He e-mailed Zimmerman, "Pete, if you can't get that [COFE] killed, what's the point of having a State Department?" (*5*), while he launched almost weekly assaults for 2 months against the conference in his *What's New* e-mail column.

With pejorative phrases like "weird-science cult" (Park's term) (*6*), "pseudoscience" (APS term) (*7*), and "fringe science," Voss and Park create a hostile, oppressive atmosphere of prejudice that stifles emerging energy technologies and deprive the public of content.

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2. *Energy INFOcard* (Energy Information Administration, U.S. Department of Energy, Washington, DC, 1997).
3. E-mail from P. Zimmerman to IRI, 16 March 1999.
4. *Comprehensive National Energy Strategy* (U.S. Department of Energy, Washington, DC, 1998), Goal IV, p. 56.
5. *Infinite Energy*, issue 25 (1999), p. 23; transcript of APS lecture (*7*).
6. www.aps.org, 2 April 1999.
7. P. Zimmerman, transcript, Pseudoscience session, American Physical Society Annual Meeting, Atlanta, GA, 22 March 1999.

Voss refers to our publication, *Infinite Energy*, as "a publication for cold-fusion buffs." This pejorative language degrades the content of *Infinite Energy*, which has featured technical articles and commentary by Nobel laureate Julian Schwinger, physicist Robert H. Parmenter [who has co-authored cold-fusion theory articles with Nobel laureate Willis Lamb in the *Proceedings of the National Academy of Sciences* (*1*)], and scientists such as Edmund Storms and Tom Claytor of the Los Alamos National Laboratory and George Miley of the University of Illinois (editor of the American Nuclear Society's peer-reviewed journal *Fusion Technology*, which features cold- and hot-fusion articles.)

Voss also comments that "Garwin and others say the [cold fusion] devices are unlikely to prove viable, either as energy sources or as systems for rendering radioactive waste harmless." Garwin and others are simply ignoring data in favor of their theories that these low energy nuclear reactions are impossible. Garwin's quoted assertions indicate a paradigm paralysis that is familiar to historians of science. Its remedy is a hard look at data, not uninformed opinion.

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I take exception to some misleading statements about me in Voss's article. I can understand that the scientific establishment would defend its in-vogue brand of scientific theory. But let's play fair. Any serious student of science can visit my Web site, www.etheric.com, to learn about my work, my books *Subquantum Kinetics*, *Beyond the Big Bang*, and *Earth Under Fire*, and can also view the unabridged "Unofficial Gazette" article referred to by Voss.

Some of the important achievements of my 25-year research and publishing career follow. I was the first to disprove the expanding universe hypothesis by showing its inability to consistently fit cosmological test data (*1*). I was also the first to show that the jovian planets conform to the lower main sequence stellar mass-luminosity relation (*2, 3*). My a priori prediction that brown dwarfs should also conform to this relation has now been twice verified (*2, 4*). I was also the originator of the subquantum kinetics microphysics methodology (*2*). In addition, I was the first to discover high levels of cosmic dust in polar ice (*5*). My published prediction that interstellar dust has been entering the solar system from the galactic center direction was later verified by Ulysses satellite data (*6, 7*). I was the first to suggest that cosmic rays can relativistically propagate long distances through our galaxy along rectilinear trajectories (*6, 8*), later validated by ob-

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servations of Cygnus X-3 and Hercules X-1. I was the first to predict that cosmic ray volleys repeatedly showered the Earth during the last ice age (*8*), subsequently demonstrated with Be-10 data. I was the first to demonstrate the occurrence of a global warming event at the end of the last ice age (*6, 8, 9*). Also, in 1977, while serving as a consultant to the Club of Rome Goals for Mankind Project, I demonstrated that a photovoltaic power plant would be cheaper to build than a nuclear power plant (*10*).

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3. ———, *Phys. Essays* **5**, 536 (1992).
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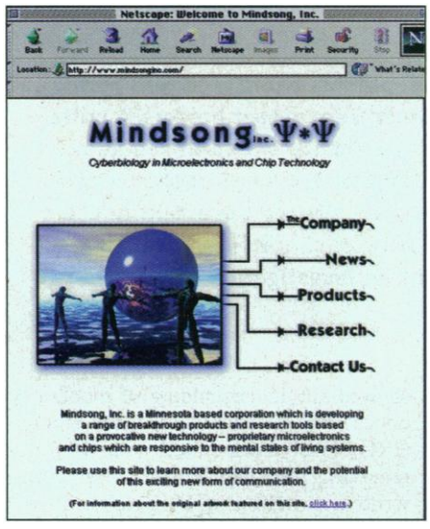
6. ———, *Earth Moon Planets* **37**, 241 (1987).
7. ———, *Eos* **74**, 510 (1993).
8. ———, thesis, Portland State University (1983).
9. ———, *Anthropos* **12**, 239 (1990).
10. E. Laszlo *et al.*, *Goals for Mankind* (Dutton, New York, 1977).

Voss's article denigrating the patent office and the "weird" things it allows seemed inappropriate in *Science*. An essential scientific attribute—open-mindedness—appeared to be missing.



Home page of Mindsong, Inc.

My company, Mindsong, Inc., was issued Patent No. 5,830,064, last year for "Apparatus And Method For Distinguishing Events Which Collectively Exceed Chance Expectations And Thereby Controlling An Output." It was one of the few out of 240,000 selected by Voss to reveal the failings and inadequate staffing of the Patent Office. In describing the patent, Voss uses terms like "gizmo," "psychic forces," and "parapsychology." The institutionalized science establishment has a long history of bashing these areas, evidenced by Voss's invoking physicist Marc Sher, who comments, "look at the background information...and it goes off into ga-ga land." This is not an informed or responsible comment.

Voss incorrectly states that Mindsong, Inc., is associated with the Princeton Engineering Anomalies Research (PEAR) Laboratory. In fact, Mindsong, Inc., is not associated with the PEAR Lab or Princeton University. While several individuals working in that laboratory serve on our Science Advisory Board, they do so only as individuals, not as representatives of PEAR or their employing institution, Princeton University.

The merits of intellectual property go beyond the issuance of a patent. The effort going into the creation of the concept, as well as the skills and credentials of the law firm drawing up the work, are a critical part of the effort. The final judgment, of course, rests in the portfolio's performance in the marketplace.

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Voss's article describes how entrepreneurs manipulate the U.S. Patent Office's unwillingness or inability, or both, to consider the science behind the submitted "inventions" in its considerations of patentability. The article does not, however, discuss another shortcoming of the patent process which allows a similar practice: The "inventor" is given the responsibility to bring prior art to the Patent Office's attention, the examiners limiting themselves to a search of prior patents. As a consequence, patents are awarded for "inventions" that have been in the public domain (unpatented) for years, or have been discussed (sometimes extensively) in the literature. These patents are then used to promote a company's stock or funding, to exert pressure on other companies that have been using such previously unpatented processes or devices, and for personal aggrandizement.

Once awarded, these patents are difficult to fight in the courts, which give the benefit of the doubt to the Patent Office's process, and where juries are asked to resolve scientific or priority issues that they are ill equipped to handle, these trials ending up being presented as scientific "disagreements" or efforts by large companies to quash struggling entrepreneurs.

These abuses could be greatly ameliorated at no significant cost to the Patent Office by following the standards of other countries, which publish applications before a decision is made as to patentability, thus giving interested parties a chance to provide relevant information. In this way, at no cost to itself, the American government would avail itself of the scientific opinions and literature searches of a wide range of experts.

The seriousness of the situation should not be underestimated, and it may be time for the AAAS to start a concerted educational process on this issue, even to the extent of conducting its own investigation of some such patents.

Leon Kaufman
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I should like to point out the existence of at least one exception to the statement by patent attorney Michael J. Colitz that, except for perpetual motion machines, "the Patent Office hasn't required a working model since the 19th century." Patent No. 2,996,288, filed 15 March 1957 for "Displaceable Support or Coupling Mechanisms Resulting in a Universal Plate," named by analogy with a universal joint, for its property of being freely displaceable in any direction in a plane but rigid

to tilting and rotation (twisting), was issued on 15 August 1961 to Nils A. Jemberg and me.

In 1956, at the Rockefeller Institute, we had developed the Universal Plate as the platform for a programmable laboratory shaker capable of sustaining a wide range of anharmonic (acceleration uncoupled from displacement) linear and planar displacements. All commercially available shakers deliver only harmonic (acceleration proportional to displacement) motion. Analysis of the motion imparted to the platform by its drive mechanism led to the discovery of an analytical basis for geometrical symmetry, of a previously unknown Euclidean transformation, and of previously unknown families of curves.

Anharmonic motion of a shaker is desirable to overcome the tendency to form standing waves in cell cultures and in suspensions of particulate matter (paints and so forth), which can promote the formation of aggregates and other undesirable phenomena. In response to our patent application, we were informed by the patent examiner that he and his colleagues were unable to fathom how the described device could sustain the claimed displacements, and that before a patent could be issued, they would need to see a working model. I took one to Washington, D.C., and demonstrated its operation to the head of the section.

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Tulane Investigation Completed

On 7 June 1996 (p. 1489), *Science* published a report entitled "Synergistic activation of estrogen receptor with combinations of environmental chemicals." On Friday, 18 July 1997, the paper's senior author, John A. McLachlan, sent *Science* a letter formally withdrawing the report. His letter was published in the issue of 25 July (p. 462).

Concurrent with the withdrawal of the paper, Tulane University convened a committee of academicians to investigate possible scientific misconduct by Steven F. Arnold, the study's principal investigator, and McLachlan, the senior author.

McLachlan is the director of the Center for Bioenvironmental Research at Tulane University. Arnold resigned from the university in 1997.

After a comprehensive review, the committee determined that McLachlan did not commit, participate in, or have any knowledge of any scientific misconduct.

With respect to Arnold, the committee concluded that he provided insufficient data to support the major conclusions of the *Science* paper. Additionally, independent review of Arnold's data does not support the major conclusions contained within the *Science* paper.

The university is making this letter public and does not intend to make further official public comment.

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CORRECTIONS AND CLARIFICATIONS

In note 14 (p. 1502) of the Research Article "The global topography of Mars and Implications for surface evolution" by D. E. Smith *et al.* (28 May, p. 1495), the last line should have read, "3,396,000 m."

A graph comparing the number of women members of the National Academy of Sciences with the available pool of talent by field (News of the Week, 7 May, p. 891) did not fully describe that pool. The left-hand bar depicted the percentage of women scientists employed in Research I and II institutions who earned their Ph.D. before 1969.