

# **Cognitive Processes and the Suppression of Sound Scientific Ideas**

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## **Abstract**

American and British history is riddled with examples of valid research and inventions which have been suppressed and derogated by the conventional science community. This has been of great cost to society and to individual scientists. Rather than furthering the pursuit of new scientific frontiers, the structure of British and American scientific institutions leads to conformity and furthers consensus-seeking. Scientists are generally like other people when it comes to the biases and self-justifications that cause them to make bad decisions and evade the truth. Some topics in science are 'taboo' subjects. Two examples are the field of psychic phenomenon and the field of new energy devices such as cold fusion. Journals, books and internet sites exist for those scientists who want an alternative to conformist scientific venues.

Although some scientific ideas are truly unfounded, the author of this paper will explore instances when valuable scientific ideas were unfairly reviled and rejected. This author will discuss the cognitive processes, including cognitive dissonance, conformity, and various biases which contribute to such suppression.

## **Examples from history of suppression in the sciences**

A legacy of cognitive biases and faulty judgments exists. It typifies the history of American and British scientific inquiry and research.

One of the earliest examples with which nearly everyone is familiar occurred in the early seventeenth Century. Galileo was branded as a heretic and sent to prison for declaring that the earth traveled around the sun (Manning 1996)..

This paper will concentrate on examples from a period starting closer to the industrial age and continuing until the present. The first example presented here is drawn from Richard Milton's (1996) book *Alternative Science*. Antoine Lavoisier, the science authority for eighteenth and early nineteenth century Europe and father of modern chemistry, assured his fellow Academicians in 1790, that meteorites could not fall from the sky as there were no stones in the sky (Milton,1996). In spite of first-hand reports of meteors falling from the sky, Lavoisier was believed. Nearly all of the meteorites in public and private collections were then thrown out. Only one meteor that was too heavy to move was saved, so today the world has few specimens that predate 1790. Meteors were not commonly collected again until mounting evidence for their extraterrestrial origin predominated about 50 years later.

Milton (1996) continued with the history of the human powered flight. During the years, between 1903 to 1908, Wilbur and Orville Wright repeatedly demonstrated the flight capability of their invention, the airplane. Despite these demonstrations plus numerous independent affidavits and photographs from local enthusiasts as well, the Wrights' claims were not believed. *Scientific American*, the *New York Herald*, the US Army and most American scientists discredited the Wrights and proclaimed that their mechanism was a hoax. Noted experts from the US Navy and from Johns Hopkins University decried "powered human flight . . .absurd "(Milton,1996 p.11).

In a similar vein, the inventors of the turbine ship engine, the mechanical naval gunnery control, the electric ships telegraph, and the steel ship hull all initially met with disinterest, disbelief and derision by the British Navy of the nineteenth century (Milton, 1996).

There are numerous accounts of useful science ideas that received such treatment. However, this writer will discuss just a few of the inventions and ideas by the best known scientists. Milton (1996) explained how the invention of what is now considered a very ordinary object, the light bulb, was initially mired in controversy and disbelief. When Thomas Edison was finally successful in finding a light bulb filament which could glow while

sustaining the heat of electrical conduction, he invited members of the scientific community to observe his demonstration (Milton 1996). Although the general public traveled to witness his electric lamp, the noted scientists of the day refused to and claimed the following about Edison:

"Such startling announcements as these should be deprecated as being unworthy of science and mischievous to its true progress."  
-Sir William Siemens, England's most distinguished engineer  
(Milton, 1996 p.18)

"The Sorcerer of Menlo Park appears not to be acquainted with the subtleties of the electrical sciences. Mr. Edison takes us backwards. One must have lost all recollection of American hoaxes to accept such claims." -Professor Du Moncel  
(Milton, 1996 p.18)

"Edison's claims are 'so manifestly absurd as to indicate a positive want of knowledge of the electric circuit and the principles governing the construction and operation of electrical machines.'" -Edwin Weston, specialist in arc lighting (Milton, 1996 p.18)

Luckily, the disinterest and derision of Edison's scientific peers did not prevent sharp speculators, like J. P. Morgan and William Vanderbilt from investing funds and helping Edison's inventions become universally adopted (Milton, 1996). Other inventors of the day were not always so lucky.

## **Cost to individuals and to society**

Many invaluable concepts for inventions from Edison's era, were not granted financial backing (Milton, 1996). This was the case for most of the ideas of Nikola Tesla, who known for the discovery and development of AC current. In the book, *The Coming Energy Revolution*, the author, Jeanne Manning (1996), told of how the treatment of Tesla contrasted with that of his contemporary, Edison. Tesla did not bother as Edison did, to "play the game" (p. 24) with the U.S. science establishment, the media and the investors. Manning (1996) continued with explaining that even though Tesla was the main trail-blazer of the age of electricity, his almost

inaccessible brilliance, his lack of interest in publishing, and his wish to give everyone free electric power may have caused substantial professional jealousy. Manning (1996) further postulated that this jealousy and Tesla's non-conformity were responsible for the lack of support and acknowledgment he received. Moreover, Manning (1996) continued, even though other inventors were often credited for them, many of the products that came out of the age of electricity were directly due to Tesla's concepts. These were inventions such as Marconi's radio, which was presented to the public in 1901 and used 17 of Tesla's patented ideas. In 1943, the Supreme Court had, in fact, ruled that Tesla was the radio's inventor (Manning, 1996). Unfortunately for Tesla, that was some years after his death. After the US science community and investors turned their back on Tesla, he descended "into wild eccentricity" (p. 26). However, Manning (1996) asserted, his research on wireless power conveyance, bladeless turbines, excess-output energy machines and other futuristic devices are still being marveled at and studied by those that have rediscovered this unappreciated genius.

Other innovators who were described by Milton (1996) as victims of the insults of the skeptical scientific power elite, were such men as John Logie Baird, inventor of television. Baird had been described by the British Royal Society as "a swindler" (p. 19). Likewise, Wilhelm Roentgen's discovery of X-rays was decried as an "elaborate hoax" (p.22) by Lord Kelvin, the most influential scientist of Europe in 1895. Scientists of Roentgen's day produced film fogging X-rays on a substantial scale but were unwilling to consider the wide ranging implications of Roentgen's work for 10 years after his discovery (Milton, 1996).

Another example of such victimization, presented by Dean Radin (1996) in his book *The Conscious Universe*, involved the theory of German meteorologist, Alfred Wegener. This theory which Wegener developed in 1915, contended that the earth's continents had once been a single mass of land which later drifted apart. Although Wegener carefully cataloged geological evidence, his American and British colleagues ridiculed both him and his idea (Radin, 1996). Although Wegener died an intellectual outcast in 1930, every schoolchild is currently taught his theory which is known as continental drift.

The cost of scientific suppression to society can be seen in the history of the development of the tank. According to Milton (1996), at a time when 1.000 men a day were dying on W.W.I battlefields for want of protection

from shelling and gunfire, the British admiralty, of that epoch, had the following to say about E. L.. deMole's , invention, the tank:.

"Caterpillar landships are idiotic and useless. Nobody has asked for them and nobody wants them. Those officers and men are wasting their time and are not pulling their proper weight in the war"(p. 20).

## **Derogation, Trivialization and Reduction of Dissonance**

Some quotations collected by Christopher Cerf and Victor Navakky in their book *The Experts Speak* (1984) illustrated further the hostile or trivializing attitude towards different ideas, scientific inquiries, and revolutionary discoveries.

"Louis Pasteur's theory of germs is ridiculous fiction." -Pierre Pachtet, Professor of Physiology France, 1872 (p.30)

"Fooling around with alternating current in just a waste of time. Nobody will use it, ever." -Thomas Edison, 1889 (p.207)

"I laughed till. . . my sides were sore." -Adam Sedgwick, British geologist in a letter to Darwin in regards to his theory of evolution, 1857 (p.9)

"If the whole of the English language could be condensed into one word, it would not suffice to express the utter contempt those invite who are so deluded as to be disciples of such an imposture as Darwinism." -Francis Orpen Morris, British ornithologist 1877 (p.10)

"Airplanes are interesting toys, but of no military value." - Marechal Ferdinand Foch, Professor of Strategy, Ecole Superieure de Guerre (p.245)

"To affirm that the aeroplane is going to 'revolutionize' naval warfare of the future is to be guilty of the wildest exaggeration." -Scientific American, 1910 (p.246)

"Who the hell wants to hear actors talk?" - H. M. Warner, Warner

Brothers Studios, 1927 (p.72)

"The whole procedure of shooting rockets into space. . . presents difficulties of so fundamental a nature, that we are forced to dismiss the notion as essentially impracticable, in spite of the author's insistent appeal to put aside prejudice and to recollect the supposed impossibility of heavier-than-air flight before it was actually accomplished." -Richard van der Riet Wooley, British astronomer (p.257)

"The energy produced by the atom is a very poor kind of thing. Anyone who expects a source of power from the transformation of these atoms is talking moonshine." Ernst Rutherford, 1933 (p.215)

"Space travel is bunk" - Sir Harold Spencer Jones, Astronomer Royal of Britain, 1957, two weeks before the launch of Sputnik (p.258)

"But what hell is it good for?" -Engineer Robert Lloyd, IBM 1968, commenting on the microchip (p.209)

"There is no reason anyone would want a computer in their home." -Ken Olson, president of Digital Equipment Corp. 1977 (p.209)

Several of the above examples show new ideas that were grievously misjudged by scientific peers and those in authority.

Today, scientific research is still judged by peer review. Henry Bauer (1994) in his book *Scientific Literacy and the Myth of the Scientific Method* revealed how research is generally funded through association with a university. In Western civilization, said Bauer (1994) selected peers judge the journal articles that the academic scientists must publish to retain their university positions and insure future funding.

Specific questions about the process of peer review were examined by sociologist Michael J. Mahoney of the University of Pennsylvania. In an interview granted to Boston Globe science reporter, David Chandler (1987), Mahoney discussed his study. Mahoney sent copies of a paper to 75 reviewers but doctored the results so that in some cases the research appeared to support mainstream theories (Chandler 1987). In other cases

Mahoney had doctored the paper so the research deviated from them. When the doctored results ran contrary to the reviewer's theoretical beliefs the author's procedures were berated and the manuscript was rejected. When the results in the doctored papers confirmed the reviewer's beliefs, the same procedures were then lauded and the manuscript was recommended for publication (Chandler 1987).

Mahoney presented the results of this study to the American Association for the Advancement of Science. Afterwards, Mahoney received 200 to 300 letters and phone calls from scientists who felt they had been victimized because the results of their research conflicted with the generally accepted scientific viewpoint or with their reviewer's beliefs (Chandler 1987).

Daniel Koshland, editor the leading US scientific journal, Science, said this in an interview to Chandler(1987) about science that threatens to change the parameters of what is accepted:

"I think it's fair to say that a new idea, something that confronts existing dogma, has an uphill road. . . There certainly is no question that there is a prejudice in favor of the existing dogma" (Chandler 1987).

In the same interview with Chandler (1987), Koshland cited, as one example, biochemist Edwin G. Krebs' discovery for which he received the Nobel prize. The discovery which is now known as the Krebs cycle, describes the fundamental series of enzyme reactions in living organisms. It was initially rejected.

Koshland (Chandler 1987) continued with the history of biologist Lynn Margulis's work, showing the evolution of cell structure through symbiotic unions of primitive organisms. It was also initially rejected and even scorned (Chandler 1987). Although her work has become the accepted dogma and appears in textbooks, in 1970 the National Science Foundation not only turned her down for funding, but told her that she should never apply again. Koshland stated that there are other examples such as these (Chandler 1987).

## **In-Group and Out-Group Effects**

Koshland's statement about the prejudices against ideas that go against

the existing dogma (Chandler 1987), and the examples Koshland gives lead this author to suppose that in-group biases could be blinding the scientific authorities to the validity of unorthodox, out-group ideas. As Aronson (1995) revealed, the valid points which the out-group makes are not readily perceived by the in-group. Moreover, the weak points or elements of the out-group preponderate in the mind of the in-group. Aronson (1995) explained the tendency to "in-group favoritism" (p. 144) in which members were thought to produce better output than non-members. This author believes that, scientists with challenging ideas have been viewed as an out-group by the in-group of conventional scientists.

## **The Urge to Conform**

Chemistry and science studies professor, Henry H. Bauer (1994), in his book, *Scientific Literacy and the Myth of the Scientific Method* urged us to realize that scientists are only human and are therefore subject to all the variations that humans possess. He claimed that although scientists have been seen as single-mindedly pursuing truth in all fields, in actuality scientists are generally expert in only one field and the pursuit of truth may not be a top priority. The fact that modern scientists are financially dependent on university and foundation research positions that are in turn dependent on grants. (Bauer, 1994) These are key factors in the formulation of a scientist's priorities. This financial dependence and instability, declared Bauer (1994), creates a direct conflict of interest between pure scientific pursuit and behavior aimed at keeping funding and positions.

A job in scientific research, seems to this writer, to be much like any precarious career position. There could be the usual tendencies to conform and participate in group-think. Criticism by the science community and loss of livelihood appear to this author to be punishment, while acceptance by the science community and financial security seem like rewards. According to Aronson (1996), punishment and rewards generally compel one to conform.

Bauer (1994) painted a picture of "an elite research community," (p. 99) consisting of a few dozen universities, which traditionally have been deemed to have the most experts. These universities are thought to turn out the best results and publications and are the top choice to receive both government and private research money.

Bauer (1994) explained that there is little money in this country for more exploratory pursuits for the "sake of scientific progress"(p. 98). Funding and acknowledgment go to virtually the same schools and the same groups of scientists, so the scope of exploration and scientific thought becomes limited and intellectual inbreeding occurs (Bauer 1994). Most of the scientists chosen to be journal editors and peer reviewers are also selected from this same narrow ingrained group. This phenomenon was referred to by Bauer (1994) as the "imperfections of the filter"(p. 99).

Like the "concurrence seeking" (p. 18) member of Hitler's inner circle, described by Aronson (1995), this "highly filtered" (Bauer p. 99) group of scientists tend to be in a position that often demand consensus of opinion and necessitates conformity.

Bauer (1994) illustrated how, throughout history, the course of scientific discovery was impeded by the social environment and prejudices of the time. He gave the example of how in Nazi Germany, the scientists were unable to make progress. The reason for this Bauer (1994) explained, is that they had been commanded to work without the theory of relativity as that theory had been originated and developed by a purportedly inferior Jew. Similarly the Soviets were commanded to do without the theory of wave mechanics which also had an unpopular genesis (Bauer 1994). The punishment of being a maverick scientist in either of those societies were death or forced labor, so the writer of this paper supposes the urge to conform must have been very compelling.

Bauer (1994) asserted that conformity within the scientific community leads to the evasion of all unwanted or inconsistent facts and this obstructs the practice of science. This avoidance of facts and truth by a group, seems to this writer, to be very much akin to the consensus seeking and evasion of reality that led up to the faulty decision to launch the Challenger space shuttle. Even though it had parts which were known to be of dubious quality, "NASA and Thiokol executive ...reinforced one another's commitment to proceed"(Aronson , 1995 p.17).

Thomas Gold, a professor and researcher with Cornell, wrote in his 1989 journal article "New Ideas in Science" that he attributed the tendency for consensus seeking among scientist to a primarily vestigial instinct, "a herd mentality"( p.103). Gold supported this notion of the herd mentality by stating how petroleum geology and other disciplines have become completely intolerant of any new ideas He also told of how he had the

experience of making colleagues violently angry with him, because he had proposed that there was some uncertainty about the origin of petroleum. (Gold, 1989) Moreover, Gold (1989) claimed, the fresh and genuinely different research from the other countries that are outsiders to the US herds, casts light on the truly one-dimensional nature of our science institutions.

Gold (1989) conjectured that going against the herd and adopting a deviant viewpoint, feels uncomfortable for personal cognitive and emotional reasons, as well as for the practical reasons listed above by Bauer. Furthermore, Gold (1989) postulated that conformist scientist may be unconsciously motivated by the protection afforded to them by the herd, "against being challenged ...or having their ignorance exposed"(p. 106).

## **Cognitive Dissonance**

According to Aronson (1996), when people are confronted with opposing beliefs or ones incompatible with their own, they are likely to ignore or negate that belief. They do this in order to convince themselves that they have not behaved foolishly by committing to false beliefs. To assure themselves that they have been wise in supporting their position, they often convince themselves that those who oppose that position are foolish and truly objects for contempt and derision (Aronson, 1996 p.184-8).

Aronson(1996) also stated that most people, when they are confronted with information that they have behaved in a cruel manner, attempt to reduce subsequent dissonant feelings of perceiving themselves as unkind. They often do this by creating a belief that cruelty towards the victim is actually justified. Studies by Karen Hobden and James M. Olson(1994) examined disparagement humor directed at an out-group. Hobden et al.(1994) had a confederate tell extremely disparaging jokes about lawyers to a group of subjects. The dissonance, caused by disparaging the lawyer out-group, prompted the majority of the subjects to change both their public and private attitudes about lawyers to one that was substantially less favorable. (Hobden et al., 1994)

Another study by Linda Simon, Jeff Greenberg, and Jack Brehm (1995) showed that trivialization is also effectively employed as a mode of dissonance reduction. The subjects in Simon et al.'s (1995) study were led to follow counter-attitudinal behaviors. They later chose to trivialize

the dissonant information about themselves more often than they chose to change their opinions (Simon et al., 1995).

Many of the quotes contained in this paper in which a member of mainstream science reacts towards new inventions or discoveries are steeped in trivialization and disparagement. This leads this writer to believe that scientists are reducing their cognitive dissonance about challenging science ideas with same faulty cognitions and methods in which non-scientists engage.

## **Outside the Paradigm**

Science author Patrick Huyghe (1995), in his internet article "Extraordinary Claim? Move the Goal Posts!," claimed that although a new science idea may have proof, if it defies convention, then instead of consideration and acceptance:

"There's often some hasty rewriting of the rules of the game. For the would-be extraordinary, for the unorthodox claim on the verge of scientific success, the ground rules are gratefully changed. This practice, often referred to as 'Moving the goal posts' is an extraordinary phenomenon in itself and deserves recognition."(p.1)

In the book by science writer, Patrick Huyghe co-authored with physicist Louis A. Frank (1990) *The Big Splash*, this moving of the goal posts was depicted by the conventional science society's reaction to a challenging discovery made by Dr. Frank. Frank and Huyghe (1990) wrote of how Dr. Frank found evidence that the Earth was being showered by approximately twenty house-sized ice comets per minute. These comets all broke up in the atmosphere. His research led him to believe that the millennia of bombardment by these ice comets were responsible for the presence of the water on Earth. Dr. Frank presented his data and his photographs of the ice comets to a geophysics journal for publication (Huyghe, 1990). At the time of the announcement of Dr. Frank's discovery, the academic standard of proof in astronomy was to have two images of the same object. Although Dr. Frank presented such proof, the appearance of ice comets in his photographs was considered to be merely due to a technical fluke and a higher standard of proof was then required (Huyghe, 1990). As each subsequent level of proof was delivered by Dr. Frank, a yet higher tier of standards was then demanded (Huyghe, 1990).

This writer believes that this goal post shifting is similar to some of the tendencies examined by Aronson(1995). Aronson cited a survey which was done to assess people's reaction to the 1964 surgeon general's report about the serious health risks from cigarettes. Aronson (1995) found that smokers who had tried to quit unsuccessfully experienced dissonance over their inability to stop the habit. Those smokers tended to change their cognitions and create the belief that smoking was not dangerous for them (Aronson, 1995). Exemplifying intelligent people, who also smoked, or deluding themselves "that a filter traps the all of the cancer- producing materials" (p.179) reduced the smokers' dissonance and made them feel that their actions were justified. Just like moving the goal posts, these cognitive ploys changed the standard by which information was judged.

James McClenon's(1984) book *Deviant Science: The Case of Parapsychology* and Dean Radin's (1997) book, *The Conscious Universe* both deal with the topic of psychic phenomenon as a suppressed science. Dean (1997) cited dissonance reduction as the reason why conventional science authorities had suppressed numerous valid studies on psychic phenomenon. Dean (1997) stated that people have an uncomfortable feeling when they are confronted with information that seems impossible to them. Evidence of psychic phenomenon, also known as psi, therefore becomes dissonant information. Although most of *Deviant Science* and *Conscious Universe* were devoted to describing the many reproducible, strictly scientific experiments that support the existence of ESP, the writers also speculated about why this field has been found unacceptable. Both Dean (1997) and McClenon (1984) claimed that the dismissal of well executed studies were not due to skepticism, but mainly to blatant attacks by those who are threatened by the shifting of perceptions in the sciences. McClenon (1984) cited the 1970's science philosophy of Thomas Kuhn, who coined the term for shifting perceptions "paradigm shifts" (p.21). McClenon (1984) had the following to say about Kuhn's definition of paradigms cited from Kuhn's *The Structure of Scientific Revolutions*:

"Paradigms are the universally accepted scientific achievements that for a time provide model problems and solutions to a community of practitioners . . . an object for future articulation and specification under new or more stringent conditions" (p.21).

When an anomaly outside of this accepted model happens frequently enough, McClenon (1984) explained, there is a crisis. The anomalies that

violates the current ruling paradigm are then either incorporated and resolved within the paradigm, or there is a "revolutionary upheaval"(p. 21).

Aronson (1995) described how people commonly have a low tolerance for anomalous, dissonant information. He had this to say about how people generally deal with challenges to their beliefs and thereby reduce their dissonance:

"People don't like to see or hear things that conflict with their deeply held beliefs or wishes. An ancient response to such bad news was to kill the messenger"(p. 185).

This writer sees such "killing" going on in the deriding and dismissing of the science ideas and the "messenger" scientist.

## **Confirmation Bias**

Radin (1997) also explained that the rejection of serious studies on psychic phenomenon is due to a particular type of confirmation bias, the "expectancy effect"(p. 234). This expectancy effect, as studied by sociologist Harry Collins in his book *The Golem* (1993), showed that for controversial scientific topics where the existence of a phenomenon is in question, scientific criticism is generally determined by the critic's prior expectations.

Collin's work, cited by Radin, (1997) also explained a phenomenon termed "scientific regress"(p. 236). Scientific regress happens when experimental results are predicted by a well-accepted theory and then the outcome is examined to see if it matches the initial expectations. Radin (1997) reasoned that with psi research there isn't a well-accepted theory with which to compare the results, so skeptics use "scientific regress" to invalidate all of the scientific results in this field of study.

Radin (1997) also called attention to another form of the confirmation bias, that of seeking to confirm one's original hypothesis when a situation is unclear or confusing. Radin's definition here matches Aronson's (1995) definition of "the confirmation bias -the tendency to confirm our original hypotheses and beliefs"(p.150).

Radin (1997) said confirmation biases are especially problematic for older more experienced scientists because "their commitment to their theories grows so strong, that simpler or different solutions get overlooked"(p. 236). These biases, Radin claimed, preserve ideas that are already established and causes suppression of non-standard science research.

Dean Radin (1997) broke down the acceptance of a new science idea into the following four predictable stages which this author sees as being rife with various aforementioned biases and dissonance reduction:

Stage 1, skeptics proclaim that the idea is impossible.

Stage 2, skeptics reluctantly concede that the ideal is possible, but trivial.

Stage 3, the mainstream realizes that the idea is more important than the trivializing scientists in authority lead them to believe.

Stage 4, even the skeptics proclaim that they knew it all along or even that they thought of it first (P.243).

This writer believes that the cognitions in this last stage are attributable to what Aronson (1996) termed as "the hindsight effect" (p.7).

## **Taboo or Unpopular Science**

The Golem (Collins 1993), Fire from Ice (Mallove 1991), The Coming Energy Revolution (Manning 1996) and Alternative Science (Milton 1996) all had chapters which described the genesis of cold fusion and gave important evidence for it's validity. These books told of the findings of two chemists, Professor Martin Fleischmann of Southampton University and his former student, Professor Stanley Pons of the University of Utah. Fleischmann and Pons held a 1989 press conference at which they announced the discovery of cold fusion. Milton (1996) defined cold fusion as "the production of usable amounts of excess energy by a nuclear process occurring in a water at room temperature"(p. 25).

By making the announcement about their success at a press conference, Manning(1996) and Milton(1996), and Collins (1993) all stated that these

two distinguished scientists were breaking with the tradition of first submitting an article to peer review for publication. Manning (1996) contended that it was mainly this departure from the expected way of introducing the phenomenon, not the failing of the results, which led to the trivializing and derogating of cold fusion, and of Fleischmann and Pons as well, by the majority of mainstream scientists.

Manning (1996) suggested that a secondary cause for disapproval was the fact that science did not have a framework yet for how these cold fusion experiments produced the energy. This lack of a previously existing framework seems to cause most mainstream scientists to invalidate anomalous data through experimental regress and the confirmation biases

Evidently Pons and Fleischmann intended to keep the means of producing cold fusion to themselves in hopes of becoming wealthy, so they were not forthcoming about the details of the methodology used. Although they were able to repeatedly get the same verifiable results, other scientists of the time were not able to independently duplicate what Pons and Fleischmann had done (Manning, 1996).

A third cause for disapproval, explained Manning (1996), is that the massively funded hot fusion research organizations had also been trying over decades to get some of the same findings as those from the cold fusion experiments and may have had professional jealousy (Manning 1996).

This writer believes that the suppression of cold fusion could have been due to some of the same cognitive distortions which led to the suppression of other maverick science ideas and inventions throughout history. These cognitions include the in-group out-group, confirmation, and that expectancy biases, as well as cognitive dissonance reactions to anomalies.

Manning (1996) wrote of how in America, Fleischmann and Pon's reputations as cold fusion researchers were tarnished. Cold fusion articles were suddenly banished from science journals and U.S. patents for cold fusion were dismissed.

Manning (1997) continued that only Japan was still putting major funding into cold fusion research. As a heavily populated island with few natural energy resources, Japan had everything to gain from clean safe energy

production. Also, because many Easterners have a "spiritual belief in an all pervading energy which comes in many forms,"(p. 102) the idea of fusion reactions taking place without extreme high temperatures was not quite such a dissonant idea as it had been for Westerners.

Other methods to derive usable energy that are considered to be in opposition to the beliefs of mainstream science were discussed by Manning (1996). These included solid state energy devices, vibrational devices developed by nineteenth century musician and inventor John Ernst Worrell Keeley, vortex and magnetic energy mechanisms, new technologies for using waste and hydropower, and the use of hydrogen for power.

## **Alternatives for excluded scientists**

The internet has, in the last few years, become a valuable resource for those scientists who have been discouraged from experimenting with and publishing unorthodox studies. It gives them the opportunity to network with others interested in their research.

Some websites for these discussion groups can be found at the yahoo website at <http://www.yahoo.com>, under the subheading, alternative science. In addition there is [/weird/wclose.html](http://www.yahoo.com/weird/wclose.html) where one can find free energy, cold fusion and otology discussion groups under the subheadings: freenergy-L, vortex-L and taoshum-L.

There are journals created specifically for printing professionally written studies on unpopular topics. Since involvement with these non-standard topics might lead to a professional scientist's ostracism, one publication, The Journal of Scientific Exploration (1986-1997) only prints articles by academic research scientists, anonymously. This journal provides a forum for presentation, criticism and debate for topics that are ignored or ridiculed by mainstream science. It also has the secondary goal of publishing articles that help to promote understanding of the factors that limit scientific inquiry.

Galilean Electrodynamics is a publication devoted to professionally written journal articles that challenge Einstein's ideas. Only papers that are in the realm of mathematics, engineering or physics and that are relativity-related are considered for publication in this journal.

Infinite Energy Cold Fusion and New Energy Technology (1994- 1998) is a magazine edited by Eugene Mallove and is devoted to energy experimentation that is beyond the scope of orthodox accepted science.

## Looking forward

Bauer (1994) called on science institutions to help foster objectivity by making sure they includes scientist from backgrounds and viewpoints that are as varied as possible. He also asked that scientists fight their personal biases and hidden social agendas by vigilantly examining their own motives, and trying to see an objective reality rather than one influenced by expectations (p. 102).

Dr. Brian Martin (1998) in his current writings posted on the internet, "Suppression Stories," asked that researchers publish more accounts about suppression, and claimed that this will provide necessary support for dissident and struggling scientists.

Radin (1997) closed his book with a hope that this process of suppressing new ideas will not continue to be at the cost of good science and scientists. He included this quote by Lewis Thomas, biologist and author of the Medusa and the Snail:

"The only solid piece of scientific truth about which I feel totally confident is that we are profoundly ignorant about nature. . . It is this sudden confrontation with the depth and scope of ignorance that represents the most significant contribution of twentieth-century science to the human intellect"(p. 289).

This author will bring this paper to a close with a quote from Bill Beaty's (1998) webpage article "Quotes against excessive skepticism:

"Daring ideas are like chessmen. Moved forward, they may be defeated, but they start a winning game." -Goethe

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