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ESSAY

Anomalistics, Pseudo-Science, Junk Science, Denialism: Corollaries of the Role of Science in Society

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Abstract—Recent decades have seen a number of public disputes over scientific anomalies and unorthodoxies, typically framed as science versus pseudo-science. This Essay suggests historical and intellectual context for these controversies. The main point: There is no universally applicable, objective, impartial formula for distinguishing good science from bad science or real science from pseudo—the devil is always in the details. Anomalies and unorthodoxies are defined implicitly by the contemporary state of the art in mainstream science; "pseudo-science" is a pejorative aimed at non-mainstream claims in defense of the authority of established, mainstream science. WWII was a game-changer: In its aftermath, science achieved unprecedented influence over public policies. As the stakes became high, "pseudo-science" seemed no longer a sufficiently powerful pejorative and was superseded by charges of "junk science" and "denialism."

Introduction

"[M]ost cryptids are brand-spanking new." I was rather bemused that this statement was apparently intended as a noteworthy insight, in a purportedly authoritative book about cryptozoology, science, and pseudo-science published by an august university press (Loxton & Prothero 2013).

Of course cryptids[1] were new in the 20th century. Cryptids, like anomalies in general, are by definition things that official science doesn't (yet?) countenance. They had no *raison d'être* until science had become a social authority allowed to proclaim not only that certain things are so but also that certain other things are *not* so. "Science" only became such a nay-sayer in relatively recent times. This Essay describes how the growth and progression of science led to the creating of such categories as "pseudo-science," "junk science," and "denialism."

Anomalistics concerns areas of potential knowledge that are ignored by science—and ignoring shades into denigrating. If an anomalistic topic is persistently investigated and attains public visibility and potential respectability, it is likely to be branded "pseudo-science" by proponents or

defenders of contemporaneous mainstream science. The category "pseudo-science" was created in defense of prevailing scientific beliefs; it is a sociopolitical category, not an intellectual one.

The term "pseudo-science" came into general usage at about the same time as science became a profession and a career (Ross 1962, Daniels 1967), and it became more widely deployed as science became an increasingly influential social force. The parallel histories of science and of pseudo-science show how the conventional wisdom has come to incorporate what the scientific establishment believes.

The stronger the influence of science within society, the higher its status, the more anxious become the true believers in "Science" that there should be no effective challenges to it. Nowadays science is almost universally regarded as the ultimate intellectual authority on which other social institutions, including political ones, depend for their beliefs; correspondingly, challenges to scientific authority are beaten back with extreme vigor.

Corollary to fiercely resisting threats is that the defenders become ever more unyielding and increasingly dogmatic; they can less and less afford to suspect that they might not be right on even the smallest detail. Thus questioning widely held scientific beliefs—"the mainstream consensus"—becomes equivalent to heresy. As mainstream science has become increasingly dogmatic in matters of great public import—DDT, the ozone layer, climate change, HIV/AIDS—the term "pseudo-science" apparently seemed no longer a sufficiently powerful pejorative and had to be replaced by the emotionally more evocative "junk science" and "denialism."

Pseudo-Science Is Defined by Science

Pseudo-science is not the same as non-science: Literary criticism, say, is not science, but it is also not pseudo-science. Pseudo-science constitutes an implicit or explicit challenge to science: It presumes to have *scientific* grounds to question the completeness or validity of prevailing science and even claims to command authentic knowledge that differs in some way from what is claimed by established or mainstream science.

Challenges to science are resisted. Observers as well as scientists have often framed the ensuing controversies in intellectual or rational terms as the "demarcation question": Can one identify objective attributes that science possesses which pseudo-science does not? Best known among proposed candidates are the scientific method, falsifiability, and avoidance of ad hoc modifications to theories (Ptolemaic "wheels within wheels"). None of those candidates have stood the test of time, however. Historians and sociologists in particular have found it easy to locate cases of universally

accepted science that was not done under such rules (Bauer 1992). Laudan (1983) went so far as to declare "The end of the demarcation problem."

There are no objective intellectual criteria to characterize pseudo-science either. Specific topics that have been called pseudo-science at various times have no commonality other than that they were not countenanced by contemporaneous science. In the 1950s, a seminal critique of pseudo-science as subversive of real science (Gardner 1957) mentioned such diverse topics as flat-Earth and hollow-Earth theories; the theories of Velikovsky, Donnelly, and Hörbiger; Forteana;[2] UFOs (then more commonly known as flying saucers); crankish attempts to disprove relativity theory; dowsing; orgonomy (Wilhelm Reich's universal energy) and eccentric sexual theories; young-Earth creationism; Lysenkoism; racism; Atlantis and Lemuria; farfetched properties attributed to the pyramids and their builders; homeopathy, naturopathy, osteopathy; medical quacks such as William Koch (cancer cure) or Edgar Cayce (remote diagnosis by psychic means); Dianetics (which was just then becoming Scientology); Korzybski's general semantics; phrenology, physiognomy, palmistry, graphology; extrasensory perception (ESP) and psychokinesis (PK); and the case of Bridey Murphy, which encapsulated reincarnation and hypnotic regression.

There is no trace of intellectual commonality among these diverse topics: clearly, the criterion of pseudo-science is simply and solely what—according to the author—does not fit with what science knows. The book specifically avoided such topics as astrology as being "so far removed from anything resembling science" (Gardner 1957:14), thereby acknowledging implicitly that the criterion for inclusion as pseudo-science is an overt and not immediately and obviously implausible challenge to science; pseudo-science is "a historically relativistic [category] . . . whatever the scientific establishment of the time—for whatever reason—is trying to discredit. . . . [A]n epithet hurled by members of the scientific *and social establishment*" [Mauskopf 1981; emphasis added]. That emphasized phrase recognizes the fact that by the 1950s, influential social institutions had become stakeholders in what counts as proper science. This is illustrated as the pejorative "pseudo-science" as deployed by politicians, social activists, lawyers, and others who really do not understand what science is and what it is not; they simply parrot what the mainstream scientific consensus happens to be because it belongs to their social clique.

The absence of objective criteria explains why what is called pseudo-science at some times and in some societies might not be called pseudo-science at other times and in other places: It all depends on what the state of established science is at a given time and place. "If you want to know what science is or has been, show me the contemporary pseudoscience"

(Gordin 2012:3). Some topics, for example alchemy or astrology, were socially accepted in the past but later became pseudo-science; Newton (1643–1727), an iconic figure of early modern science, spent much effort on Biblical exegesis and studies of alchemy; leading scientists in the 19th century made extensive investigations of mediumship and other claimed psychic manifestations that are nowadays branded pseudo-science; and sea serpents, too, were respectable subjects of investigation not much more than a century ago. Other phenomena, for instance meteorites (Westrum 1978), were once pseudo-science but later became science. Other matters again have experienced several back-and-forth classifications as science or pseudo-science, for instance biological effects of electricity and magnetism (Bauer 2001a:119–136).

Hegemony of Science and Public Frustration

Science attained even greater prestige than earlier as a result of its role in World War II, when it delivered victory-bringing atomic bombs, radar, penicillin, and many other less prominent advances. Government support for scientific and medical research and education expanded enormously through the newly founded National Science Foundation and the greatly expanded National Institutes of Health. Public media became replete with items about matters scientific.

The long-held view is that science can make the natural world comprehensible. Frustration then ensued when, in this modern age with science taking tremendous strides to greater knowledge, science appeared nevertheless to have no useful information about matters of great public interest: What are those "flying saucers"? What are the big creatures in Loch Ness, one of which was captured on film in 1960? What is science's quarrel with the interesting scenario that Immanuel Velikovsky inferred from innumerable historical and geological sources? What is not scientific about the rigorous experiments by Rhine at Duke University that demonstrated a human capacity for extrasensory perception?

Frustration led to the founding of a variety of new organizations aiming to acquire knowledge about these things that science failed or even refused to offer: the Parapsychological Association (1957), the Loch Ness Investigation Bureau (1962), a number of groups interested in UFOs (Aerial Phenomena Research Organization [APRO] (1952) and others now-defunct; as well as still active ones such as the Mutual UFO Network [MUFON] (1969) and the Center for UFO Studies [CUFOS] (1973)). Roger Wescott (1980) recognized this intellectual agitation by coining the umbrella term "anomalistics."[3] Some well-established scientists launched the Society for Scientific Exploration[4] in 1982 as an encompassing organization to

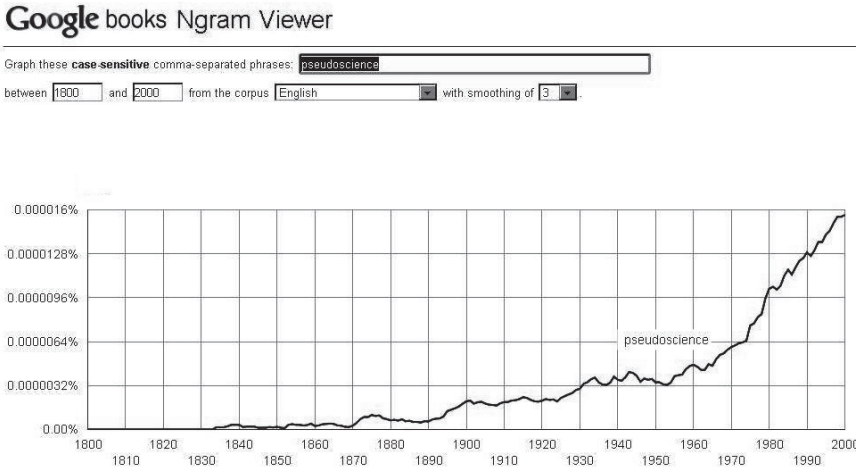

Figure 1. Presence of the term "pseudo-science" in books in English. It became steadily more frequent from the early 19th century into about the middle of the 20th century, then increased more rapidly.

foster rigorous consideration of these matters that were being ignored by mainstream research; the *Journal of Scientific Exploration* began publication in 1987 and in 2009 was joined by *EdgeScience*.

Devoted advocates of mainstream science did not take kindly to these ventures. Specifically to combat the perceived flourishing of such "pseudo-science," in 1976 philosopher Paul Kurtz founded the Committee for Scientific Investigation of Claims of the Paranormal (CSICOP; the name changed in 2006 to Committee for Skeptical Inquiry, CSI).[5] Its journal, *The Zetetic*, also began publication in 1976, changing its name to *Skeptical Inquirer* in 1978.

The increase in perceived challenges to science after WWII is reflected in the more frequent appearance in print[6] of the defensive epithet "pseudo-science" (Figure 1). Pseudo-science had earlier been of concern primarily or even solely to the scientific community. But as science became increasingly influential in public policy after WWII, challenges to science began to be seen as challenges to the social order, not just to matters internal to the scientific community.

Scientists had grounds to fear the consequences of challenges to scientific understanding from outside the scientific community. Nazi Germany had enacted "Aryan science" which forbade anything attributed to Jews, including relativity theory (Lenard 1938). In the Soviet Union, chemistry and physics had been forbidden from employing the insights of quantum mechanics, and genetic science was crippled by Lysenkoism.

Gordin (2012, especially chapter 3) has argued that the latter example in particular stimulated prominent scientists to react violently when Velikovsky's science-challenging books met widespread public acclaim in 1950 and later years.

This was the intellectual milieu in which spokespeople for science—self-appointed spokespeople with sometimes doubtful credentials for it—began to agitate against "pseudoscience" as a perceived threat to the social order. When Gardner (1957) published the first version of his compendium of pseudo-science in 1952, he could point to only three similar earlier efforts, by Daniel Hering (1924), David Starr Jordan (1927), and Joseph Jastrow (1936). By contrast, critiques of pseudo-science became increasingly frequent and vehement from the 1950s on, not only in the *Skeptical Inquirer* but also in books, for example Cohen (1965), Moore (1972), Sladek (1973), Fair (1974), Evans (1975), Story (1976), White (1976), Marks and Kammann (1980), Abell and Singer (1981), and Gardner (1981). Prominent scientists took leave from their science to attack Velikovsky (Bauer 1984) and to propose definitions and examples of what constitutes pseudo-science (Bauer 1984:Chapter 8).

Two matters of semantics need to be noted, relevant in particular to groups like CSICOP: the mis-use of "skeptical" when debunking is actually meant, as in "Skeptics" societies and publications; and the mis-use of "paranormal" to include not only everything not accredited by contemporaneous science, even the possible existence of perfectly material and natural entities, but often also anything of a religious bent—a fairly natural corollary of CSICOP's founding under the initial auspices of the American Humanist Association.

Science in Earlier Times and the Relative Lack of Pseudo-Science

Many notable "scientific" discoveries and technological inventions had been made in the centuries and millennia preceding what is regarded as "modern" science, but they had not challenged prevailing social authorities. Builders of megaliths and pyramids several millennia ago understood much about astronomy, applying what they knew in the service of established beliefs and authority. Greek philosophy, not Greek science, was sometimes seen as a threat to the social order. The notable achievements of Arabic science produced no authority-challenger analogous to Galileo. "Modern" science is generally considered as beginning in the 16th century in Western Europe, but it did not present a serious challenge to established authority until the middle of the 19th century.

The iconic figure in the birth of modern science is Galileo, widely viewed as an empirical proto-scientist in opposition to a non-empirical, non-

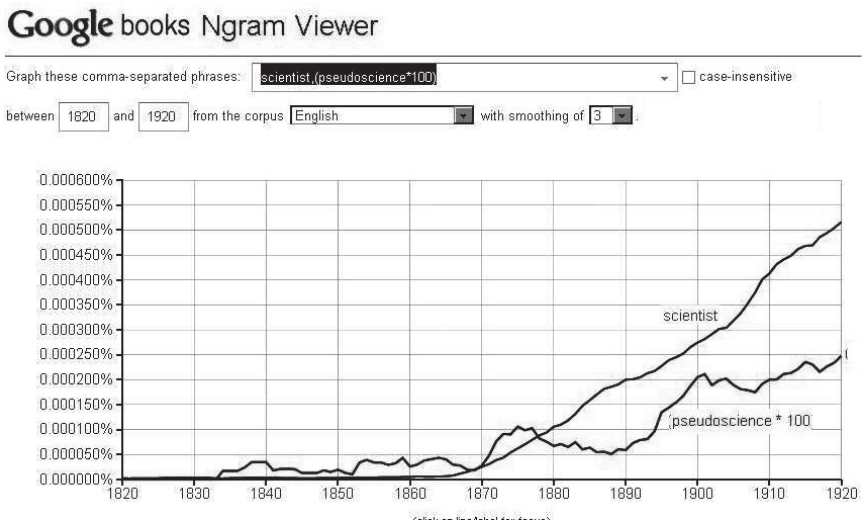

Figure 2. The defensive pejorative epithet "pseudo-science" came into use at about the same time as "scientist" and when the latter could describe a career and then the member of a professional guild (Ross 1962, Daniels 1967).

scientific Church. Historians argue for something more nuanced, not so much differences over heliocentricity or empiricism or "science" but centrally over the question of *intellectual authority*: Galileo's insubordination would have been just as unacceptable to his Pope had it been over something other than whether the Earth goes round the Sun.

Although the Catholic Church discerned Galileo as a challenge to its authority, it was only an individual's challenge. During the 17th and 18th centuries, increasing knowledge about Nature laid the groundwork for science to mount an *institutional* challenge to religious authority on questions about the workings of the world. In the 18th century, proto-geologist James Hutton concluded that geological formations had resulted from very long, slow processes. Also in the 18th century, Galvani had found that he could make frogs' legs seem alive by stimulation with his batteries ("piles"). But it was only in the 19th century that the accumulation of such discoveries led to inferences that challenged organized religion. It was also in the early 19th century that the word "scientist" (Ross 1962, Daniels 1967) first came into use, corresponding with the time when science could be a career rather than an avocation; and it seems unlikely to be coincidental that the term "pseudo-science" began to enter public discourse at about the same time (Figure 2).

Galvani's work inspired speculation that life might be breathed into clay by electricity as well as by God, as in the 1818 novel *Frankenstein, the Modern Prometheus* (commonly but perhaps mistakenly [Lauritsen 2007] attributed to Mary Shelley). In 1828, Friedrich Wöhler demonstrated that the "inorganic" ammonium cyanate could be converted readily into the "organic" urea: Living beings were seen to be made of the same stuff as makes up inert matter. The challenge to religion reached its crisis when Darwin proposed that evolution resulted from natural selection. As Charles Lyell pointed out, Hutton's stratigraphic analyses indicated that the Earth was old enough to accommodate Darwin's proposal. Thus traditional religious views were challenged directly over the age of the Earth as well as over the genesis of species including human beings.

The apparently *mindless, purposeless* mechanism of natural selection constituted a direct challenge to the belief that Godly purpose governed everything on and outside the Earth, and it was anathema to most religious authorities (as it still is to some). Before that, from about Galileo's time until about the middle of the 19th century, science had been a largely descriptive enterprise often described as "natural philosophy." Among those active in its pursuit had been clergymen to whom learning about Nature was synonymous with worshipping the Creator. After Darwin, however, church people faced novel problems in reconciling scientific knowledge about the natural world with religious teachings and traditions. Eventually the great proportion of Christian groups came to allow science authority over natural phenomena, restricting religious authority to matters of human behavior (though small fundamentalist sects remain recalcitrant; and evolution is still not taught in such Islamic institutions as universities in Turkey as well as fundamentalist colleges in the USA).

From the middle of the 19th century, "Science" progressively supplanted religion as the ultimate recognized intellectual authority. Science was now a career, a profession (Ross 1962, Daniels 1967), and it eventually became an influential social institution. Tremendous scientific advances accumulated during the second half of the 19th century, which an historian aptly described as The Age of Science (Knight 1986): Understanding grew about electricity and magnetism, atomic theory, and the regularities in properties and compounds of the chemical elements as revealed by Mendeleev's Periodic Table (ca. 1870). By the end of the 19th century, Science had acquired high intellectual authority, not to say hubris, as when T. H. Huxley proclaimed Science's victory over religion by preaching "Lay Sermons" for "the Church Scientific" (Knight 1986:3–4). Huxley's enthusiasm might be seen as the founding of *scientism*, the view that science and only science offers a reliable path to Truth. Some enthusiasts ventured that science had

already unraveled all the major mysteries and what remained was to fill in details.

Scientism almost at once suffered a setback. In what has been called the Second Scientific Revolution, at the turn from the 19th into the 20th century confidence in amassed knowledge was shaken by entirely unexpected discoveries: radioactivity, atoms that were sometimes unstable, transformations of one element into another, X-rays, and quantum phenomena and associated discoveries.

Science Supersedes Religion as Social Authority

The staggering scientific advances during WWII brought science back onto a pedestal similar to its status at the end of the 19th century. Our times are sometimes called an age of science, but it might more appropriately be called an age of scientism. Although not many people will acknowledge, probably not even to themselves, that scientism is their faith, many actions and inferences reveal that scientism nowadays has many adherents within and without the scientific community.

For the general public, the force of science is seen in the degree to which "scientific tests have shown" trumps the rhetorical impact of "tests have shown," even though the two statements have the same intrinsic meaning (Bauer 2001b:Chapters 1–3). CSICOP and "Skeptics" groups reveal clearly enough through their writings and initiatives that their only touchstone of trustworthiness is what science happens to be saying. Another indicator is the fact that some religious sects felt the need to enlist "science" in support of their religious beliefs: "Creation science" or "scientific creationism" emerged in the 1960s as an attempt to have science support fundamentalist Biblical interpretation (Whitcomb & Morris 1961); and "intelligent design theory" represents the same ambition.

Before science became the touchstone of intellectual authority, that role had been filled by religion and religion-sanctioned political bosses. In such circumstances, those who harbor nonacceptable beliefs are traitors or heretics. When Science supplanted Religion as the ultimate intellectual authority, challenges to social authority were less frequently condemned as heretical and more frequently as pseudo-scientific (Figure 3).

Science and Politics

Following WWII, scientists began to see the active influencing of political policies as part of their proper role. An early example was the *Bulletin of the Atomic Scientists*, concerned primarily but not only with military and peaceful applications of atomic energy. Academe also began to recognize

Figure 3. As science superseded religion as the ultimate intellectual authority, challenges to social authority were pejoratively labeled pseudoscience rather than heresy.

the rising public significance of science by developing courses and programs on "science and society"; these fostered interactions among historians, philosophers, sociologists of science, and political scientists as well as engineers and "hard" scientists, which led eventually to the field nowadays recognized as Science & Technology Studies (STS).

The atom-bomb project not only underscored the potential national importance of science; it also represented for scientists a precedent for the initiation of significant public policy from within the scientific community. The feasibility of atomic weapons had become known to the national government not through the usual channels but directly from the scientific community, exploiting the high prestige of Albert Einstein to gain access to the President. Also from WWII onward, the President routinely includes a Science Advisor as part of the White House staff. In recent decades, several initiatives of national and global importance have started as a result of claimed scientific discoveries, for example concerning the claimed destruction of the Earth's ozone layer by refrigerants and similar chemicals and the effect of carbon dioxide on global climate.

The influence of science on public policy brought a degree of collateral damage. In the 1960s, the perceived participation of "science" in The Establishment made antagonism against science part of the "counterculture," but the most serious damage has come through attempts to make science serve partisan political purposes. Publicly professed opinions about matters of science thereby become determined by political affiliation.

Differing political views and ideologies find specific interpretations of scientific matters more to their liking or less to their liking, with the result that differences over interpretation of scientific data become politicized. For example, the hypothesis that human generation of carbon dioxide is responsible for climate change (AGW, for anthropogenic global warming) is welcome to environmental activists and unwelcome to people concerned with industrial economics. As a result, scientists who question the evidence for AGW are accused by AGW advocates and activists of being right-wing collaborators with conflicts of interest that allegedly vitiate their professional expertise. Liberals and Democrats are supposed to regard AGW as proven, Conservatives and Republicans are supposed to deny that (Bauer 2012a). Similarly, arguments divisive along political lines have concerned research on human stem cells and the question of what defines the beginning of human life. The teaching of biology is beset by continuing controversies about how or even whether evolutionary theory should feature in textbooks and classrooms.

How Modern Science Has Changed

It is not widely recognized that "modern" science, acknowledged as originating half a millennium ago, is nowadays a different *kind* of thing than it was then. The conventional wisdom maintains a view of science based on something like the earliest days of modern science, namely, that science is an objective, disinterested pursuit of authentic knowledge by people of outstanding intellect whose only aim is to uncover the best possible understanding of the natural world. But pervasive conflicts of interest, external control of research directions and funding and publication, and politicization of the interpretation of scientific data make today's science nothing like the science of even a century ago. Those who appear plausibly to speak for science (Ross 1962, Daniels 1967) are still treated by media, public, and policymakers as though they were disinterested purveyors of objective understanding when instead they are increasingly self-serving agents of commercial or political forces as well as of their own status and the prestige of their profession.

There have been three distinct eras of modern science (Bauer 2013). From the 16th century into the early 19th century, science was an avocation. Beginning in the 19th century, it became a profession (Ross 1962, Daniels 1967). From about the middle of the 20th century, science has been an institution just as influential as the institutions of economics, finance, media, politics, and religion. Nowadays scientific experts influence national and international activities through such institutions as the World Health Organization, UNAIDS, and the International Panel on Climate Change,

just as economic experts influence national and international activities via the World Bank and the International Monetary Fund.

The change from profession to institution was in essence from a largely self-organized cooperative activity of independent intellectual entrepreneurs—which is how the conventional wisdom still thinks of "science"—to a centrally organized activity controlled largely by factors and forces not intrinsic to the pursuit of scientific research.

As science gained social prestige, preferment, and access to greater resources, the social sciences sought overtly to align themselves with the "hard" physical sciences in order to qualify as "Science" and enjoy the associated benefits in resources and prestige. A corollary has been the tendency to treat "experts" in every field as though they had access to knowledge as reliable and usefully applicable as knowledge in the physical sciences is agreed to be.

However, in economic matters it is universally understood that the experts suffer conflicts of interest owing to their political views: left- and right-wing economists, or progressive and conservative economists, draw significantly different conclusions from any given set of data or "facts." By contrast, it has not so far been widely understood that analogous conflicts of interest play a role in the interpretation of "scientific" data. In an increasing number of fields within science, a single point of view has gained hegemony and become dogma, and proponents of that view have been able to enlist institutions outside science to enforce that dogma through suppression of competent professional minority opinions (Bauer 2012b).

That a purportedly "scientific" viewpoint should attain hegemony to the extent of suppressing differing interpretations held by competent researchers and observers runs counter to the traditional view of science as an empirical enterprise that never attains final closure. Proponents of the dogmas resort to rhetorical devices like claiming a "consensus" of experts, which Michael Crichton aptly labeled

> the first refuge of scoundrels. . . . Whenever you hear the consensus of scientists agrees on something or other, reach for your wallet, because you're being had. . . . The greatest scientists in history are great precisely because they broke with the consensus. There is no such thing as consensus science. If it's consensus, it isn't science. If it's science, it isn't consensus. Period. . . . Consensus is invoked only in situations where the science is not solid enough. Nobody says the consensus of scientists agrees that $E = mc^2$. Nobody says the consensus is that the sun is 93 million miles away. It would never occur to anyone to speak that way. (Crichton 2003)

Crichton's understanding of science and common sense have not yet

penetrated the halls of power, however, so monolithic viewpoints have shaped national and international policies over matters of science and medicine, for example global warming and HIV/AIDS. Minority views on these and similar questions represent a most threatening challenge: to the mainstream scientists, who have inveigled policymakers and national leaders into expensive, far-reaching actions and whose careers and social status are in jeopardy if their advice turns out to have been flawed; and to the decisionmaking national leaders whose reputations and careers would be in jeopardy if it turned out that they had allowed themselves to be misled *even as competent dissenting experts had tried to warn them of it*.

The potential threat is so profoundly damaging that the old pejorative "pseudo-science" seems no longer adequate: In the last few decades, when "science" has been responsible for major public policies and actions, for example over purported destruction of the ozone layer or the dangers of carbon dioxide, questioning mainstream views is now labeled as "junk science" (for example, Huber [1991] and Agin [2006]), and its proponents are called "denialists" (for example, Kalichman [2009] and Specter [2009]), a deliberate emotionally evocative analogy with those who deny that the Nazis had perpetrated a Holocaust of genocide against Jews and gypsies; see Figures 4 and 5.

Dissenting scientists find themselves ostracized, disinvited from conferences and interviews, unsuccessful when seeking research funds, and rarely able to get their work published in top professional journals (Bauer 2012b:Chapters 2 & 3).

Some activist dissidents have turned the tables and returned fire by pointing to the "denialism" of HIV/AIDS theorists regarding the toxicity of antiretroviral drugs (Bauer 2010a, 2010b) and the "junk science" of AGW and the dangers of second-hand smoke[7] (Milloy 2001).

In a Nutshell: The Interplay of Science, Anomalistics, Pseudo-Science, Junk Science, and Denialism

As Science became an integral part of the Establishment, it acquired constraints, including what topics it could choose to study. External influences now control what science is done and published, and those external influences do not have the background to make the best judgments about where research is likely to be most fruitful. Anomalistics became necessary to fill the role that natural philosophy, early modern science, had played—namely, the pursuit of knowledge about everything that interests human beings.

In that sense, anomalistics and science are complementary just as official medicine and alternative medicine are in principle complementary.

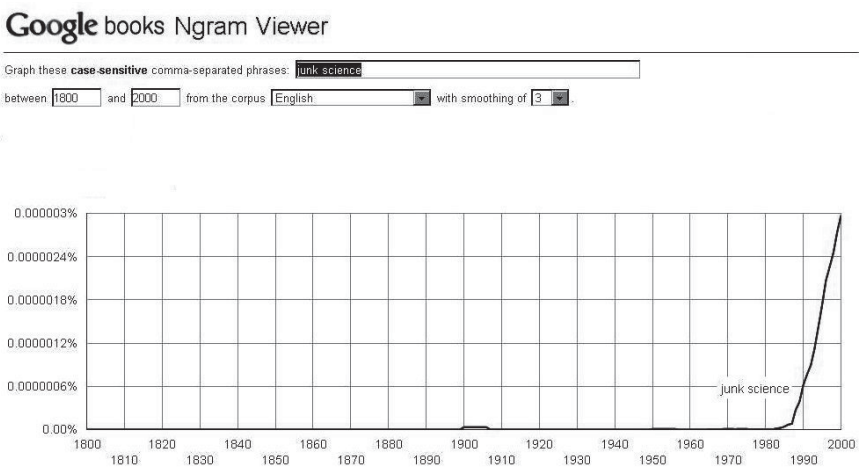

Figure 4. The epithet "junk science" started to be deployed when questions were raised about the predictions of doom from carbon dioxide emissions and the supposed destruction of the ozone layer by refrigerant chemicals.

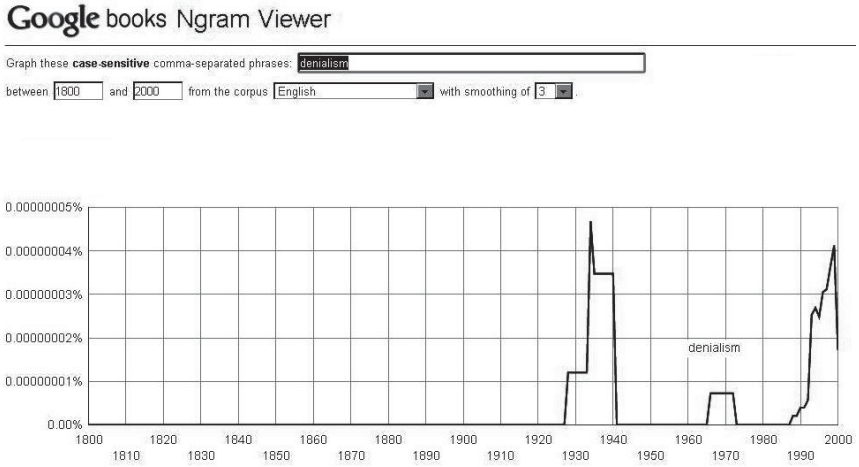

Figure 5. The pejorative "denialists", earlier associated with denying the horrors of the Nazi regime, became deployed against those who raised questions about the predictions of doom from carbon dioxide emissions, from supposed destruction of the ozone layer by refrigerant chemicals, and whether HIV had been proven to cause AIDS.

However, practitioners of the mainstream ventures see their complements as challenges rather than potential allies. Perhaps that is inevitable, just as political hegemonies seem unable to make even the smallest accommodations to minority wishes.

At any rate, current circumstances find the mainstream consensuses over matters of science and medicine exerting effective control over research and dissemination of information, to a degree that extends to active persecution of those who hold different views. A contributing factor to these circumstances is the widespread ignorance about the nature and history of science: that "science" has changed out of sight during the last century, and nowadays is the captive of conflicting interests; that science has always progressed by overturning mainstream consensuses; that what is denigrated and persecuted as "pseudo-science" and "junk science" and "denialism" just because it challenges the consensus might become the accepted mainstream consensus of a future time.

Not *all* challenges to mainstream dogmas necessarily have merit, of course. Implying that they do has been aptly described as the Galileo Gambit or Galileo Fallacy.[8] But that fallacy is widely understood as such, while the unwarranted and increasing dogmatism of mainstream science and medicine remains little-recognized.

Notes

[1] Cryptids are creatures known only from human testimony, looked for by cryptozoologists, and which may or may not exist: Nessie, Bigfoot, and the like.

[2] Named after Charles Fort, who published collections of events or phenomena awaiting scientific explanation.

[3] Wescott apparently used the term in an oral presentation in 1973 (Wescott 1975) but in print only in 1980 (Wescott 1980).

[4] http://www.scientificexploration.org

[5] http://www.csicop.org

[6] Data about frequencies of usage have become available through the Google Ngram Viewer.

[7] JunkScience.com

[8] http://rationalwiki.org/wiki/Galileo_gambit

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