Why consensus science is anti-science

Jerry Bergman

A major argument against opposition to Darwinism is the claim that evolutionary naturalism is the consensus of the science community, therefore not open to debate. A review of the problems caused by consensus science indicates that, as a whole, it harms scientific progress because wrong ideas become established that impede the research required to determine the actual situation. Reasons why incorrect conclusions become consensus science include failure to carefully follow standard science research protocol, such as strictly adhering to proper research procedures, and lack of replication. This is compounded by the fact that once an idea becomes mainstream in science, it is difficult to overturn it.

One of the major methods employed to oppose critics of Darwinian theory is the *consensus science* argument. Consensus science is the claim that evolution is true because it is agreed by the proper authorities, meaning that most all scientists accept evolution; and, therefore, opposition to Darwinism is 'obviously' as foolish as claiming that the earth is flat.[1] A typical example of the consensus claim is a statement by the National Academy of Science that "The scientific consensus around [Darwinian] evolution is overwhelming", and, therefore, ideas that oppose it are properly censored.[2]

Becky Ashe, president of the Tennessee Science Teachers Association, wrote in opposition to a law that would protect the careers of teachers who critiqued evolution, that "the scientific theory of evolution is accepted by mainstream scientists around the world as the cornerstone of biology and the single, unifying explanation for the diversity of life on earth and is, therefore, beyond question."[3]

Anthropology professor Cameron Smith also has equated scientific consensus with unimpeachable fact: "There is consensus among the scientific community that Darwinian evolution does occur [and] that it is a fact", not a theory.[4] Furthermore, the distinguished Swiss Catholic theologian Hans Küng opined, "A theologian should not cast doubt on a scientific consensus, but see how he can deal with it", by which he means the theologian must conform theology to the current scientific consensus.[5]

This paper documents the fact that consensus science can interfere with the goal of science, that of discovering accurate knowledge about the natural world. Numerous historical examples are cited to illustrate this point.

Consensus science harms science

Daniel Sarewitz, director of the Consortium for Science at Arizona State University, arguing that consensus science actually hurts science, wrote that "When scientists wish to speak with one voice, they typically do so in a most unscientific way: the consensus report."[6] The problem, he notes, is that "the process of achieving such a consensus often acts against … [science], and can undermine the very authority it seeks to protect", namely the authority of science.[6] He adds that, in contrast to "a pallid consensus, a vigorous disagreement between experts would provide decision-makers with well-reasoned alternatives that inform and enrich discussions as a controversy evolves, keeping ideas in play and options open."[6]

Furthermore, another problem is that the scientific consensus claim "creates a public expectation of infallibility that, if undermined, can erode public confidence [in science]."[6] Of course, this is exactly what has happened in no small number of cases. The "idea that science best expresses its authority through consensus statements is at odds with a vibrant scientific enterprise" because

> "… science depends for its progress on continual challenges to the current state of always imperfect knowledge. Science would provide better value to politics if it articulated the broadest set of plausible interpretations, options and perspectives, imagined by the best experts, rather than forcing convergence to an allegedly unified voice."[6]

In short, Sarewitz concluded that the voice of science should be to agree to disagree. Although consensus reports are the "bedrock of science-based policy-making", the fact is that "disagreement and arguments are more useful" for scientific advancement.[6] A disparity also exists between real consensus and a consensus cobbled together by surveys of biased samples, such as faculty at elite universities, often for political or social goals. Real consensus is based on the replication of carefully designed, controlled experiments. Reality may lie beneath the surface of consensus claims, but it exists and needs to be searched for, a task impeded by consensus science.

Author Michael Crichton condemns consensus science

In a talk given at California Institute of Technology, Harvard-trained physician Michael Crichton, after quoting Stanford University Professor Paul Ehrlich's claim that "scientists are always making absurd statements", argued

against the belief that a view was most always correct when a "consensus of a very large group of scientists" existed.[7] In his talk Dr Crichton examined in detail the "notion of consensus, and the rise of what has been called consensus science." He concluded that consensus science is "an extremely pernicious development" because historically

> "… the claim of consensus has been the first refuge of scoundrels; it is a way to avoid debate by claiming that the matter is already settled. Whenever you hear the consensus of scientists agrees on something or other … you're being had."[7]

The reason he condemns consensus science is because the task

> "… of science has nothing whatever to do with consensus. Consensus is the business of politics. Science, on the contrary, requires only one investigator who happens to be right, which means that he or she has results that are verifiable by reference to the real world."[7]

Crichton added that "in science, consensus is irrelevant. What is relevant is reproducible results."[7] In support of this claim, Crichton noted that the "greatest scientists in history are great precisely because they broke with the consensus", opining that there

> "… is no such thing as consensus science. If it's consensus, it isn't science … the claim of consensus is invoked … only in situations where the science is not solid enough … . Nobody says the consensus is that the sun is 93 million miles away [because it is a verifiable fact]."[7]

He added that "the track record of the consensus [in science] is nothing to be proud of", noting a few of the many examples that exist, such as not too long ago the number one

> "… killer of women was fever following childbirth. One woman in six died of this fever. In 1795, Alexander Gordon of Aberdeen suggested that the fevers were infectious processes, and he was able to cure them. The consensus said no. … . Thus the consensus took one hundred and twenty five years to arrive at the right conclusion despite the efforts of the prominent 'skeptics' around the world, skeptics who were demeaned and ignored … despite the constant ongoing deaths of women."[7]

Another example is that, in the 1920s, tens of thousands of Americans were dying of pellagra and consensus science said pellagra

> "… was infectious, and what was necessary was to find the 'pellagra germ'. The US government asked a brilliant young investigator, Dr. Joseph Goldberger, to find the cause. Goldberger concluded that diet was the crucial factor. The consensus remained wedded to the germ theory. Goldberger demonstrated that he could induce the disease through diet. He demonstrated that the disease was not infectious by injecting the blood of a pellagra patient into himself, and his assistant. The consensus continued to disagree with him. … until the 1920s … despite a twentieth century epidemic, the consensus took years to see the light."[7]

Photo: Wikipedia/Dibner Library of the History of Science and Technology

Figure 1. Louis Pasteur fought against the scientific consensus of his day. Eventually, after a long struggle, he finally prevailed, disproving the close to universally accepted spontaneous generation theory of the origin of life.

Crichton observed that examples of where consensus science had been proven wrong can be multiplied almost endlessly, such as Jenner and smallpox, Pasteur (figure 1) and the germ theory, and hormone replacement therapy.[7] One could add Dr Barry Marshall's discovery that most peptic ulcers are caused by bacteria, not stress, as the scientific consensus believed for decades. Marshall's papers were rejected and he earned the reputation of a nut due to his persistence in advocating a view that consensus science thought was irresponsible. In the end, Marshall turned out to be correct.

Alfred Wegener

One of the most well-known examples of the consensus problem in science is that of Prof. Alfred Wegener, who, in 1912, proposed that all of Earth's continents were once a single continent called Pangea, but later separated to form the major continents.[8] Consensus science called his idea "German pseudoscience", and "delirious ravings" by a non-geologist.[9] University of Chicago geology professor Rollin

T. Chamberlin wrote that accepting Wegener's hypothesis would require that we

> "… forget everything which has been learned in the last 70 years and start all over again." Instead, geologists largely chose to forget Alfred Wegener, except to launch another flurry of attacks on his 'fairy tale' theory … . For decades afterward, older geologists warned newcomers that any hint of an interest in continental drift would doom their careers."[9]

In this case, the scientific

> "… consensus sneered at continental drift for fifty years. The theory was most vigorously denied by the great names of geology—until 1961, when it began to seem as if the sea floors were spreading. The result: it took the consensus fifty years to acknowledge what any schoolchild sees."[7]

As Conniff wrote, "the giants of geology ridiculed him [Wegener]. But nobody's laughing now."[10] The theory's acceptance came about "in the mid-1960s, as older geologists died off and younger ones began to accumulate proof of seafloor spreading and vast tectonic plates grinding across one another deep within the earth."[9]

The case of Carl Woese

Microbiologist Carl Woese also faced enormous opposition from consensus science, but was also eventually vindicated.[11] Woese proposed the existence of three domains of life, adding Archea to the established Bacteria and Eukarya. In spite of Woese's many scientific accomplishments, scientists treated him very poorly "for nearly two decades for uprooting the tree of life. One does not mess with the tree [of life]. But … Woese was not afraid to question dogma."[12] At a conference hosted by *Science* magazine, criticism against him was so vitriolic and unprofessional that Woese "sat silently for the most part with a somewhat irritated expression upon his face, justifiably so."[13]

Professor Friend noted that one of Woese's chief critics had not even bothered to read Woese's Archaea paper when it was first published in the prestigious *Proceedings of the National Academy of Sciences Journal*.[14] His major critic, the eminent evolutionary biologist Salavodor Luria,

> "… reacted by deriding any notion of the possibility for the existence of a third domain of life. The hostility, Woese said, was shocking … . He was called a crank and a crackpot, out of his league being neither a microbiologist nor an evolutionist … . He anticipated criticism, but in the form of scientific debate."[15]

Woese was not even "invited to conferences to speak about his work or defend it … . Postdoctoral students did not flock to Woese's lab."[14] Woese wrote that Salvador Luria telephoned his close colleague, Ralph Wolfe, who told him, "Ralph, you must dissociate yourself from this nonsense, or you're going to ruin your career!"[16]

Professor Woese added that there existed a significant amount of grumbling by biologists and "only one biologist had the courage to challenge the archaeal concept in print at that time". The reason for the opposition was not that he proposed "a third type of living system per se … but because their presumed existence violated a central dogma, the eukaryote-prokaryote dichotomy … rather than question the dogma, most biologists were content to condemn the finding."[15]

Woese's theory opposed the theory that prokaryotes evolved into eukaryotes and this new life form created major difficulties for this theory. For this reason, one of the world's leading evolutionary biologists, Harvard's Ernst Mayr, had joined in the attacks against Woese and "to his death [Mayr] refused to accept that Archaea represent a new domain of life."[15]

Consensus science misleads scientific planetary research

Another example where consensus science hurt scientific progress was in planetary research. Kaufman wrote that a

> "… consensus exists within the astronomy community that to have any chance of supporting life, a solar system needs a huge Jupiter- or Saturn-sized planet (300 and 100 times more massive than Earth, respectively) in roughly the [same] locations where they sit in our solar system."[17]

He reasoned that this would be the case

> "… because the gravitational force of the giant planets serves to pull in and destroy asteroids and other celestial bodies that might otherwise head into the 'habitable' zone and smash the small rocky planets to bits. This is why in astronomical circles Jupiter is often called our protective 'big brother' or 'big bouncer'. But if Jupiters and Saturns in many other solar systems are … in what is considered the wrong place, then they can offer no protection at all."[19]

But as more new planets were discovered,

> "… it became clear that many, and probably most, were strikingly different than what almost all astronomers and planetary scientists expected, what Butler calls the 'Everything You Know Is Wrong' phase of extrasolar planet research … . The consensus of the astronomy community had been that distant solar systems would be similar to ours."[18]

Thus, using our solar system as a model turned out to be worse than having no model,

> "… because it leads you down one road and you don't imagine the others. But because of research … the field of planet hunting has abandoned its previous

assumptions and now is working hard to make sense of the new reality that solar systems structured like our own are a distinct minority."[20]

The nuclear winter fiasco

Another example of breaking from consensus science was the claim made in the 1970s that an atomic bomb would result in a year or so without summer weather called *nuclear winter*. We now know that the nuclear winter idea was not supported by valid science but rather served policy ends, and was promoted from the start by a well-orchestrated media campaign. This was clear from the nuclear winter advocates' response to criticism:

> "Although Richard Feynman was characteristically blunt, saying, 'I really don't think these guys know what they're talking about', other prominent scientists were noticeably reticent. Freeman Dyson was quoted as saying 'It's an absolutely atrocious piece of science but who wants to be accused of being in favor of nuclear war?' And Victor Weisskopf said, 'The science is terrible but—perhaps the psychology is good'."[7]

Furthermore, the man called the "father of the H bomb", Dr Edward Teller, once said that

> "'While it is generally recognized that details are still uncertain and deserve much more study, Dr. Sagan nevertheless has taken the position that the whole scenario is so robust that there can be little doubt about its main conclusions.' Yet … the fact that nuclear winter was a scenario riddled with uncertainties did not seem to be relevant [to Sagan's conclusion]."[7]

The nuclear winter idea soon petered out and, as the media glare faded, the scenario became less persuasive. John Maddox, editor of *Nature*,

> "… repeatedly criticized its claims; within a year, Stephen Schneider, one of the leading figures in the climate model, began to speak of 'nuclear autumn'. It just didn't have the same ring. A final media embarrassment came in 1991, when Carl Sagan predicted on Nightline that Kuwaiti oil fires would produce a nuclear winter effect, causing a 'year without a summer', and endangering crops around the world."[7]

None of these dire predictions ever eventuated. The lessons of nuclear winter fiasco include using

> "… a catchy name, a strong policy position and an aggressive media campaign, nobody will dare to criticize the science, and in short order, a terminally weak thesis will be established as fact. After that, any criticism becomes beside the point. The war is already over without a shot being fired."[7]

In short, once a scientist abandons strict adherence to the current consensus by proposing other explanations for scientific data, orthodox scientists often start proclaiming the consensus as the established truth and begin suppressing competing ideas. The result of consensus science is that one situation will result in mobilization against nuclear war, and in another context the result is

> "Lysenkoism. In another, you get Nazi euthanasia. The danger is always there, if you subvert science to political ends. That is why it is so important for the future of science that the line between what science can say with certainty, and what it cannot, be drawn clearly and defended."[7]

More examples of the harm of consensus science

Professor Jorge Barrio, of The Department of Molecular and Medical Pharmacology, UCLA School of Medicine, Los Angeles, CA and Editor-in-Chief of *Molecular Imaging and Biology*, wrote that the

> "… historical track record of scientific consensus is nothing but dismal. Many examples can be cited, but there are some classical ones. Nicholas Copernicus and his follower, Galileo Galilei [figure 2], experienced the effects of consensus when they advanced theories that planet Earth was not the center of the Universe. The sixteenth and seventeenth centuries were not the right time to go against established [scientific] dogmas."[19]

He added that the methods for forcing

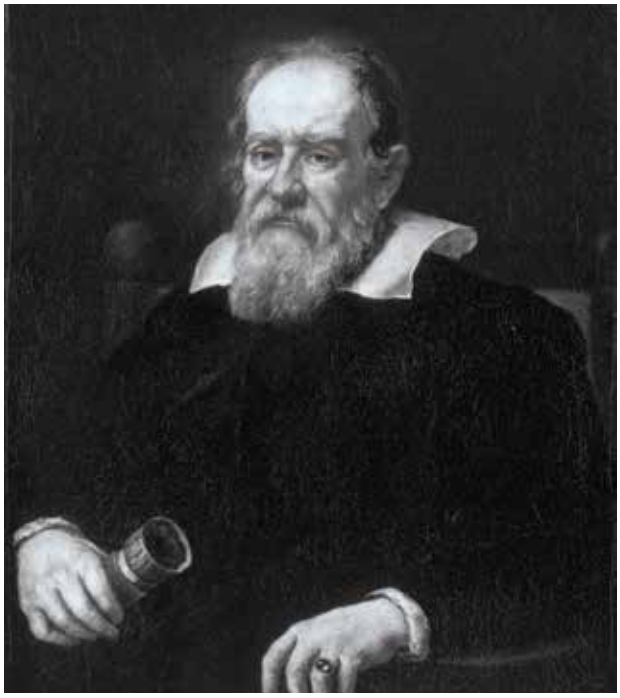

Photo: Wikipedia/National Maritime Museum, Greenwich, London

Figure 2. Galileo Galilei fought against a powerful scientific consensus and lost in the short run, but history has vindicated his theory that planet Earth was not the centre of the solar system as taught by science for generations.

"… consensus have changed but the result could be the same: The death of the spirit. The use and abuse of 'consensus science' is at least partially responsible for the current crisis in the scientific and medical peer review system. Although peer review may be considered one of the sacred pillars of the scientific edifice, it has been under fire for some time now because peer review controls access to publications and funding."[21]

Barrio concluded he is

"… quite certain that most of us have been—in one way or another—exposed to the concept (and consequences) of 'consensus science'. In fact, scientific reviewers of journal articles or grant applications—typically in biomedical research—may use the term (e.g. '... it is the consensus in the field ...') often as a justification for shutting down ideas not associated with their beliefs."[21]

The case of Semmelweis

The fact is scholars who make up the consensus do not always carefully read the scientific literature. And, significantly, science often is not a very objective process: dogma and prejudice, when suitably whitewashed, creep into science just as easily as they do in most other human enterprises, possibly more easily because, compared to politics and religion, the entry of dogma in science is unexpected.

The fact is, all too often, experimental evidence alone is not enough to overturn a science consensus. No matter how valid, new results are often explained away to defend the consensus. The classic example is the Hungarian physician Ignac Semmelweis (figure 3), who discovered that childbed fever, which typically caused a 10 to 30 percent mortality level in hospitals throughout Europe, could be largely abolished if doctors washed their hands in a chlorine solution before examining pregnant mothers. The mortality rate in Semelweis's own clinic dropped from 18 to zero percent after he required this practice of his staff.

This compelling evidence, though, failed to convince his superiors, in spite of the fact that doctors who were not using Semmelweis's simple germicide technique were still losing the same number of patients as Semmelweis had before he instituted his innovation.[20] Yale Professor Sherwin Nuland wrote, "The frustration of his inability to convince the medical world of a principle that seemed so obvious and had actually been proven in practice was becoming increasingly difficult to bear."[21]

Semmelweis's procedure, while obvious to us today, went contrary to the whole theory of medical consensus existing in his day. His fellow doctors, as is true of scientists today, did not accept new ideas easily. Semmelweis was eventually dismissed from the clinic, and spent the last years of his life trying to convince European doctors of his system's

Photo: Wikipedia/Benedek, István

Figure 3. Ignac Semmelweis, a surgeon who struggled against the scientific consensus of his day. The cost of ignoring his research findings was the loss of countless lives and much suffering.

effectiveness.[22] The doctors refused to accept the fact that they had unwittingly caused so many patients to die with their own unwashed hands that spread the germ which caused childbed fever.

One reason for Semmelweis's failure to convince his contemporaries was that he was an ineffective propagandist. The results of research, no matter how good, will not be implemented until a convincing communicator comes along to advertise and sell the research findings. A brilliant scientist must also be a brilliant communicator or, at the least, a very good one.

After 20 years of trying, in frustration, possibly complicated by age, Semmelweis ended up in a mental hospital, his ideas forgotten until Joseph Lister again took up his battle, this time successfully. The claim that science fundamentally differs from other belief systems because it rests on reason alone is false.[23] This claim must be modified in light of what historians have to say about scientists' resistance to new scientific ideas, and their tendency to reject ideas based on the prism of their own theories. History shows the "community of scientists is often ready to swallow whole the dogma served up to them, as long as it is palatable and has the right measure of scientific reasoning ... objectivity often fails to resist infiltration by dogma."[24]

Historical vs empirical science

Science can be divided into the empirical or operational sciences, such as physics and chemistry, and the historical sciences, such as paleontology and archeology. One step to help deal with the consensus problem is to stress the difference between operational science, that which can be proven by laboratory research, such as the density of gold, and historical science, such as biological origins, which evaluates existing life plus fossil evidence and then attempts to extrapolate backward in developing theories of evolution. Today experimentalists "have a tendency to disparage the claims of their historical colleagues, contending that the support offered by their evidence is too weak to count as 'good' science".[25] Cleland adds that a good example of this conflict between historical and operational science

> "… is the startling number of physicists and chemists who attack neo-Darwinian evolution on the grounds that it hasn't been adequately 'tested'. The most sweeping condemnation of historical science, however, comes from Henry Gee, an editor of the prestigious science journal *Nature*. In Gee's words 'they [historical hypotheses] can never be tested by experiment, and so they are unscientific … . No science can ever be historical.' In other words, for Gee, a genuine test of hypotheses requires classical experimentation."[26]

Once consensus is established, often due to the influence of highly respected scientists, such as Steven Jay Gould, Richard Dawkins or Carl Sagan, it is often enormous to overcome. As Max Plank wrote, "scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it."[26]

When challenged, scientists can always cite numerous examples of a scientific consensus, such as the law of gravity, which has been proven correct after numerous empirical research studies and careful examination. The problem is to avoid premature acceptance of a conclusion, especially those conclusions that support a particular political, or philosophical view, or ideology. A greater acceptance of dissident views is a step toward reducing the intellectual stranglehold that many ideas have on science.

Peer review

The journal refereeing system is controlled by a closed, elite group of people who often exercise censorship that can, at times, be pernicious to the extreme. The elitism problem in science often results in ideas becoming accepted because of who said them instead of the merits of what was said. Poor ideas "get accepted because their proponents are members of the elite" group of scientists and, as a result, "good ideas may be ignored because their advocates may have poor standing in the social structure of science."[27]

The elite both perpetuate their own ideas and create the next group of elites. As a result, the next elites tend to be those who agree with the ideas of the previous elites. Thus, elites and their ideas are both perpetuated, resisting change and progress, although, on the positive side, also resisting fads. To distinguish between these two options is no easy matter, and the best approach must surely be to avoid taking sides until clear evidence exists for one side or the other.

Groupthink

Groupthink is the social psychological phenomenon where group pressure tends to produce conformity and discourage both innovation and critical thinking. Group deliberations "sometimes amplifies a particularly vocal member's incorrect opinions", and, as a result, may make "us more vulnerable to various logical fallacies … studies have shown that when you bring together like-minded people and have them discuss a topic, they tend to become even more extreme in their positions."[28] Furthermore, groupthink can result from forces as

> "… subtle as social pressure, an emphasis on group cohesion, the perception of someone's status, or even who speaks first … . Given the subtle forces that can stifle candor and impede the exchange of ideas, adding an outright threat to punish speech—which happens all too often on [a college] campus—is poison to the process of getting to better, more interesting, and more thoughtful ideas."[29]

The problem is, how many people will

> "… play devil's advocate on thorny public policy issues if everyone knows that the 'wrong' point of view can actually get you in trouble? If we want our universities to produce the best ideas, we must do more than just protect diversity of opinion; we must train and habituate students to seek out disagreement, seek out facts that might prove them wrong, and be a tough skeptical whenever they find a little too much agreement on an issue. [College] campuses, however, are often doing the precise opposite: rewarding groupthink, punishing devil's advocates, and shutting down discussions on some of the hottest and most important topics of the day."[30]

This is a common problem for students and others who have major reservations about Darwinism. Lukianoff concluded that our colleges and universities

> "… take our best and brightest and put them through what is supposed to be an intellectual decathlon that helps our entire society develop better ideas. We are squandering this opportunity if we discourage dissent and if we do not train students to be brave in the face of ideas that upset them, to welcome challenging ideas, and to engage in endless thought experimentation."[30]

Conclusion

It is clear from history that consensus science, rather than furthering scientific progress, is all too often an impediment to scientific advancement.[30] The examples noted here could be multiplied by thousands to document this point. As professor of physics at the University of California, Berkeley, Richard Muller, concluded, "consensus science has been a notoriously poor guide for truth".[31] Science must go where the evidence leads and not blindly or apathetically follow the consensus of the orthodox scientific establishment.[32] A modern example in most

> "… academic institutions and not least those associated with the federal government, ID is a red flag. You can't bring it up for discussion, except to condemn it, without the expectation of being gored or trampled to death. That's how the 'scientific consensus' in favor of Darwinian evolution and materialist orthodoxy actually works."[33]

ID refers to 'intelligent design' which is presently on the top of the list of science ideas to ridicule, and creation science is not far behind. Intelligent design and creation science are cogent present day examples of how consensus science operates to shut down open discussions of the merits of an idea that contradict consensus science and encourage distortion in science.[34]

The fact is, great scientific advances often begin with strong opposition. In the case of creation science and intelligent design, opposition exists even to presenting scientific data that questions neo-Darwinism or which indicates a young age for the earth or humans. As Johns Hopkins University history Professor Lawrence Principe wrote, the common belief that "truth is born only of consensus" is flawed. Truth is not a result of scientific consensus but rather "a consonance between the intellect and objective reality."[35] The push for conformity is also a contributor to the problem of fraud, the common lack of replication in science, and the problems in publishing research findings that do not agree with the scientific consensus.[36]

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