

CHAPTER 4

The Triumph of Ideology in an Increasingly Fact Free World

In a time of universal deceit, telling the truth is a revolutionary act.

George Orwell

The American lifestyle is not up for negotiation.

Attributed to former US President George H. W. Bush at the Rio Earth Summit in 1992
(As quoted in Bell and Golden, 2008)

The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom.

Isaac Asimov

The best index to a person's character is how he treats people who can't do him any good, and how he treats people who can't fight back.

Abigail Van Buren

Most scientists prefer to use the words “theory” and “hypothesis” instead of the word “fact.” But the merchants of doubt (Oreskes and Conway 2010) have portrayed the word “theory” as merely a guess and use “hypothesis” as a pejorative term. In addition, science on global warming is designated a hoax and, in the 2008 US presidential elections, a huge number of candidates stated that they do not believe in evolution. Attacks on scientists by politicians and radio talk shows typically involve inflammatory language. Special interest groups (e.g., in defense of fossil fuel) have spent huge sums of money to cast doubt on scientific evidence perceived to be a threat to their profits. Of course, more scientific evidence exists in the 21st century than at any other time in history. However, this evidence does not become policy until the general public accepts it as fact.

Global discourse is essentially nonexistent on the effect that the destruction of the present Biosphere will have on humankind's children, grandchildren, and their descendants. At best, they will live in a world more unstable, hostile, and resource depleted than the one that exists at the outset of the 21st century. The present Biosphere, like everything else on Earth, is the product of the universal laws of biology, chemistry, and physics, and the people who spend their lives studying these universal laws are called scientists. Scientists gather evidence and other scientists decide how valid that evidence is. However, to the general public, this evidence is usually described as good (e.g., a cure for a life-threatening disease) or bad news (e.g., global warming caused by anthropogenic greenhouse gas emissions). “The future of mankind hangs in the balance of 21st century predicaments, including climate change, resource allocation, food shortages, water scarcity and overall sustainability” (Ehrlich and Orstein 2011). This declaration is “bad news” indeed, but instead of society's addressing these problems, the bearers of the bad news, the scientists who produce the evidence, are attacked.

The assault on science in the United States is facilitated by well financed doubters (Oreskes and Conway 2010), many without adequate (or even any) scientific credentials. Some of the same individuals have made a profession of obscuring the truth from tobacco smoke to global warming. The doubt casters need not have published in peer-reviewed journals. They can merely cherry pick three or four e-mails from thousands to succeed in their denial mission, even when the e-mails have no effect upon the preponderance of scientific evidence.

The process of scientific research is extensive and complex. Securing funding for a research project can take hundreds of hours of staff time. In addition, competition for funding is daunting, with no assurance of receiving the grant. Funding is typically not for any part of the principal investigator's salary, but is often used to pay graduate student stipends, post docs, young faculty, and technician's salaries and to purchase specialized equipment.

When data gathered is adequate to test the researcher's hypothesis, the results are often prepared for publication, which usually requires two to three drafts before the manuscript is submitted to a scientific journal.

Usually three reviewers are asked by the journal to evaluate the manuscript. Such reviewers are the backbone of scientific quality control, although they receive less recognition for their services and time than they deserve. Inadequate manuscripts are rejected, often with suggestions for improvement in the research itself or in the interpretation of the results. Even though this explanation is a condensed version of the scientific quality control process, the process never stops. When a manuscript is published in a scientific journal, it is never immune from evaluation. Some journals designate an open period (e.g., six months) in which legitimate evaluations are accepted. Of course, “off the wall” comments that attack the scientists rather than the science are not permitted — neither are “it might be bad for the economy” comments accepted. Finally, every qualified scientist is responsible for correcting any errors.

New information generated from research is not always perceived as “good news.” No doubt, some people were disturbed when they were told that Earth is not flat. The news that Earth is not the center of the universe and the sun does not revolve around Earth also probably disturbed some people. Even in the 20th century, Rachel Carson’s *Silent Spring* (1962) caused much hostility toward her because she wrote that pesticides did more than kill pests — they harmed other forms of life, such as wildlife and humans. Carson criticized the chemical industry for being irresponsible, but the chemical industry continued to claim that pesticides were safe, which was accepted without question by many public officials. My career was just beginning in 1962 when I was 39. I decided that, if the science were sound, I need not try to respond to anti-science rhetoric. Fortunately, I had not published a popular book (as Carson had) and had published only in professional journals, so I was “safe” from unsubstantiated criticism.

The disinformation campaign against scientists and their science, which began with Rachel Carson, had two major effects.

(1) Corporations producing hazardous chemicals found that they could hire a few highly vocal individuals to cast doubt on scientific evidence. These people need not be credentialed, research scientists to achieve the desired results if the news media insisted on a “balanced view” and presented “both sides” regardless of the preponderance of scientific evidence.

(2) Some scientists, but fortunately by no means all scientists, did not wish to fight back because the argument took time from their research.

One of the major differences between detractors of science and scientists is that, when proven wrong, detractors quickly state: “Let’s not engage in the blame game.” However, scientists, not always cheerfully, admit they are wrong because the evidence leaves them no other choice. The doubters of science take no responsibility for the lives lost to cigarette smoke, hazardous chemicals, and the like. In short, a vast gulf exists between the ethics of scientists and the ethics of detractors.

However, science will prevail since it is based on a preponderance of evidence. But what can be done until the unsubstantiated arguments fail? “Evolutionary adaptation can be rapid and potentially help species counter stressful conditions or realize ecological opportunities arising from climate change. The challenges are to understand when evolution will occur and to identify potential evolutionary winners as well as losers . . . Extinction can be avoided if populations move to favorable habitats, organisms successfully overcome stressful conditions via plastic changes, or populations undergo evolutionary adaptation” (Hoffmann and Sgrò 2011). The tide is still turning against science in the United States and some other parts of the world. However, the detrimental effects of climate change and other global interactive crises must be addressed collectively rather than individually (Cairns 2010).

One viewpoint that is an obstacle to nurturing the Biosphere is that “unused space” should contain shopping malls or housing developments. Proponents of such a view must realize that life forms fully occupy such spaces. Every part of the Biosphere is important, especially when large portions are damaged, such as the Gulf of Mexico in the 21st century due to the massive British Petroleum leak. Attempts are often made to calculate the monetary loss when parts of the Biosphere are damaged; however, when very complex systems are damaged, the “compensation” is likely to be inadequate. Prudence should dictate that all possible efforts be made to avoid damage to the biospheric life support system.

Continued global climate change, oil spills, and ubiquitous toxic chemical substances mean more ecosystems will go into disequilibrium, more species will become extinct, and more species will suffer population reductions that result in that species losing ecological significance (biotic impoverishment). These changes make ecological restoration more difficult and push the Biosphere closer to a tipping point (irreversible change). However, some biospheric stability probably can be achieved with assisted recolonization of ecologically damaged areas. Ordinary citizens can make amazing strides in ecological restoration with some professional guidance. A group of high school students in California restored a stream (John Berger, personal communication) when they, their teachers, and their parents became the stream’s guardians and removed many tons of trash from the stream and campaigned to reduce waste discharges into the stream.

Switchgrass (*Panicum virgatum*) is a summer perennial grass that is native to North America (<http://bioenergy.ornl.gov/switchgrass-profile.html>). It sequesters carbon below ground, holds soil together, and plays an important role in the Biosphere. Switchgrass was described as useless (i.e., little or no commercial value) until it was discovered to be a source of bioenergy for automotive fuel. In the same vein, solar panels can be used to acquire energy for electric cars, which are presently being fueled by fossil carbon that, when released, damages native species. Humankind's attitude toward the Biosphere must change. Risking a huge portion of the Biosphere, such as the Gulf of Mexico, to obtain a finite supply of petroleum is amoral.

In March 2007, then US Senator Barack Obama stated that the United States is not suffering from a budget deficit but an "empathy" deficit (<http://www.npr.org/templates/story>). However, the concept of empathy is usually used in the context of humans. E. O. Wilson believes that humans also have an innate and genetically determined affinity with the natural world, which he terms *biophilia* (<http://oxforddictionaries.com/definition/biophilia>). At present, biophilia has been replaced by technophilia, which is the strong enthusiasm for technology (<http://www.websters-dictionary-online.net/technophilia?cx=partner-pub-093945075>). Some individuals even believe that all global crises can all be eliminated by future technologies. In truth, technology has caused more problems than it has solved, the worst being the damage to the present Biosphere. The worst crisis caused by technology is likely to come soon if "business as usual" continues, i.e., combustion of fossil fuels that result in anthropogenic emissions of greenhouse gases could cause as much as two-thirds of the world's gigantic storehouse of frozen carbon to be released (Leahy 2011). This tipping point may be less than 20 years away. How can technology solve this problem?

"Even the most optimistic business as usual emissions [greenhouse gases] is projected to result in some dramatic, and potentially dangerous, climate impacts. Therefore, despite uncertainty over the future of climate change, we have to improve on the status quo" (Mastrandrea and Schneider 2010, p. 61). However, no sense of urgency has been displayed for beginning robust efforts toward either mitigation (reduce humankind's impact on the Biosphere) or adaptation (e.g., prepare for rising sea levels). Humankind must face and eliminate or reduce many global crises, but no significant progress has been made on any of them. What is missing is a universal concern for the ethic/moral obligation humankind has to posterity, to other life forms, and to the billions of individual humans who are living in poverty and are lacking housing, medical care, education, and even potable water.

However, humankind is not trying to improve the status quo. Enormous support continues for the use of fossil fuels despite ever increasing scientific information about their harm. Plastics are still popular despite strong evidence that more than 70% of them release chemicals that act like the sex hormone estrogen (Hamilton 2011). Can a culture that continues to expose babies to harmful chemicals in plastic bottles have any sense of ethics or morality? Even when in doubt about the evidence, compassion requires that babies and young children be protected until they are old enough to judge acceptable risk for themselves.

Sovereign nations exist to protect their citizens, but the justification for much legislation is that environmental laws might hurt the economy. United States Senator John Barrasso (Wyoming) is campaigning "to stop the [US President] Obama administration from incorporating climate change into federal plans and policies, taking aim at an interagency report released in October that proposed ways for the federal government to respond to increased frequency of severe weather events and other effects of global warming" (Chemnick 2011). How else can a sovereign nation protect its citizens if it ignores highly probable future problems?

The US Congress turned to the US Environmental Protection Agency (EPA) for advice on handling wastes from oil and gas drilling. The EPA scientists "concluded that some of the drillers' waste was hazardous and should be tightly controlled. . . . But that is not what Congress heard. Some of the recommendations concerning oil and gas waste were eliminated in the final report handed to the lawmakers in 1987" (Urbina 2011).

The most stunning rejection of science is covered in a *New York Times* editorial (Editorial 2011): "Regrettably, politics trumps science among House Republicans, who recently voted to zero out this country's extremely modest \$2.3 million annual commitment to the IPCC [Intergovernmental Panel on Climate Change]. The bill also slashes spending on a half-dozen domestic programs that study the causes and effects of climate change." However, even if the production of evidence was eliminated in this country, the intergenerational ethical issues remain. Suppressing scientific evidence about global climate change is shameful and demonstrates an absence of intergenerational ethics/morality.

One reason humankind may show little concern for posterity is the constant assertions of technophiles and most economists that future generations will lead better lives than the current generation is leading — so why help them? Until recently in evolutionary time, errors have caused tribes or nations to disappear, but globalization has markedly increased the risks to civilization and its future. "It does not take a political scientist . . . to point out how problematic our discourse has become: Much of talk radio and television punditry is highly partisan and hysterical" (Herbst 2011).

Conclusions

As the complexity of any system increases, it inevitably becomes more vulnerable. “Bad news” results whenever the universal laws of nature are violated. Ancient civilizations (e.g., the Assyrians) destroyed natural capital (i.e., natural resources) in their doomed effort to maintain the status quo. Their descendants perished or fled. However, when the crises are global, no backup planet is available for fleeing populations. Listening to people who only state what the individual wants to hear and wants the population to hear is a dangerous tactic.

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LITERATURE CITED

- Bell, R. and Golden, D. 2008. *Jesus Wants to Save Christians: A Manifesto for the Church in Exile*. Zondervan, Grand Rapids, MI, p. 211.
- Cairns, J., Jr. 2010. Threats to the biosphere: eight interactive global crises. *Journal of Cosmology* 8:1906-1915.
- Chemnick, J. 2011. Barrasso intensifies efforts to stop Obama admin's focus on adaptation. *Environment and Energy News* 1Mar <http://www.eenews.net/EEDaily/2011/03/01/4/>.
- Editorial. 2011. On climate, who needs the facts? *New York Times* 4Mar <http://www.nytimes.com/2011/03/05/opinion/05sat4.html>.
- Ehrlich, P. and R. Ornstein. 2011. *Humanity on a Tightrope: Thoughts on Empathy, Family, and Big Changes for a Viable Future*. Roman & Littlefield Publishers, Inc., Lanham, MD.
- Hamilton, J. 2011. Study: Most plastics leach hormone-like chemicals. *NPR* 2Mar <http://www.npr.org/2011/03/02/134196209/study-most-plastics-leach-hormone-like-chemicals>
- Herbst, S. 2011. Rude democracy in America: can we overcome it? *The Key Reporter* Spring:8-9.
- Hoffman, A. A. and C. M. Sgrò. 2011. Climate change and evolutionary adaptation. *Nature* 470:479-485.
- Leahy, S. 2011. Permafrost melt soon irreversible without major fossil fuel cuts. *InterPress Service* 17Feb <http://ipsnews.net/news.asp?idnews=54518>.
- Mastrandrea, M. D. and S. H. Schneider. 2010. *Preparing for Climate Change*. MIT Press, Cambridge, MA.
- Oreskes, N. and E. Conway. 2010. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth from Tobacco Smoke to Global Warming*. Bloomsbury Press, NY.
- Urbina, J. 2011. Pressure limits efforts to police drilling for gas. *New York Times* 3Mar <http://community.nytimes.com/comments/www.nytimes.com/2011/03/04/us/04gas.html>.