

COMMUNICATING THE PROCESSES OF SCIENCE TO THE NEWS MEDIA, POLITICIANS, AND THE PUBLIC

John Cairns Jr.*

**Virginia Polytechnic Institute and State University, Blacksburg,
Virginia, USA**

***jcairns@vt.edu**

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The discourse between scientists and the news media, politicians, and the general public must be improved. Common-sense efforts to ameliorate scientific journalism deserve serious attention (Buckley 2010). Issues such as climate change, biodiversity loss, ecological overshoot, endocrine disruptors, exponential population growth, and the process of science require a much higher level of scientific literacy than now exists in the general public and its representatives. Both scientists and their organizations must spend more time communicating the process of science to the nonscience part of the world.

The recent “Climategate” (hacked e-mails in 2009 of the Climate Research Unit [CRU] of the University of East Anglia, UK) shows that scientists sometimes show bad judgment, but their actions do not change the scientific consensus on global warming (Henig 2009). The e-mails spanned 13 y, and some skeptics refer to them as “smoking guns” but are not disturbed that they were obtained illegally by a still unnamed source (Henig 2009). Even the Intergovernmental Panel on Climate Change came under fire from the critics, although its report writing process is subjected to extensive and repeated review by both experts and governments. Skeptics claim they have been excluded from the peer-review process, although they may not have been as qualified as the actual reviewers.

“Climategate” included some claims in the news media that the stolen e-mails were proof of a “deliberate fraud” and “the greatest deception in history” (Henig 2009). Scientists waste much time attempting to correct statements not supported by evidence and regrettably, even when disinformation is corrected in the news media, much damage has been done that is not fully expunged.

Ironically, as the amount of valid scientific data reaches many thousands of pages, the probability of finding a few small errors increases, despite rigorous attempts to achieve perfection. Out of thousands of articles cited in large climate reports, a few minor errors were found. Such incidents might well be repeated in any large volume of printed material, such as the Congressional Record or university dissertations. Only if a major paradigm shift resulted from these errors would these small errors be significant.

Another illustrative incident of miscommunication concerns US Senator James Inhofe’s list of 17 scientists who stated they were disturbed by the threat of criminal prosecution (Goldenberg 2010). Some people on the list are connected to the CRU Climategate. Clearly, the news media, politicians, and the public need to improve their understanding of scientific processes, and scientists need to develop skills to communicate how science works.

One misunderstanding is that the uncertainty existing in science is no greater than uncertainty that exists in politics, the stock market, football games, or bingo. Science is a probabilistic undertaking based on evidence that for most journals is peer-reviewed and never free from comment, even after publication.

Another major cause of misunderstanding is that scientists make judgments on the preponderance of evidence, especially

when the source is a peer-reviewed scientific journal. The news media uses the term “balance” to justify giving equal time to both sides of the global warming issue, even when the peer-reviewed evidence is massive on one side and slim on the other. The public and its political representatives are given the impression that the issue is still in doubt, even though massive evidence indicates it is not. This situation may have done more damage to the impact of scientific information in the public’s mind than any other factor. “Balance” is really a form of bias because it distorts the amount of information available on every issue involving scientists, including ecotoxicology. Scientists and their professional organizations would benefit greatly from eliminating this distortion and diminishing the inattention given to the preponderance of scientific evidence.

What should an ecotoxicologist or any scientist do when erroneous or misleading information appears in the local newspaper or other news source? Taking time from one’s research program is not a good idea—it might weaken the science. Moreover, in this era of specialization, many details are incomprehensible to almost everyone, including specialists in some other area of scientific research. In addition, recent psychological research on misinformation indicates that trying to correct an error or disinformation can increase the number of people who believe it. Some people believe the world needs a leader and/or prophet who can connect and persuade the general public and its elected politicians. However, although Al Gore is both persuasive and passionate and has won a Nobel Prize, he has not dramatically altered the number of skeptics on global warming.

I often ask skeptics and deniers what evidence would change their minds. Usually the response is in the “I’ll know it when I see it” category. Probably the best approach is to use every opportunity to increase literacy about the processes of science in the general public by starting with the representatives of the news media who wish to acquire a better understanding of the way science works. The general public often views scientists as sinister people who produce nuclear bombs and biological warfare diseases such as anthrax. In the 1940s and 1950s, scientists were regarded as the people who made a cornucopian lifestyle possible and who could provide more of everything. However, that era of popular mythology is over, which is probably good since scientists could not have lived up to those expectations.

Science reporters deserve all the assistance that scientists can give them (Buckley 2010), i.e., the relationship between scientists and the news media, politicians, and the general public must be vastly improved and nurtured. No simple solution exists to this dilemma. Scientists must continue doing research and use every opportunity to explain how the processes of science work. In these trying times, no excuses exist for inaction. The security of Earth requires better communication!

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