

On issues like global warming and evolution, scientists need to speak up

By Chris Mooney
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The battle over the science of global warming has long been a street fight between mainstream researchers and skeptics. But never have the scientists received such a deep wound as when, in late November, a large trove of [e-mails and documents stolen from the Climatic Research Unit](#) at Britain's University of East Anglia were released onto the Web.

In the ensuing "Climategate" scandal, scientists were accused of withholding information, suppressing dissent, manipulating data and more. But while the controversy has receded, it may have done lasting damage to science's reputation: Last month, [a Washington Post-ABC News poll found](#) that 40 percent of Americans distrust what scientists say about the environment, a considerable increase from April 2007. Meanwhile, public belief in the science of global warming is in decline.

The central lesson of Climategate is not that climate science is corrupt. The leaked e-mails do nothing to disprove the scientific consensus on global warming. Instead, the controversy highlights that in a world of blogs, cable news and talk radio, scientists are poorly equipped to communicate their knowledge and, especially, to respond when science comes under attack.

A few scientists answered the Climategate charges almost instantly. Michael Mann of Pennsylvania State University, whose e-mails were among those made public, made a number of television and radio appearances. A blog to which Mann contributes, RealClimate.org, also launched a quick response showing that the e-mails had been taken out of context. But they were largely alone. "I haven't had all that many other scientists helping in that effort," Mann told me recently.

This isn't a new problem. As far back as the late 1990s, before the news cycle hit such a frenetic pace, some science officials were lamenting that scientists had never been trained in how to talk to the public and were therefore hesitant to face the media.

"For 45 years or so, we didn't suggest that it was very important," Neal Lane, a former Clinton administration science adviser and Rice University physicist, told the authors of [a landmark 1997 report](#) on the gap between scientists and journalists. ". . . In fact, we said quite the other thing."

The scientist's job description had long been to conduct research and to teach, Lane noted; conveying findings to the public was largely left to science journalists. Unfortunately, despite a few innovations, that broad reality hasn't changed much in the past decade.

Scientific training continues to turn out researchers who speak in careful nuances and with many caveats, in a language aimed at their peers, not at the media or the public. Many scientists can scarcely contemplate framing a simple media message for maximum impact; the very idea sounds unbecoming. And many of them don't trust the public or the press: According to [a recent Pew study](#), 85 percent of U.S. scientists say it's a "major problem" that the public doesn't know much about science, and 76 percent say the same about what they see as the media's inability to distinguish between well-supported science and less-than-scientific claims. Rather than spurring greater efforts at communication, such mistrust and resignation have further motivated some scientists to avoid talking to reporters and going on television.

They no longer have that luxury. After all, global-warming skeptics suffer no such compunctions. What's more, amid the current upheaval in the media industry, the traditional science journalists who have long sought to bridge the gap between scientists and the public are losing their jobs en masse. As New York Times science writer Natalie Angier recently observed, her profession is "basically going out of existence." If scientists don't take a central communications role, nobody else with the same expertise and credibility will do it for them.

Meanwhile, the task of translating science for the public is ever more difficult: Information sources are multiplying, partisan news outlets are replacing more objective media, and the news cycle is spinning ever faster.

Consider another failure to communicate from the global-warming arena: the scientific fallout after a devastating trio of hurricanes -- Katrina, Rita and Wilma -- in the fall of 2005. Just as these storms struck, a pair of scientific studies appeared in top journals suggesting, for the first time, that global warming was making hurricanes more intense and deadly. Other scientists vociferously disagreed, and the two camps fell into combat.

So while public interest in hurricanes was at a high after Katrina, much of the science reporting at the time portrayed researchers bickering with one another ("Hurricane Debate Shatters Civility of Weather Science," announced a Wall Street Journal cover story). Judith Curry, a climate scientist at the Georgia Institute of Technology and a co-author of one of the contested studies, told me recently that the experience made her realize that "this was really the wrong way to do things, trying to fight these little wars and knock the other side down."

With the media distracted by the food fight, scientists weren't leading the public discussion, and other important findings that ought to have received attention in Katrina's wake -- for instance, that we had better tend to our overdeveloped coastlines, which are dangerously exposed to future storms -- were drowned out.

If the global-warming battle has any rival in its intensity, its nastiness and its risk to scientists if they do not talk to the public, it is the long-standing conflict over the teaching of evolution. Science's opponents in this fight are highly organized, and they constantly nitpick evolutionary science to cast the field into disrepute.

The scientific response to creationists has long been to cite the extensive evidence for evolution. In book after book, scientists have explained how DNA, fossil, anatomical and other evidence

indisputably shows the interrelatedness of all species. Further, they have refuted creationist claims that evolution cannot explain the complexity of the eye or the intricacy of the bacterial flagellum. Yet such down-in-the-weeds messages probably miss most of the public -- polls repeatedly show that a large portion of Americans have doubts about evolution.

For all these efforts, why haven't scientists made any inroads? It's because at its core, the objection to evolution isn't about science at all, but about perceived threats to faith and moral values. The only way to defuse the conflict is to assuage these fundamental fears. Yet this drags many scientists out of their comfort zone: They're not priests or theologians and don't know how to sound like them. Many refuse to try; others go to the opposite extreme of advocating vociferous and confrontational atheism.

Ironically, to increase support for the teaching of evolution, scientists must join forces with -- and show more understanding of -- religion. Scientists who are believers also need to be more vocal about how they reconcile science and faith.

"Many Christians, including fundamentalists, can accept evolution as long as it is not attached to the view that life has no purpose," Karl Giberson, a Christian physicist and the author of "Saving Darwin: How to Be a Christian and Believe in Evolution," told me recently. "Human life has value, and any scientific theory that even appears to deny this central religious affirmation will alienate people of faith and create opportunity for those who would rally believers against evolution."

In other words, what's needed is less "pure science" on its own -- although of course scientists must continue to speak in scientifically accurate terms -- and more engagement with the concerns of nonscientific audiences. In response to that argument, many researchers will say: "Why target us? We're the good guys. And if we become more media savvy, we'll risk our credibility."

There is only one answer to this objection: "Look all around you -- at Climategate, at the unending evolution wars -- and ask, are your efforts working?" The answer, surely, is no.

The precise ways in which scientists should change their communication strategies vary from issue to issue, but there are some common themes. Reticence is never a good thing, especially on a politically fraught topic such as global warming -- it just cedes the debate to the other side. "If we come out of this with a more organized way of dealing with these attacks in the future, then it will have done some good," Mann said of Climategate.

On other topics, including evolution, scientists must recognize that more than scientific matters are at stake, and either address the moral and ethical issues themselves, or pair with those who can (in the case of evolution, religious leaders and scientists such as Giberson and National Institutes of Health chief Francis Collins, who in 2006 wrote a book called "The Language of God: A Scientist Presents Evidence for Belief").

All this will require universities to do a better job of training young scientists in media and communication. The good news is that this is beginning to happen: At the Scripps Institution of Oceanography at the University of California-San Diego, for instance, marine biologist Jeremy

Jackson's "Marine Biodiversity and Conservation" summer course introduces young scientists to the media, blogging and even filmmaking.

"Traditionally, scientists have been loathe to interact with the media," Jackson said in a recent interview. But in his class, "the students understand that good science is only the beginning to solving environmental problems, and that nothing will be accomplished without more effective communication to the general public." Scientists need not wait for former vice presidents to make hit movies to teach the public about their fields -- they must act themselves.

And in another sign that the times may be changing, a syllabus for such classes is already here. A spate of recent books, from Randy Olson's "Don't Be Such a Scientist: Talking Substance in an Age of Style" to Cornelia Dean's "Am I Making Myself Clear?: A Scientist's Guide to Talking to the Public," seem like perfect assigned reading.

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