



Speakers: Chris Mooney, *Seed Magazine* and ScienceBlogs; Matthew Nisbet, American University

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Highlights

- Scientific knowledge itself is not enough to win political debates, change government policies, or sway public opinion.
- Scientists need to learn tactics of effective communication to target audiences.
- Frame theory explains how communication is transmitted and received in the media and in political discourse.
- Frames organize issues in ways that give them latent meaning.
- There are numerous frames that can be employed to package information effectively.
- Today more than ever, scientists have tremendous power to influence politics and solve pressing problems.

Lost in translation

Prolonged controversies over issues such as evolution, stem cell research, and global climate change show that scientific knowledge itself is often not enough to win political debates, change government policies, or sway public opinion. That's because policymakers, the media, and the public use that knowledge in very different ways than the scientists who create it.

The problem is not with scientific knowledge, but with translating that knowledge into public acceptance and appropriate policy.

To explain forces behind transmission and reception of scientific findings, **Matthew Nisbet** of American University's School of Communication and **Chris Mooney** of *Seed* magazine and

ScienceBlogs visited the Academy on June 4, 2007 in an event sponsored by the **Science Alliance for Students and Postdocs**. Their presentation reviewed research on public opinion and media coverage of science issues, and employed case studies of ongoing scientific battles to illustrate the relative effectiveness of various communication strategies.

Mooney, author of *The Republican War on Science*, a book that detailed political interference with science, said ways must be found to bridge broad gaps existing between science, society, and politics on longstanding controversial issues such as climate change.

Proposed solutions include strengthening scientific communication to government officials and the media, and improving how media covers science in terms of both content and volume. But these measures are not enough. Effective communication also requires scientists to understand how people make decisions and how various factions organize messages to their target audiences.

"We have good science," he said. "The problem is not with the knowledge, but with translating that knowledge into public acceptance or appropriate policy action."

The anatomy of debate

Mooney noted that different debating arenas follow different rules of engagement. Scientists who debate an issue in their own peer-reviewed literature use boxing rules, punching hard, but only above the belt. When that issue gets politicized, politicians and warring advocacy groups kickbox, "using their feet from time to time." Once that topic becomes both politicized and the subject of mass media coverage, there are no rules at all. "Scientists need to realize realities of how this plays out in different contexts," said Mooney.

Nisbet explained that social psychology and public opinion research reveal how people decide complex issues. People are "cognitive misers," he said. "Faced with a torrent of information and the number of issues to make up their minds about, everyone looks for information shortcuts, oftentimes in the absence of knowledge, to make up their minds." Savvy political strategists play on the miserly public, knowing that people will decide about candidates "on heuristics such as interpretations of character and personal narratives," rather than issues.

"Frame theory" explains how information is communicated and received in the media and in political discourse. Frames organize ideas on an issue and endow dimensions of a complex topic with seemingly greater relevance than the same dimensions might appear to have under an alternative frame. They reduce complexity and communicate why an issue might be a problem, who or what might be responsible, and what should be done. Framed information can be communicated almost instantaneously by condensed symbols such as catch-phrases, slogans, historical references, and cartoons and other images.

Journalists use frames to organize stories and appeal to their audiences. Citizens use frames to simplify complex topics and articulate opinions; they accept media frames that fit their own predispositions. Scientists also need to understand how they use frames to communicate to journalists and non-specialists across fields, as well as to craft grant proposals, popular books, and PowerPoint presentations.

Numerous framing devices have been identified as ways to define and give latent meaning to science issues. One device is called "social progress," wherein an issue is defined as improving life and solving problems. Another frame is "economic development," which addresses market benefits and competition. Still other frames are "Pandora's box" (a call for precaution to avoid possible impacts/catastrophe); "morality/ethics" (distinguishing right from wrong, or crossing or respecting boundaries); "scientific uncertainty" (evoking or undermining consensus); "public accountability" (relating to the use or abuse of power); "third way/alternative path" (finding a compromise solution); and "conflict/strategy" (seeing an issue as a game among elites or a battle of groups or personalities). (For an overview, see Nisbet's [Web site](#).)

Like nuclear energy Nisbet suggested, "framing can be used for very bad purposes ... but scientists can use it very effectively while remaining true to the science."

Framing global climate change

While there is ever-increasing scientific consensus about and record amounts of media coverage on global warming, polls reveal that public knowledge remains low, Nisbet said. One recent poll conducted by ABC News showed that when Americans are asked "Do most scientists agree global warming is happening or is there a lot of disagreement?" about 40% of Americans still think most scientists disagree.

About 40% of Americans still think most scientists disagree about global warming.

"This is in part because of a very strategic framing campaign by conservatives and others who oppose any meaningful policy action." In fact, said Nisbet, a strategy memo of GOP pollster Frank Luntz recommended that politicians first focus on the idea of scientific uncertainty regarding global warming, then hit an "emotional home run" with an economic-burden frame that points to the "international unfairness" of developing countries like India and China not being subject to Kyoto measures. "If you follow the statements of conservatives who oppose meaningful policy action on climate change in the media, they follow this playbook very closely."

In response, environmental groups, former Vice-President Al Gore, and several scientists tried to reframe the issue as a Pandora's box. This interpretation focuses on dramatic climate impacts such as the potential for more intense hurricanes because of global warming. But this strategy can backfire. Explained Nisbet: "The problem with this interpretation is that the error bars around each of these impacts remain a lot bigger than the error bars around the specific phenomena of global warming." That opens strategists to accusations from opponents of engaging in alarmism, "and sends all the framing back to the scientific-uncertainty frame, what Chris describes as 'paralysis by analysis,' and we have no meaningful policy action." The result is that in poll trends over time, one increasingly finds "two Americas" of global warming perceptions. "You see 30, 40, and then 50 point percentage differences in how Republicans and Democrats view the urgency of the issue, how worried they are about the issue, and whether or not they accept the science."

One way to bridge this chasm is to reframe the issue in a way that appeals to the Republican base. To that end, some scientists are working with evangelical and other religious leaders to frame the issue as a moral one, pointing out that the Bible "teaches us that we should be stewards of the environment, and in fact you are passing the buck on to your children and to the developing world, and that's not being a good Christian." One prominent example is Edward O. Wilson, author of *The Creation* (2006). "Instead of attacking people and their religious values, he's saying scientists and religious Americans should share similar concern about this issue," Nisbet said.

Category 5: the hurricane controversy

Mooney, who is also author of a new book titled *Storm World: Hurricanes, Politics, and the Battle Over Global Warming*, gave a case history showing how rules of scientific debate change when a subject gets swept up in a political and media frenzy, and how important framing can be in that context. "Scientists unfamiliar with the media can really get burned by it," Mooney said.

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The event he described was sparked in 2005 by the dramatic hurricane season and two scientific reports that came out stating that hurricanes had measurably intensified, and saying or at least implying that global warming was the cause. In response to both the weather and the reports, the pattern of media coverage resembled a storm that "explosively intensifies to category 4 or 5 status. In fact, the image of a cyclonic storm becomes a new icon, a new frame device, for global warming," said Mooney, noting that the cyclone pictured on the movie poster for Gore's *An Inconvenient Truth* epitomizes that concept. "It conveys the Pandora's box idea that we are unleashing all these dramatic catastrophic consequences."

But in the world of science, there was huge debate about the validity of the scientific reports' findings. "We then get a case study of what can happen when you combine real scientific debate and real scientific uncertainty with mass media coverage and in fact, a media feeding frenzy, and it's not pretty."

Using the scientific uncertainty frame, a *Wall Street Journal* cover story was headlined: "Cold Front. Hurricane Debate Shatters Civility of Weather Science. Worsened by Global Warming? Spats Are So Tempestuous, Sides Are Barely Talking. Charges of 'Brain Fossilization.'" The debating scientists "were really quite shocked when the media pounced on the issue," said Mooney. "As they later put it in the *Bulletin of the American Meteorological Society*, "even senior scientists are ill prepared for their first major experience with mixing politics, science, and the media." Finally, the scientists themselves decided that they were going to reframe the issue. They united to endorse a joint statement saying that "while the debate on [hurricanes and climate change] is of considerable scientific and societal interest and concern, it should in no event detract from the main hurricane problem facing the United States: the ever-growing concentration of population and wealth in vulnerable coastal regions" Said Mooney: "This gets us out of this uncertainty frame and lets us move forward into constructive policy action."

Now more than ever before, scientists have tremendous political power.

The example teaches scientists two lessons. One is that they need to be prepared for media demands and reactions. The other is that "now more than ever before, scientists have tremendous power to drive public discourse, to drive societal decision making, to drive media attention." That's not going to go away. "Science is only going to become more crucial to politics in the 2008 election cycle and beyond, not less crucial."

With power comes responsibility. "Too many scientists still cling to this idea that if you just put the facts out there, somehow the facts will speak for themselves, and we'll all be better off. But the evidence overwhelmingly shows that the facts won't necessarily speak for themselves and we won't necessarily be better off, because they get spun by advocates, attacked by politicians, uncovered, miscovered, overcovered by the media, and in some cases, get suppressed by government agencies." Scientists must take active steps to counter and prevent misuse of science and ensure that information gets through.

Recommendations

Nisbet concluded with specific recommendations. Scientists need to take advantage of all research regarding how people make up their minds about complex material so that they can recast research in ways that remain true to the science but makes it personally meaningful to various audiences. They can also go beyond the fragmented media system by recruiting volunteer "science navigators," a national system of people armed with facts and recommendations who can create "word-of-mouth buzz." Then, when a new report is issued, these navigators can turn to a friend or coworker with a set of talking points. Instead of saying "Hey did you see the hockey game last night?" they say, "Hey, did you see the IPPC [Intergovernmental Panel on Climate Change] report?"

To reach nontraditional science audiences, scientists must be on local TV news. That's because about 65% of Americans rely on that venue as their primary source of news information. "Recruit scientists and spokespeople who are on the ground in these local media markets," Nisbett advised, "so that when there's a national event or a national report is released you can activate this network of local representatives who have cultivated relationships with local TV reporters to appear and provide a local angle."

He also suggested that scientists take advantage of the power of film to engage both mass and targeted audiences. Find better ways to work with the media. Stop blaming science writers. Instead, engage and educate editors who staff science writers and assign stories. Science writers, he pointed out, are perhaps the best trained, best educated, and most professional journalists of all. Include scientific reasoning courses in journalism education. Work with science writers and editors to "go

beyond the tyranny of the news peg." Usually, newsworthiness is tied to releases of scientific studies. This means we "often miss out on scientific context and sometimes don't address important social, ethical and policy dimensions of research." When a report is being issued, a parallel peg can be created by commissioning a peer-reviewed report or essay to address these other dimensions.

Finally, Nisbet recommended providing incentives to change the scientific culture. To show scientists that they should take communication as seriously as they take research, induct people like Carl Sagan into the National Academies. Provide funding for educational initiatives in science communication, such as doctoral training in communications research. At the college level, "socialize students into being scientific citizens." Change the science courses for non-majors people to include strong popular science components. Instituting such changes today will go a long way toward helping society to make more well-informed decisions in 2008 and beyond.

Resources

Web Sites

Speaking Science 2.0

Matthew Nisbet and Chris Mooney have been maintaining this blog tracking issues of the framing of the science in the public media.

The Intersection

More blogging on science and politics from Chris Mooney, with Sheril Kirshenbaum.

Framing Science

Matthew Nisbet's blog on science and communication.

Books

Gamson W. 1992. **Talking Politics**. Cambridge University Press, New York.

[Amazon](#)

Mooney C. 2007. **Storm World: Hurricanes, Politics, and the Battle over Global Warming**.

Harcourt, New York.

[Amazon](#)

Mooney C. 2005. **The Republican War on Science**. Basic Books, New York.

[Amazon](#)

Wilson EO. 2006. **The Creation: An Appeal to Save Life on Earth**. W.W. Norton, New York.

[Amazon](#)

Articles

Bauerlein V. 2006. **Hurricane debate shatters civility of weather science**. *The Wall Street Journal* (February 2). FULL TEXT

Emanuel K. 2005. **Increasing destructiveness of tropical cyclones over the past 30 years**.

Nature 436: 686-688. FULL TEXT (PDF, 152 KB)

Emanuel K, Anthes R, Curry J, et al. 2006. **Statement on the U.S. hurricane problem**. *Bulletin of the American Meteorological Society* (July 25). FULL TEXT

Nisbet MC, Mooney C. 2007. **Policy forum: framing science**. *Science* 316: 56. FULL TEXT (Follow instructions from Nisbet's site to access full article.)

Nisbet MC, Mooney C. 2007. **Thanks for the facts. Now sell them**. *Washington Post* (April 15). FULL TEXT

Scheufele DA. 2006. **Messages and heuristics: how audiences form attitudes about emerging technologies**. In Turney J, ed. *Engaging Science: Thoughts, Deeds, Analysis, and Action*. The Wellcome Trust, London. FULL TEXT (PDF, 146 KB)

Webster PG, Holland GJ, Curry JA, Chang H-R. 2005. **Changes in tropical cyclone number, duration, and intensity in a warming environment.** *Science* 309: 1844-1846.

From the Academy

Confronting climate change: a scientific expert panel report, featuring Rosina Bierbaum et al. 2007. New York Academy of Sciences **eBriefing**, sponsored by Sigma Xi, the UN Foundation, and the New York Academy of Sciences.

Blurry vision: bridging the gap between science and the public, featuring Dean Hamer et al. 2005. New York Academy of Sciences **eBriefing**, sponsored by Princeton University and the Science Alliance.

The daily planet: why the media stumble over the environment, featuring Andrew C. Revkin. 2004. New York Academy of Sciences **eBriefing**, sponsored by the Environmental Sciences Section.

Speakers

Chris Mooney

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Chris Mooney is Washington correspondent for *Seed* magazine and author of the bestselling book *The Republican War on Science* and of the newly published *Storm World: Hurricanes, Politics, and the Battle over Global Warming*. A graduate of Yale university, he has worked as an editor at *The American Prospect*, and his blog The Intersection was a recipient of *Scientific American's* 2005 Science and Technology Web award. He lectures regularly and has been featured on many popular programs in the national media.

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Matthew Nisbet is a professor in the School of Communication at American University where his research focuses on the intersections between science, media, and politics. He studies how news coverage reflects and shapes policy, how strategists try to mold public opinion, and how citizens make sense of controversies. He has analyzed a wide range of debates including those over stem cell research, global warming, intelligent design-creationism, plant biotechnology, and hurricanes. He completed his PhD in communication at Cornell University.