Adapting to a Warmer Climate of Scientific Communication

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In a recent article in *Mother Jones*, science writer Chris Mooney (2013) noted how climate skeptics and evolution deniers have joined forces. Mooney (2013) laid out a number of hypotheses for this alliance. We argue that it is time evolutionists and climate scientists join forces in promoting the public understanding and acceptance of science.

When we talk to evolutionary biologists about the unchanging proportion of the US population that accepts evolution (consistently lower than 50 percent over many decades), we get two basic responses: the deficit model and religious objections.

The deficit model presupposes that students simply lack relevant scientific knowledge (i.e., they have a knowledge deficit). If people would just learn more about evolution, as this line of reasoning goes, they would become more accepting of it. It is true that evolution understanding is poor. However, the relationship between knowledge and acceptance is not that straightforward. In his article, Mooney (2013) cited research showing that more acceptance, and the same is true of evolution, is simply incor...
biological evolution. In isolation, these concepts are daunting; combined, they are enough to deter even an interested learner. Evolution and climate change share this conceptual complexity (Lombardi et al. 2013). Climate scientists have made gains by recognizing how complex their discipline can seem to the general public. Evolutionary biologists see the products of evolution in their everyday lives and may wonder how others do not. Climate scientists have been striving to show the general public how climate change will affect their everyday lives, something evolutionists are now striving to do more often (ironically, a great example is evolutionists who point out the impact of climate change on extinctions). In addition, a sophisticated and nuanced understanding of scientific concepts may be beyond reach for many, but a better understanding is attainable for most.

Identity
Exploring the idea that all living things are interrelated may prompt some very unsettling questions about one's identity. Similarly, recognizing that seemingly small changes to the Earth's climate can have drastic impacts may prompt a deep sense of guilt and responsibility. These concepts raise difficult questions about who we are and our place in the universe. Recognizing the deep philosophical, theological, and emotional challenges that these concepts pose to some individuals may allow scientists and educators to predict and empathically consider these unique barriers to acceptance.

Emotions and motivation
Strong emotional reactions may be produced when prior knowledge, beliefs, and identity conflict with new information. Even students who understand and accept evolution or climate change may find these ideas disheartening. But emotional reactions can be positive, as well. Understanding how all living things are interrelated may create a sense of awe and wonder about the sheer complexity of life. Seeing how ecosystems exist in harmony with living things may foster a sense of appreciation and a motivation to protect and maintain this balance. Climate scientists have been successful in reducing some negative emotional responses by focusing on actions that individuals can take to mitigate global climate change. Motivating individuals toward actions makes them feel empowered rather than fearful and hopeless.

The 2005 Kitzmiller v. Dover Area School District trial, which ended by ruling that intelligent design is not science, illustrated just how little the average citizen knows about the nature of science—that is, what science is, how it is conducted, and what practices are or are not scientific. Evolutionary biologists have a long and well-documented history of defending the nature of science. They have fought—and won—nearly every battle intended to undermine the teaching of science in the public school science classroom. However, for all these victories, they may be losing the war. The fact that biologists are still fighting the same battles after nearly 100 years may serve as an illustration.

Climate-change deniers and evolution deniers share a common strategy: They both leverage the public's misunderstanding of the nature of science to promote ideas that the public wants to believe. Deniers are not just attacking the science classroom; they are publishing books, making movies, writing articles, and blogging. They present their arguments in compelling, comprehensible language and keep their talking points consistent across media platforms. Climate scientists have been gaining ground by addressing the challenges that we noted above and by broadening the scope of their defense of science to include areas outside the public school classroom (such as radio, print, and online media; see Mann v. the Competitive Enterprise Institute, www.climatesciencewatch.org/2014/01/14/mann-defamation-lawsuit-law-of-the-case-doctrine). We think that more evolutionary biologists should take a page from the climate scientists' playbook. By addressing the five barriers outlined above and by perhaps broadening the scope of the defense, evolutionary biologists and climate scientists can join forces to improve public understanding and acceptance of science.

References cited