Bridging Science and Society

The theme of this year’s annual meeting of the American Association for the Advancement of Science (AAAS) seems especially timely: Bridging Science and Society. Virtually every major issue now confronting society has a science and technology component, and this means that “the need for general scientific understanding by the public has never been larger, and the penalty for scientific illiteracy never harsher.”* Today, science and technology are receiving unprecedented financial and policy support worldwide, as more countries invest in science and science education with the belief that these investments will enhance economic strength and improve the lives of their citizens. In the United States, the current national leadership frequently focuses on science, science education, and science-based policy-making. As well, the U.S. National Science Board just reported in Science Indicators 2010 that the general citizenry continues to hold scientists in high regard, second only to firefighters in prestige. But this confidence and prestige depend on a belief in the integrity and credibility of science, as well as in the scientific community’s ability to help solve global problems. A spate of recent incidents has threatened the public’s trust and argues that greater attention is essential to maintaining a strong bridge between science and the rest of society.

The ability of science to deliver on its promise of practical and timely solutions to the world’s problems does not depend solely on research accomplishments but also on the receptivity of society to the implications of scientific discoveries. That receptivity depends on the public’s attitude about what science is finding and on how it perceives the behavior of scientists themselves. The past decade saw substantial tension in the science/society relationship emerge when scientific advances and theories conflicted with certain cultural values or religious beliefs. Much of the turmoil surrounding the teaching of evolution in public schools, for example, derives from conflict between a modern understanding of evolution and religious beliefs in creation. Likewise, objections to embryonic stem cell research arise from the belief of some religions that life begins at the moment of conception. These kinds of tensions are best addressed by engaging with the public on the issues and seeking common ground whenever possible. This approach requires scientists to listen and respond to the public’s concerns and to educate their fellow citizens about scientific advances. Public engagement is increasingly being facilitated by governmental and nongovernmental institutions, and it has become a high priority for many individual scientists around the world. A focus on creating a genuine dialogue has consistently been more productive than unidirectional attempts at “public education” about science.

Inappropriate behavior by scientists also weakens the bridge between science and society, at times to a degree out of proportion to the incidents. Widely publicized examples of scientific misconduct, or even mere accusations of misconduct, can tarnish the image and diminish the credibility of the entire scientific enterprise. Likewise, undisclosed conflicts of interest, whether real or apparent, can call into question the integrity of the whole scientific community. Scientists also jeopardize the credibility of science by overinterpreting or misstating scientific facts. Recent examples include misinformation on the prospects of Himalayan glaciers and the effects of climate change there, and newly discovered problems with a 1998 report linking vaccines to autism. These types of revelations are highly problematic for policy-makers, the public, and the scientific community. Every such case should be investigated, with a follow-up public explanation. Scientists should not tolerate threats to the integrity of science, whether they come from outside the scientific community or from within it.

The scientific community can strengthen the bridge between science and society by ensuring vigorous enforcement of scientific behavioral norms and standards, aggressively focusing on problems of global importance, and actively engaging with the public. As scientists and policy-makers convene in San Diego this week at the AAAS meeting, we all should commit to pursuing these goals.

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