Capably Communicating Science

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There is no shortage of topics where policy-makers or other members of the public seem to persistently misunderstand, misrepresent, or disregard the underlying science: climate change, genetically modified foods, vaccines, or evolution, among others. Consequently, the call for scientists to do a better job of communicating both the meaning and the nature of their work is getting louder. Public understanding of science not only affects people's ability to appreciate and make full use of the products of science, it also contributes to the extent of support for scientific research. Yet far too many scientists are reluctant to engage with people outside their own community. The reasons range from a belief that this responsibility lies outside a scientist's "job description" to an expressed ignorance about how to go about it. In an attempt to find better solutions to this problem, the U.S. National Academy of Sciences convened a meeting of over 450 scientists, policy-makers, journalists, and other professional communicators to examine the underlying dynamics of science communication.* The good news is that empirical studies across many disciplines, particularly in the behavioral and social sciences, are providing very useful baseline information about public attitudes and knowledge about science, as well as some fundamental principles that can help guide scientists to engage more effectively with both the public and policy-makers.†

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How does the public come to interpret and use science? Valuable studies have been carried out to discover what determines public attitudes toward science and technology, and some of the results are surprising. For example, some studies point to an individual's ideological views or cultural identity as having greater influence on his or her opinions than an understanding of the facts. Often, simply increasing public knowledge about an issue will not move the debate, as seen with embryonic stem cell research. Instead, the way an issue is framed can have a larger effect on people's views. As a case in point, many people will give more credit to the scientific claims about climate change when the issue is cast as a technological challenge than as a regulatory problem.‡

Science is complicated and often jargon-laden, so scientists may need help from a "translator" to help tell a story simply and cogently. In doing so, the gist of the message is what matters. Here there is a lesson to be learned from antiscience forces, who regularly over-simplify science in very effective ways, even when distorting it. As studies from psychology, sociology, and political science have shown, most people care primarily about things that affect them personally or locally; thus, a useful approach is to determine what matters to a specific audience and seek a way to make the message relevant to them. Although true

public engagement attempts to bring together diverse perspectives, including the participants' political, personal, and community values, scientists are most effective when they stick to the facts. Because credibility is conferred by the audience, not the speaker, it is essential that scientists be seen as objective, citing the facts without an overlay of their own personal values.

Public understanding and support of science and technology have never been more important, but also never more tenuous. Today they are embedded in an increasingly politicized environment where ethical, legal, and social implications are emerging at a rate that seems to be outpacing society's capacity to make sense of the science. The science of science communication will be essential to help guide new and more effective efforts at engaging productively across the science/society interface.

- ↵* Arthur M. Sackler Colloquium, “The Science of Science Communication,” National Academy of Sciences, Washington, DC, 21 to 22 May 2012 (http://events.tvworldwide.com/Events/NAS120521.aspx).
- ↵† http://communicatingscience.aaas.org/.
- ↵‡ D. M. Kahan *et al.*, *Nat. Clim. Change* 10.1038/nclimate1547 (2012).