

# Making the Audience a Key Participant in the Science Communication Process

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**ABSTRACT:** *The public communication of science and technology has become increasingly important over the last several decades. However, understanding the audience that receives this information remains the weak link in the science communication process. This essay provides a brief review of some of the issues involved, discusses results from an audience-based study, and suggests some strategies that both scientists and journalists can use to modify media coverage in ways that can help audiences better understand major public issues that involve science and technology.*

Mapping the Human Genome, Dramatic Climate Changes Forecast, Possible Evidence of Water on Mars, Biotech Crops Appear Safe, Invasive Species Alarm Ecologists, Women Overtake Men on the Internet, Benefits of Gene Therapy, Cloning Sheep with Customized Genes, Academic Research Under the Microscope, New Evidence for Global Warming. —These are just a handful of the stories that have greeted newspaper readers over the last several months. They represent only a small fraction of the wealth of information about science—including medicine, the environment, and technology—that people have access to on a regular basis. Probably most importantly, such stories also represent one of the major ways that non-specialists find out about these complex scientific topics.

Unfortunately, however, we know little about how audiences make sense of information about such complex scientific issues when they encounter it in newspaper, television, and radio reports. Specifically, to what extent does the way in which

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science is presented in the mass media affect the public's understanding of science? Does science information in the mass media empower audiences to function more effectively as citizens in today's society?

In many ways, understanding the audience remains the weak link in the public communication of science and technology. The scientific community has been increasingly concerned about communicating with a larger, non-technical public throughout this century. At the same time, journalists have an interest in reaching this same group, which also, in part, constitutes the mass media audience. Yet, both scientists and journalists seem to have little understanding of the needs, interests, and concerns of those very people they are trying to reach. In fact, although scientists regularly decry the lack of scientific understanding on the part of the public, it is also the case that scientists themselves actually know very little about the public they often criticize.<sup>1,2</sup>

Similarly, scholars consistently find that journalists know little about their audiences overall. Part of the problem seems to be that journalists rarely get feedback from audiences, whether they are newspaper readers, radio listeners, or television viewers. This seems to be especially true in terms of science. Recently, for example, the former science editor of a major metropolitan newspaper observed that the science desk hears less from readers than does any other beat on the paper.<sup>3</sup>

Even so, we do know some things about this audience for science information. First of all, we know that people are very interested in science. Evidence of this interest can easily be found in such things as the popularity of television programs such as the U.S. television program NOVA, visits to science museums all over the world, and books about science directed to general audiences. Surveys regularly reflect this interest as well. In just one example, a recent study done for the U.S. National Science Board found that approximately 45 percent of American adults were very interested in new scientific discoveries, nearly 70 percent in new medical discoveries, and 51 percent in environmental issues.<sup>4</sup>

We also know that people are interested in having science widely covered in the mass media. In the United States, studies as long ago as the late 1950s and as recently as the early 1990s found that a "relatively large number of people" wanted to see mass media coverage of science.<sup>5(p.3)</sup> In addition, "the number of American adults who want serious scientific news is substantial," and a "majority of the public nationwide considers science news to be of equal importance to every other major area of news coverage...." <sup>6 (p.2)</sup>

Although people might be interested in science, numerous studies indicate they do not know much about it. These studies consistently find that people seem to have a poor grasp of such scientific facts as the definitions of DNA, the Internet, and a molecule. (See, for example, the National Science Board's *Science & Engineering Indicators* 2000).<sup>4</sup> However, such one-dimensional quantitative measures provide only one way to consider the public's understanding of science. Several scholars offer a more complex picture that recognizes the context-specific way that most people seem to understand science. In particular, social scientist Brian Wynne points out that lay

people “negotiate” their relationship with science in a broader, social context that considers such things as “existing relationships, divisions of labour, dependency, and trust.”<sup>7</sup> (p.328)

The surveys that document public interest in science, as well as the work that explores the complex ways people understand science, are powerful reminders that the public are active participants in the science communication process. Listening to what these lay audiences have to say can help both scientists and journalists not only learn more about them but also how to better provide understandable information about scientific issues. Some of my own work with a series of six focus groups that explored how people make sense of media coverage of AIDS and global warming offers several possibilities.

The AIDS stories used in the focus groups primarily reported on the success of using combination drug therapies, including protease inhibitors, in patients with HIV/AIDS. The global warming stories were based on the Intergovernmental Panel on Climate Change (IPCC) report in which a consensus statement was approved that said there is “a discernible human influence on global climate.”

Two story characteristics caused particular problems for focus group participants as they tried to understand the stories, regardless of whether the story was about AIDS or global warming and regardless of whether the story appeared in newspapers or on television or radio. These were lack of information and lack of context.

Surprisingly, perhaps, one of the biggest problems was that the stories often lacked even the basic information study participants were looking for. Specifically, they found the stories assumed levels of knowledge that they did not have. In the AIDS stories, for example, audiences wanted more explanation about the drugs being discussed and the relationship between AIDS and HIV.<sup>a</sup> Equally important, the focus group participants were especially concerned about side effects and costs of the drugs, two issues that were barely mentioned in any of the reports.

As for the global warming stories, the focus group participants also wanted more basic information, for example, where the facts came from and how the experts came to “know” about the human influence. They wanted to have a better picture of the decision-making process. In addition, however, they wanted to know more about the experts themselves so that they could better evaluate the experts’ credibility. Further, although one of the stories noted that there was “uncertainty” about global warming, the study participants found no information in the story about the nature of that uncertainty.

Repeatedly, focus group participants said they were frustrated with the lack of context in the stories as well. They wanted to know how to fit this new information about both AIDS and global warming into the bigger picture of things that had come before and what could be expected next. Of course, some of the missing context had to

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a. HIV, the human immunodeficiency virus, is generally acknowledged to be the virus that causes AIDS.

do with the uncertainties inherent in the issues themselves, such as the long-term effects of the AIDS medications and the implications global warming would have for both the planet and the people on it. That missing context turned out to be a major deterrent in helping participants make sense of the new information and in deciding just how important it was in the larger scheme of things.

Journalists usually work within tremendous constraints, of course, such as those of time, space, and resources. Taking those constraints into account, however, journalists could benefit from what these audiences had to say. These discussions suggest several strategies that might be useful in bridging that gap between the interests and needs of audiences and the content of the stories journalists produce. Similarly, scientists have a responsibility to better understand the needs and concerns of non-technical audiences as they, too, participate in the science communication process.

For example, journalists and scientists could better use the Internet and World Wide Web to become more aware of audience needs and interests. Audiences can now send e-mail messages to journalists and news media outlets, asking questions and providing comments, and, on some web sites, asking scientists questions about topics that interest them. These interactions can provide much needed insights. At the same time, we must be mindful of the limitations of this remarkable technology. Even as access to the Internet and World Wide Web is increasing exponentially, such access is still largely the province of a limited segment of society, not only throughout the world but even in a highly developed country like the United States.

Of course, reporters need to provide the basic “who, what, when, where, why, and how” in writing about science, as well as about other complex topics. Yet, even when those basics were present in stories, they were not enough for participants in the study discussed here. These individuals consistently reported having to make a lot of assumptions in order to make sense of the stories about both AIDS and global warming. Journalists need to go beyond the basics and provide more complete information. Scientific sources also need to do their part to help ensure that the journalists have that complete information to convey to audiences.

At the same time, one of the key tenets of journalism, as writer and teacher William Zinsser has pointed out, is “‘the reader knows nothing’.... You just can’t assume that your readers know what you assume everybody knows, or that they still remember what was once explained to them.”<sup>8(p.157)</sup> This does not mean that audiences are stupid. Rather, it is a recognition of the reality that people cannot keep up with everything. Simply assuming that the audience shares the journalists background, knowledge, or attention to the news is a recipe for continued frustration.

Finally, both scientists and journalists would do well to incorporate into their work more of what we have learned about the dynamic ways in which people process information to make sense of their world and to manage the uncertainties that are regular parts of their lives. In addition to information, the audiences in the study wanted context. Journalists need to emphasize why the story is important, to ask the “so what” question, and scientists need to be willing to provide that information.

Journalists must do a better job of giving audiences a sense of why they should care about the story and of giving them enough background to enable them to understand it.<sup>9,10</sup>

Journalists and scientists need to pay more attention to audiences. **Communication is about speaking AND listening in order to get a truer understanding of the public's needs, interests, and concerns.** That is the only way to guarantee the long-term health and vitality of the news media as we know it, the long-term health and vitality of the scientific enterprise—and the conduct of science for the public good.

**Note:** An expanded version of the study discussed in this essay appears in Chapter 11, “The Importance of Understanding Audiences” (1999) in: Friedman, S.M., Dunwoody, S., and Rogers, C.L. (eds.) *Communicating Uncertainty: Media Coverage of New and Controversial Science*, Lawrence Erlbaum Associates, Inc. New Jersey, USA.

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