

Interpreting Science for the Public

A word from the CBE InterViews editor—Some journal editors recognize the importance of disseminating information to the public in a way that the layperson can understand. Others do not, but perhaps should. I interviewed Sharon Dunwoody, Evjue-Bascom Professor of Journalism and Mass Communication at the University of Wisconsin, and Julie Miller, a CBE member and editor of *Science News*.

Q: How would you define science writing?

Miller: Science writing, which has come to include radio and television science journalism, conveys information about the activities of scientists to a broad audience. It is distinguished from scientific writing in that it is not aimed at science's practitioners but at other interested readers, listeners, and viewers. While a scientist can do science writing, most professional science writers have at least some journalistic training. Science writing tends to use the tools of journalists; science writers generally choose topics that have a news angle, interview the partici-

pants, and solicit comments from others in the field. The writer usually cannot assume that the audience has an interest in the specific topic, so he or she must entice the reader with a strong opening and clear, appealing images. The information must be made accessible to people who have neither studied the field nor followed related developments, so it must be put into context and its strength and importance clearly denoted.

Much of science journalism presents advances in human understanding of the natural world and the resulting medical and technologic benefits. However, it also reports on the scientific questions that

remain, the process of research, and other aspects of the scientific endeavor such as financial, moral, and policy issues. Although most science writers have a deep personal interest in the fields that they cover, they serve as critics rather than promoters of research. They must be selective in their choice of research to cover, skeptical about the claims of the scientists they interview, flexible in their viewpoints, and willing to change focus as further evidence becomes available. Nothing annoys science writers more than the assumption that they are working for the scientists they cover.

Dunwoody: My definition of science writing: Explaining science (broadly defined) to people who think they know nothing about science, aren't even sure they are interested, and have only seconds to attend to your information. One pulls this off pragmatically by embarking on a science topic when it becomes salient to readers (that is, when something timely or dramatic happens—news, in other words), by understanding the science and your audience well enough to explain concepts and processes reasonably superficially (the time element), and by being a captivating storyteller.

Q: What do you believe scientific journal editors can do to assist science writers?

Dunwoody: Let me offer 2 things. They can give journalists access to their journals, either in hard copy or online. Many journals simply go unnoticed by the press because journalists intermittently get to the library.

They can "explain" the innards of their journals via brief, plain-English summaries. *Science* magazine now does this at the front of each of its issues. I find those summaries very helpful, and I think journalists would, too. Each of these vignettes has a catchy title on top. These aren't easy to prepare, but they quite effectively communicate the gist of the main science in the issue. They should take less time than press releases or other standard science writing fare, yet they give the reader a quick idea of what's inside. I'll bet that

perusing such a page becomes required for all the journal's scientific readers as well! A brief, clear rendition of someone's results is a boon to all. A good journalist will be able to take it from there.

Miller: In day-to-day operations, journal editors can provide science writers with valuable information on a variety of levels. The most basic is answering questions about whether an article is in press, when it is scheduled for publication, or when it appeared. Journal editors can also provide copies of articles a few days before the publication date to allow a writer to check facts if his or her story is scheduled to coincide with the journal's publication. A journal editor also may be able to suggest other scientists in a specialized field who would be qualified to comment on a report.

In the belief that mention in the popular press enhances journal prestige, editors at some journals go beyond answering questions to facilitating coverage of their articles. Some journals send out formal press releases for articles that they believe will be of popular interest; sometimes editors alert individual writers of articles in an area that they cover. Routinely sending out articles, or a list from which writers can request articles, a few days before publication allows writers to select the most important stories for news coverage. Whenever journals provide pre-publication material, they can request that writers adhere to an embargo, that is, not release their stories before the publication date indicated.

A more controversial matter is the requirement enforced by some journal editors that scientists, on threat of having their articles rejected, not talk to the press about a piece of research before an article about it appears in the journal. Some scientists have been convinced that this is a moral issue, when in fact it is an economic one. The journals want to enhance their value by being the first to provide particular information and to reap the recognition if the publication is later noted in the press.

The requirement of avoiding prepublica-

tion distresses journalists who come upon a story, most often at a public meeting, that has not been published. After hearing a talk, the journalist will generally approach the scientist with questions. If the scientist refuses to answer them, the accuracy of the story may be compromised. I have been in a situation, for example, where a scientist was presenting data to Congress intending to influence legislation but to protect his publication options tried to keep me from reporting on it. Journal editors need to realize that their mission of informing scientists, and thus of their publication, differs from the mission of journalists. Newspapers and magazines are not in competition with journals—a few paragraphs can hardly substitute for the full treatment of methods, data analysis, tables and graphs, and bibliography. This distinction becomes muddy when publications contain both original scientific articles and science writing.

Because I see science writers as critics of the scientific enterprise, it is not their role to assist journal editors beyond holding to common courtesy in their interactions. Journalists should not make unreasonable demands, but if deadlines occasionally force them to do so, they should be appreciative of the help received. If journal staff members have been helpful on a story, the writer should make sure that they are sent a copy of the final publication.

Q: Is there any evidence that science writing affects the public funding of science?

Miller: I think that it would be very difficult to design a study to link science writing to the public funding of science. Why would you want to do such an experiment? The goal of science writing is to inform the public about science, not to be an uncritical booster or a fundraiser. Personally, I find science to be fascinating and hope that a well-informed public will be supportive of scientific research. However, there are likely to be people who, with increased understanding of what scientists are doing, decide that they don't want to support those activities. Per-

haps they have objections to the use of animals in experiments. Perhaps they decide that the fruits of space exploration are not worth the cost. Although public understanding of science may contribute to an appreciation of science, funding levels primarily rest on the values of the public and on a variety of political and budgetary considerations. I would hate to see any justification of science writing based on potential financial benefits to the research community.

Dunwoody: The evidence that science writing influences funding of science is indirect but there nonetheless. That evidence doesn't illuminate the big picture. That is, I have no idea if science coverage generally makes the public and policy makers more likely to fork over money for science "writ large". Rather, I'm talking about the likelihood that media coverage of someone's research makes that research more likely to be supported in the future.

Specifically, I think there is accumulating evidence that visibility in high-status media publications legitimizes the work of scientists in the minds of the public as well as in the minds of other scientists. That legitima-

cy in turn (and here's where the data are, at best, anecdotal) probably makes that work more likely to receive support.

Certainly scientists perceive that such a funding link exists. Some years ago, in a survey of scientists at 2 Ohio universities, we found a strong perception that visibility makes you more likely to find research funds. And in countless talks with scientists since then, I hear that presumed linkage articulated time and time again.

An important assumption, of course, is that the coverage is positive, not negative. Indeed, most coverage of science is not critical. I know of no attempts to analyze the funding fate of individuals whose work is trashed in the media. Some years ago, a student of mine tried to look for such a link by analyzing the subsequent funding status of scientists who were given the Golden Fleece Award by then-Wisconsin Senator Bill Proxmire. The data were just too incomplete and murky to make that possible.

Media coverage of a topic, issue, or research project clearly conveys a sense of social legitimacy, and that should translate into perceptions of quality, importance, and

funding decisions. To give a quick example, in the 1980s, a group of social scientists found that, all things equal, research that got covered by *The New York Times* was cited far more often in the peer-reviewed literature by other scientists than was research that did not get covered by *The New York Times*. The investigators controlled for quality, prestige of scientists and institutions, whether or not the research was peer-reviewed, and where it was published (in this case, the *New England Journal of Medicine*). Through all those controls, the effect of *NYT* visibility persisted. Strikingly, the legitimizing effect occurred not among the general public but among scientists whose own research was relevant to the work in question.

Now, if scientists in your own area are judging your work to be more important than the work of others because your work appeared in *The New York Times*, just imagine the kind of legitimacy this coverage would convey to those with less expertise!

Journalists don't write stories with funding and the future in mind, but I suspect that such support is one of the byproducts of journalists' work.