Fact or Fiction?

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Scientists vs. Journalists

"Our willingness to be ignorant seems to know no bounds."
—Walter Cronkite

Suppose there are two news bulletins: "Napoleon Escapes From Elba" and "Faraday Discovers Electricity." Which one makes the six-o'clock news? You know it'll be Napoleon every time.[1] Michael Faraday did more to change the lives of people on this planet than all the kings of England rolled up into one—and we might as well throw in Genghis Khan and Napoleon. Yet, in a history class about England you learn about all the kings and what they did to their wives and all that stuff, but you never learn about Michael Faraday. All of this is from physicist Leon Lederman, who also said: "Until we can change our education system and break the barriers between the two cultures and get science in history and history in science, and merge them in some way, we're not going to get the journalists to be interested. They will say that this isn't news."

Here's another example from Gentry Lee, chief designer of RAMA, the award-winning CD-ROM adventure game.[1] (He was the sole partner of Carl Sagan on the Cosmos TV series from 1976 to 1980.) Here's what he said: "We have a little game that we play in our house. At the end of each month we try to figure out what's the most significant thing that happened in this last month from the point of view of long-term history. The end of last month (September 1997), everybody voted for [Princess] Diana, and I said, 'Nope, It's not Diana's death. I'm sorry. What really is the most important thing that happened that will affect every person on this planet is IBM's discovery that they can use copper on silicon in chips. That will revolutionize everybody's life five years from now.' And they said, 'Well, how did you figure that out?' And I said—because it wasn't in the newspapers. It wasn't in the stories they read and so forth." (In retrospect, it turns out that this breakthrough was mentioned in some newspapers.[2] It wasn't even a close call, however, compared with what the press devoted to Diana's death).

All of this is from a recent study discussing the relationship between scientists and journalists. It was conducted by the First Amendment Center in Nashville, TN, and included responses from 762 journalists and 670 scientists. Here are some of the findings published in their report titled *Worlds Apart*[1] and summarized by Studt:[3]

- 91% of the scientists and 77% of the journalists felt that journalists lack an understanding of the nature of science and technology.
- 88% of the scientists and 56% of the journalists felt that managers of news media are more interested in sales than in telling people what they need to know.
- 79% of the scientists and 67% of the journalists said that journalists focus on trendy issues rather than scientific facts.
- 67% of the journalists said that journalists seek sensational topics that sell their product better.
- More than half of the scientists and journalists felt that journalists have no appreciation of the need for funding basic scientific R&D.
- Journalists said that scientists' jargon and the endless qualifications by which they circumscribe their findings make communicating their work to the public an all-but-impossible task.
- Scientists sometimes have weak communication abilities that prevent them from presenting their results efficiently to the appropriate audience.

The evidence presented in *Worlds Apart* leaves no doubt that adequate coverage of science stories is rare and found in only a handful of news outlets. The report contends that science is literally a life-and-death news story that threads its way through every aspect of American culture, and the media leave the public mostly ill-informed about it. Furthermore, if it's an environmental issue, the media's view is that bad news can be big news. This is a topic in itself and was covered in a previous column (*P&SF*, Feb. 1998).

Science vs. Journalism

Let's look at the differences between science and journalism.

Speed

Science is slow, patient, precise, careful, conservative and complicated. Journalism is fast, short, hungry for headlines and drama, and very imprecise at times. It's a truism in news, as well as science, that as speed increases, so does the opportunity for error. In case you haven't heard the words of some anonymous author: "Doctors bury their mistakes, lawyers hang them, but journalists put theirs on the front page."

Language

Journalists frequently overlook or minimize the precise, qualified language that communicates the tentative nature of research findings. Scientists are heavily dependent on scientific jargon.

Margin of Error

Scientists have an extraordinary advantage over journalists in that they can devise valid tests for their hypotheses. Journalists hardly ever have measurements of such precision. They are frequently thrust into exceptionally ambiguous environments in which the outcome is completely unpredictable.

Objectivity

Science, by its very nature, takes objectivity as its central premise. Journalism, on the other hand, is a largely subjective enterprise. As an example, nearly 70 percent of newspaper editors contacted in a study examining changing environmental values in the nation's press endorsed the slogan of the old *Chicago Times*: "The duty of a newspaper is to print the news and raise hell."[4]

Journalists can also be quite open where they stand in reporting controversies, particularly about environmentalism. In 1989, *TIME* magazine editor, Charles Alexander, proudly told an environmental conference, "I would freely admit that on this issue we have crossed the boundary from news reporting into advocacy."[5] These comments are born out by systematic survey data. In one study, 240 randomly selected national media journalists were asked to name a reliable source on environmental problems. Sixty-nine percent mentioned environmental activist groups, compared to only six percent who cited scientific journals such as *Science* or *Scientific American*. In the same survey, more than four out of five journalists (81%) rejected the notion that America's environmental problems are overstated.[5]

Measuring Effects of Work

Scientists can accurately measure the effects of their work. The Hubble telescope, for example, photographs a comet crashing into Jupiter; successful vaccines can cure diseases. By contrast, journalism depends on adapting to the vagaries of human unpredictability—a difficult, if not impossible, task.

The question, then, is: Why do most of the American news media largely ignore science? *Worlds Apart* lists four major barriers to the effective communication of new scientific knowledge:

1. Scientists, as a group, are not effective or efficient in explaining their work to a lay audience. Typically, this is because scientists are not trained particularly well to communicate that knowledge to the general public. Scientists tend to be wordy, unnecessarily detailed and overly technical. Furthermore, most scientists rarely ever talk to journalists, and those who do are most often the ones with their own agendas, which are contrary to the thinking of the vast majority of scientists. Sandman[6] points out that, for a variety of reasons, most journalists are naturally more allied with their alarming sources than with their reassuring ones. He states: "This is not mostly because reporters are anti-establishment activists in disguise. It is more because reporters are interested in their careers, and a scary story is intrinsically more interesting, more important—'better' by journalistic standards—than a calming one."
2. Many reporters are not familiar with the culture of science, its language and its methods. Reese Cleghorn, president of the *American Journalism Review* and dean of the College of Journalism, University of Maryland, says: "Reporters and editors may still have the hang of politics and government and certainly the yen for covering the textures of lifestyles, but they remain largely ignorant when it comes to the sciences, for instance, where many of the new frontiers are to be found."
3. Editors and producers, who decide which stories will be printed or aired, often don't feel qualified to make sound judgments about the merit of science stories. One example: Of the hundreds of news managers around the nation who responded to the survey for the *Worlds Apart* project, only six percent had science degrees.
4. As the report[1] states: "When the once-mighty cascade of scientific and technological information finally reaches the American public, it's not much more than a trickle. Sadder still, many Americans don't know what to make of the information that gets through. They're ill-prepared to receive it." There's a high degree of scientific illiteracy—ranging from 80 to 90 percent, depending on your point of view—in the general public. A majority of Americans tell pollsters they believe in science, but in many cases the so-called science they advocate includes astrology, yoga and ESP![7] Sandman[6] states that getting technical information into the media isn't only difficult, it is also close to useless. He uses a 1991 study as an example. He and his colleagues wrote news stories about a hypothetical perchloroethylene spill, systematically varying three dimensions of the coverage: (1) the level of outrage (whether neighbors were angry or calm, whether the agency was helpful or contemptuous, etc.), (2) the seriousness of the spill (how much PERC was spilled, how many drinking water wells were nearby, etc.) and (3) the amount of technical information in the story. Experimental subjects were asked to read one story and answer questions about their reactions to the risk. The results: Outrage had a substantial effect on risk perception; hazard had a modest effect; technical information had no effect at all.[6]

What to do?

Carl Sagan said that scientists themselves must enter the fray, to defend both their institutions and themselves.[1] The critical questions are: How does the average scientist make herself or himself understood and appreciated and how can the scientist's work be made relevant to the average citizen? One recommendation of the report is that all future scientists be required to take undergraduate courses in communications. In addition, media training that addresses the special needs of scientists can be quite helpful. *Worlds Apart* sums it up best: "It is time for scientists to come to terms with the fact that they're eating at the political

trough and that they'd damned well better make their political case, and make it in a way that real people can understand."

Here's what Whelan recommends in her book, *Toxic Terror*:[8]

1. Scientists must come to appreciate how irresponsible the mass media are in disseminating information ... or misinformation.
2. Scientists should convince the media, by example, that sound science isn't intrinsically dull.
3. Scientists, whenever possible, through personal contacts, letters to the editor, or call a TV producer, should announce well in advance of a breaking story their availability to answer questions on specific topics.

Peter Sandman, who consults and trains in risk communication, emphasizes that, above all, one must be prepared to focus on outrage.[6] He points out, "The most striking statements an environmental activist can make to the media are statements aimed at increasing, focusing and mobilizing outrage. These are the statements that are most likely to get in, and most likely to affect the audience. Conversely, the most striking statements an industry spokesperson can make to the media are statements aimed at reducing outrage: acknowledgments of problems, apologies for misbehaviors, offers to share control, explanations of what the source is doing and what the audience can do to mitigate the risk, demonstrations of accountability in lieu of trust, etc. Sources who are convinced a risk is huge usually know how to manipulate the outrage. Sources who are convinced it is trivial, on the other hand, usually make the mistake of believing that the key task is to explain the data."

A final question—Are you ready to debate an enthusiastic environmentalist in a lecture hall, on radio or on TV? P&SF

References

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