Current Comments

Science Journalism: You've Come a Long Way Baby, But . . . !

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Most of the public's knowledge of science, technology, and medicine comes from the mass media. Since so many social, political, and economic issues revolve around scientific questions, you might expect significant science coverage. The sad fact is that science reporting is minimal.

In 1975 only about 5% of American newspaper stories was devoted to science and medicine—the *same* figure reported for 1958 (p. 455).[1]

Up-to-date figures on science news are difficult to find. We called several major newspapers to ask for estimates. The *New York Times* and *Washington Post* told us they did not keep track of such information. Robert C. Cowen, science editor of the *Christian Science Monitor,* estimates that one page per week goes to natural science.

I believe that European newspapers do a much better job of covering science. However, this coverage is difficult to quantify. Dr. Bernard Dixon, editor of *New Scientist,* estimates that the space allocated for science and technology in Britain's six national dailies "is so small as to be negligible—certainly less than one percent."[2] Dr. Greta Jones and Professor A.J. Meadows of the University of Leicester's Primary Communications Research Centre in England reported that the London *Daily Telegraph*'s amount of science coverage has actually been declining. In 1968, they say, the paper published 515 items relating to science; in 1969, 409; in 1971, 396; and in 1973, 290.[3] But from informal inquiries I have learned that Russian newspapers devote roughly 5 to 10% of their space to science, and that many news stories include more technical detail than American readers are accustomed to getting. I do know that the German *Frankfurter Allemeine Zeitung* has a large full time staff of science writers. They subscribe to *Current Contents*® and use it regularly.

Popular magazines deal with a wide variety of specialties. It is difficult to make generalizations about the amount or quality of science writing in these magazines as they are aimed at so many different audiences. Bill Katz of the State

University of New York at Albany, editor of the "Magazines" column in *Library Journal*, estimates there are about 2,000 of them published in the world today.[4] *Time* and *Newsweek*, America's two best known weekly news magazines, have circulations of about five and three million, respectively. Both regularly publish short features on science, medicine, and the social and behavioral sciences, although they rarely do an in-depth cover story (of 5 or 6 pages) on a science topic.

My friends at ISI® who regularly watch television tell me that only a small fraction of American TV is devoted to science. It was not easy to get relevant data. The research department at the American Broadcasting Company (ABC) said one to two percent of the network's news coverage goes to science. The National Broadcasting Company (NBC) and the Columbia Broadcasting System (CBS) couldn't give us exact figures, but the amount is probably roughly the same. So much for science on the commercial networks.

The Public Broadcasting Service (PBS), however, estimated that about 11% of their daytime hours devoted to instructional programs cover science. Unfortunately, these programs reach a relatively small part of the total viewing audience.

The only weekly American TV program which deals with general science is PBS's *Nova*. PBS tells us that in February of this year *Nova* reached 4.88 million households, or only about 5.7% of the homes in the US.

The BBC, sometimes helped by American co-sponsors, does better. Their *Horizon* programs give a comprehensive treatment to different areas of current scientific research. They have also produced such outstanding two-hour epics as "The Restless Earth." This covered plate tectonics for the informed layman.

National Public Radio, which, like PBS, is funded by the Corporation for Public Broadcasting and private donations, tells us that roughly 5% of the material sent over its 180 stations deals with science. However, as I mentioned in an earlier essay, the American Chemical Society's *Man and Molecules*, a science program aimed at the lay audience, is broadcast by 500 commercial stations in the US and other countries.[5]

Of course, none of these estimates takes into account science-oriented entertainment programs. For example, *Marcus Welby, M.D.* would not be classified as science reporting. But this program (now in reruns) does indeed convey a considerable amount of authentic medical information. All medical data was checked with qualified consultants. Unfortunately, the program gives a syrupy and grossly distorted view of the present-day American family doctor. If every doctor spent as much time with each patient as Welby does, we'd

need at least five times as many doctors. Maybe we do, but we don't have them now!

David Perlman, science editor of the *San Francisco Chronicle*, asserts that there is "virtually no biology, no behavioral science, no physical science on everyday television."[6] But commercial TV will drop everything to cover a manned flight to the moon. Carl Sagan claims that "in all three [commercial] network news departments there is not a single person whose job includes scanning *Science* or *Nature* each week for newsworthy material."[7]

Apart from the abysmally small quantity of science reporting in newspapers or radio and TV, what about the quality?

One good example of a highly publicized story was the 1976-77 swine-flu vaccination program. The scientific aspects had grave implications for society. In 1976, the US government launched a $135 million program to innoculate the American people against an epidemic that never materialized. Several elderly people in Pittsburgh, Pennsylvania died shortly after receiving the shot. This led to fears that the vaccine itself was dangerous.

Unlike many science projects, which don't affect members of the public personally, this one affected everybody. In the face of apparent confusion and incompetence on the part of the government, every American had to weigh the risks of catching swine flu against the risks of taking the shot.

Dixon asserts that the coverage of the swine flu vaccine debacle by major US newspapers is a model of science journalism. "Instead of blow-by-blow accounts of every minor twist in the plot," he writes, "news features were used to convey in a balanced and informative fashion principal shifts in the argument."[2]

However, David Rubin and Val Hendy of the New York University School of Journalism claim that coverage by papers such as the *New York Times, Washington Post, Los Angeles Times*, and *Miami Herald* were exceptions to otherwise mediocre coverage.

They studied swine-flu stories in 19 daily newspapers. They also studied the evening news shows of the three commercial television networks. And they looked at coverage by the two major syndicated American wire services, Associated Press and United Press International. (Associated Press serves 1,300 newspapers and radio and TV stations in the US and over 100,000 abroad. For United Press International the figures are 1,150 and 2,250.) Rubin and Hendy focused on the week of October 11-17, 1976, "the week the [immunization] program began in earnest, the week a number of elderly people died after receiving the shot."

They conclude that, "while most press coverage was unoriginal, predictable, [and] superficial...it

was not misleading, sensational or inaccurate except in a couple of instances." They complain that *most* of the coverage consisted of body counts and the detailing of the byzantine twists and turns of the *political* side of the story. Coverage, they say, "faithfully reflected the confusion among public health officials."[8]

Thus, their agreement with Dixon was qualified somewhat. Dixon complains that balanced, comprehensive science reporting is all too rare in Britain. Rubin and Hendy argue that, at least in the swine-flu case, it was rare except in the case of major US newspapers.

The question is, how typical is this particular story? The quality of science reporting in newspapers has, on the average, increased greatly since the 1920s. Dr. Rae Goodell teaches science writing at the Massachusetts Institute of Technology. She noted that many journalists classify science reporting from early in this century as "gee-whiz" reporting—the kind that concentrates on the sensational side of science. The '40s and '50s saw "conveyor belt" reporting. Such science stories may clearly explain the technical aspects of a discovery to the reader. But they do not examine the larger social, economic or political repercussions of the story.

"Gee-whiz" and "conveyor belt" reporting are still with us today. But Goodell and other observers see the rise, in the last decade or so, of "science policy reporting." This type of science journalism tells readers what new developments and discoveries *really* mean, and how they affect their lives (p. 127-8).[9]

Science reporting on TV generally has not reached this stage of maturity. Rubin and Hendy, in their study of the swine-flu story, singled out television for especially severe criticism. No network, they assert, preempted regular programming to cover the swine-flu case. Nor did any of them try to answer questions like "What is swine-flu?" or "What is the risk of inoculation?" The networks offered only "typical correspondent-on-the-scene coverage." Rubin and Hendy comment: "It was a sad performance by television, on which 36% of Americans say they rely exclusively for their news."[8]

Other observers have criticized television for excessive coverage of the paranormal and "pseudoscience." NBC in particular has been censured for lavishing attention on the dubious "ancient astronaut" question. And on October 30, 1977, NBC aired "Exploring the Unknown," a program on "psychokinesis," or the ability to move objects by psychic power. The Committee for the Scientific Investigation of the Claims of the Paranormal (CSICP) condemned the program for giving the impression that the existence of such psychic powers has been scientifically validated. Its complaint to the Federal Communications Commission was recently published in *The Humanist*, which CSICP chairman Paul Kurtz edits. Speaking for CSICP, Kurtz said

NBC should provide equal time and funding for a program to present "the critical scientific viewpoint."[10]

CSICP's aim—to keep the public skeptical of occult or paranormal reports—is laudable. Telepathy, UFOs, ancient astronauts, biorhythms, astrology, and the Bermuda triangle are all topics which excite the imagination, even if they carry with them questionable scientific validity. Many find it more fun to believe in them than to disbelieve in them. In the minds of many editors and TV programmers (and readers and viewers), stories about such alleged phenomena make better entertainment than the rebuttals.

However, Carl Sagan has managed to remain quite popular on TV even though he debunks such theories. He has also performed this valuable service in books such as *The Dragons of Eden,* where he writes:

> ...There is today in the West...a resurgent interest in vague, anecodotal and often demonstrably erroneous doctrines that, if true, would betoken at least a more interesting universe, but that, if false, imply an intellectual carelessness, an absence of toughmindedness, and a diversion of energies not very promising for our survival.... It may be that there are kernels of truth in a few of these doctrines, but their widespread acceptance betokens a lack of intellectual rigor, an absence of skepticism, and a need to replace experiments by desires.[11] (p. 247-8)

Much can be done to improve the treatment of science in newspapers and television. But both scientists and reporters need to reach a better understanding of each others' professional concerns.

For example, scientists must realize that reporters are under severe deadline pressures which usually prevent print or TV journalists from doing much research on their own.

Space is also at a premium in newspapers. A story may have to be cut, sometimes by copy editors who may not realize that an important clarification or explanation is being sacrificed. Walter Sullivan of the *New York Times* had 30% of a story on quarks cut. The result was that through no fault of his, only one scientist's name was mentioned, but not the names of others who contributed significantly to the discovery (p. 124).[9]

Reporters' stories face another peril at the copy desk: headline writers may give items titles that are short, snappy and attention-grabbing—but not completely accurate.

Sagan has a headline horror story. He gave a press conference where he spoke of the possibility that organic molecules might exist in the atmosphere of Jupiter. He says he made it very clear that he was talking about organic molecules, not life. Yet the following day a San Francisco headline declared: "Life on Jupiter, scientist says." (p. 173)[9]

Television reporters, too, are allotted only a few minutes on the air to tell their stories. Tapes must

be edited and valuable information dropped from an interview. And of course, the reporter has no control over the way the anchorperson (the broadcaster who coordinates the news program) will lead into the story.

Reporters have the obligation to understand scientists' problems and professional concerns. If a scientist takes the care to qualify a statement, that qualification should get a prominent place in the story. Also, depending on the size of the news operation and reporters' schedules, it is possible for reporters to help write headlines and edit stories, to avoid inaccuracies and distortions.

Also, scientists should realize that, as Perlman puts it, reporters "are in business to report on the activities of the house of science, not to protect it, just as political writers report on politics and politicians."[6] Scientists cannot expect reporters to act as public relations agents, even though the great majority of science writers probably have a favorable attitude towards science and scientists.

The best popular science writers strive to learn what they can about science. In their swine-flu study, Rubin and Hendy assert that reporters' science backgrounds made the biggest difference in the quality of the coverage. Lawrence K. Altman of the *New York Times*, for example, is an MD.[8] Yet many reporters begin without a scientific specialty or a strong general science background.

Perlman asserts that this is not an entirely bad thing; that on-the-job training has worked for some. He writes that Walter Sullivan is "virtually a card-carrying geophysicist by now, he has written so often on the subject." Perlman, himself without formal science training, describes his job as "a full-time, perpetual fellowship to a graduate school with a varied and endlessly challenging curriculum."[6]

You don't need a Ph.D. to be a good popular science writer. And perhaps it doesn't matter whether reporters get their science training in or out of universities, though more formal training might be called for.

Relatively few journalism schools offer courses in science *writing*. A *Directory of Science Communication Courses and Programs* lists 34 programs and 105 courses in 58 colleges and universities in the US.[12] Since science writing carries with it special problems not faced by reporters of politics, business or sports, more formal training might be needed here.

Some organizations are trying to improve science news by making scientists in certain fields available for interviews by reporters. The public relations office of Drexel University in Philadelphia operates a "Deadline Doctors" program. It is designed to help reporters who need a qualified source on a scientific topic. Calls are referred to an appropriate faculty member.

The Society for Neuroscience, a group of 4700 scientists who have done research relating to the nervous system, plans to introduce a similar service this fall. The Bethesda, Maryland-based group,

publisher of the quarterly *Neuroscience Newsletter* and the annual *Neuroscience Proceedings*, will publish a directory of scientists who expressed willingness to talk to reporters in need of a clear explanation or quotable source.

The American Cancer Society invites science writers to attend its annual meetings. This gives writers a chance to hear the latest developments in cancer research. The Federation of American Societies for Experimental Biology publishes a newsletter called *FASEB Feature Service*. This monthly publication is distributed without charge to about 400 newspapers. It explains new developments in the laity's language.

Some organizations have grown up with the specific aim to improve science writing. The National Association of Science Writers, Box H, Sea Cliff, New York 11579, is a group of about 1,000 science writers and editors. It holds seminars on science writing at the annual American Association for the Advancement of Science meeting. Participants discuss the problems of communicating science-related information through the various media. Both journalists and scientists attend these seminars.

The Council for the Advancement of Science Writing, 618 N. Elmwood Oak Park, Illinois 60302, is a group of 26 writers, editors, television executives, scientists and physicians. The group tries to upgrade the quality of science writing, and improve the relationship between scientists and the media. CASW holds annual press briefings on new horizons in science and the social and behavioral sciences as well.

One of CASW's special programs provides on-the-job training to journalists. Journalists who can't take time off from work for special training are supplied with textbooks and journal subscriptions. Also, CASW members provide guidance on how to deal with scientist-sources, and how to cover scientific meetings.

Another CASW program brings journalists directly into laboratories or field studies. Journalists spend weeks or months with scientists to get a better idea of how research is actually conducted.

Other journalism or scientific societies could try offering services similar to these. The fact that some groups are already trying to improve the system by opening communications is cause for optimism.

Calls for cooperation between various professions go out constantly. Yet between journalism and the sciences, cooperation is especially important. Journalists and scientists both have a stake in raising the quality of science reporting. Science is at least as important as politics, sports, or the personal lives of movie and TV stars. And the less the public knows about what is going on in science, the less likely it is to hold intelligent opinions about the directions research should take and the amount of funding it should receive.

Science journalism has come a long way from the "gee-whiz" days but it still has a long way to go. Advances in television technology may

lead to improvements in the quality of information that the public gets via the small screen. I have described elsewhere how the British "Prestel" (formerly Viewdata), operated by the British Post Office, may revolutionize the dissemination of scientific information.[13] ISI's European branch supplies the Prestel system with a science news segment called SCITEL™.[14] However, the problem with the commercial networks does not seem to be lagging technology but lagging will. The networks could be doing a far better job of reporting science with the resources they already have.

Journalism itself leaves much to be desired but the investigative reporting typified by Bernstein and Woodward in the Watergate case signalled a new era.[15] Just this sort of thorough investigative reporting is what we need in the mass media. They would do well to emulate the excellent job done by *Science* in its "News and Comment" Section.

That the public is ready for more science I have no doubt. The AAAS is studying the feasibility of a science magazine geared to a mass audience. And the publishers of *Penthouse* and *Viva* have announced a new science magazine, *Omni*, to be launched in September. All in all I think we can say about science journalism, as they do in the ads: "You've come a long way baby." but you've still got a way to go!

REFERENCES

1. **Sandman P M, Rubin D M & Sachsman D B.** *Media: an introductory analysis of mass communications.* Englewood Cliffs, NJ: Prentice-Hall, Inc., 1976. 483 p.
2. **Dixon B.** Medicine and the media: popular science. *Brit. J. Hosp. Med.* 18:497, 1977.
3. **Jones G & Meadows A J.** Public understanding of science—British experience. *Social Innovation* (2):A7-13, 1976.
4. **Garfield E.** Keeping up with new magazines. *Current Contents* (9):5-13, 27 February 1978.
5. ----------. Radio: the neglected medium for scientific communications. *Current Contents* (25):5-9, 19 June 1978.
6. **Perlman D.** Science and the mass media. (Holton G & Blanpied W A, eds.) *Science and its public: the changing relationship.* Boston: D. Reidel Publishing Company, 1976.
7. **Sagan C.** There's no hint of the joys of science. *TV Guide* (26):6-8, 4 February 1978.
8. **Rubin D M & Hendy V.** Swine influenza and the news media. *Ann. Intern. Med.* 87:769-74, 1977.
9. **Goodell R.** *The visible scientists.* Boston: Little, Brown and Company, 1977. 242 p.
10. **Kurtz P.** Complaint to FCC against NBC. *The Humanist* 38(1):5, January/February 1978.
11. **Sagan C.** *The dragons of Eden.* New York: Ballantine Books, 1977. 271 p.
12. **Friedman M S, Goodell R, & Verbit L.** Directory of science communication courses and programs. Binghamton, NY: State University of New York at Binghamton, 1978. 46 p.
13. **Hawkes N.** Science in Europe/British may use telephone, TV's, to tap data banks. *Science* 201(4350):33-4, 7 July 1978.
14. **Garfield E.** Viewdata and SCITEL bring interactive information systems into the home. *Current Contents* (41):5-10, 10 October 1977.
15. **Bernstein C & Woodward B.** *All the president's men.* New York: Simon and Schuster, 1974. 349 p.