

Data and Words: Making Sense of It All

Science in Public: Communication, Culture, and Credibility. Jane Gregory and Steve Miller. New York: Plenum Press; 1998. x + 294 pages. \$29.95. ISBN 0-306-45860-8

Just as most scientific research takes place behind closed doors, so does the debate on how to communicate findings of that research to the general population. The public-understanding-of-science movement has a long and complex history, and governments, organizations, and scholars continue to weigh the benefits and disadvantages of a scientifically literate public. In *Science in Public: Communication, Culture, and Credibility*, Jane Gregory and Steve Miller bring these debates together for discussion.

Gregory and Miller, both of whom teach at University College, London, provide an intensive review of the literature on communicating science to the public. In the first 2 chapters they offer a foundation for their arguments, beginning with the connection between science and the public. They note the differences in scientific-literacy movements between the United Kingdom and the United States: Scientific-literacy efforts in Britain have been directed toward adults, families, and community groups, whereas efforts in the United States remain focused within the educational system. The American Association for the Advancement of Science's Project 2061 is the primary example of this focus on producing scientifically literate students.

But the programs would be useless without the prediction of benefits. Gregory and Miller use 9 benefits established by Geoffrey Thomas and John Durant as a framework to illustrate why we should be motivated about the public understanding of science. These include benefits to science, national economies, individuals, and democratic government.

The authors examine the emergence of science coverage in the popular media. They track science from the first science story published in an American periodical in 1690 to the post-World War II rise in science reporting. "The late 1950s and early

1960s were a boom time for science coverage, and for science on the front page; in the late 1950s in particular, science articles were awarded a prominent position in the newspapers" (page 39).

The popularization of science took off in the late 1980s, when Stephen Hawking's *A Brief History of Time* topped best-seller lists for months. Soon after, several scientists began writing books that could be found outside scientific bookstores and academic libraries. This phenomenon, much to the dismay of many scientists, also opened the door for the popularization of "alternative science".

The trend toward the popularization of science was not welcomed by the entire scientific community. As Gregory and Miller state, "the rise of the 'public understanding of science' movement of the 1980s brought an expression of positive attitudes toward popularizing activity by scientists, but despite high-level approval within the scientific community, popularization is still not seen by many academic institutions as something to be encouraged or rewarded . . ." (page 82).

Although use of the popular media to disseminate scientific information is discussed throughout the book, the authors devote an entire chapter to media issues. There is a continuing debate between scientists and the media about accuracy in reporting scientific information. "The scientific community has consistently claimed the right to arbitrate on questions of accuracy in the popular representation of science, and the research literature has highlighted inaccuracy in reporting. This has served to perpetuate an image of popular media as misrepresenting science" (page 107). The authors discuss news values and criteria that media organizations use when deciding the content of their publications. They then describe why science stories usually fall to the back burner. For example, the authors say that a substantive and relevant story about food or health may make it in a newspaper because everyone can relate to it, whereas a story on the discovery of the Higgs boson may be passed

over. The discovery of the Higgs boson, the one missing link in a symmetric model of the particles of matter, would be amazing, and an editor dedicated to newsworthiness would certainly not pass up an opportunity to report it.

It is impossible to measure the effect of the media on the public. But the media are an important tool in the dissemination of scientific information; we can hardly expect an advertisement announcing a scientific discovery to prompt many people to storm the local library for a copy of the research report. Mass-media reports on breaking scientific discoveries are likely to be provisional and controversial. "Science-in-the-making puts strains on everyone involved in the process of public understanding of science: on scientists, in knowing what to claim; on journalists, in assessing what is reliable and significant; and on the public and their representatives, in matching the new facts and ideas to what they already know and how they already live, and in deciding what to do" (page 165).

Some controversial science reporting falls into the journalistic category of risk reporting. Gregory and Miller devote a chapter to dealing with risk and use 3 examples to illustrate it: the Alar scare, "mad cow disease", and a theory on a comet collision with Earth. They point out the importance of the media's role when such a story arises: "The mass media are largely responsible for communicating risks to the public, particularly in times of crisis: In a world divided up into experts and laypeople, the mass media are often the only points of contact" (page 188).

In their concluding paragraph, the authors define their goal for the book as illustrating how complex and complicated the public-understanding-of-science movement is. They accomplish their goal, perhaps too extensively. Several of the book's chapters constitute material for entire college courses, and the authors rush through the fascinating historical information so that they can get to the meatier issues of the public understanding of science. A rather

cryptic reference system is a shortcoming of the book; Science in Public raises hundreds of interesting discussion topics and cites some important research that should be more accessible.

This book has several potential applications. Various chapters are aimed at academics, journalists, and scientists. Overall, the book would make an excellent text for a college course or a reference for anyone interested in the public-understanding-of-science movement. If various groups recognize the complex issues that the movement raises, the authors say, it would be a step forward.

Katherine Arnold

Katherine Arnold is a graduate student in science and technology journalism at Texas A&M University.

The Professor and the Madman: A Tale of Murder, Insanity, and the Making of the Oxford English Dictionary. Simon Winchester. New York: HarperCollins; 1999. xi + 242 pages. Hardcover \$22.00. ISBN 0-06-017596-6

My office is fortunate to have the 12-volume set of the Oxford English Dictionary (OED), with supplement, issued in 1961. I have appreciated its scholarship from afar, occasionally looking in it for words that no other dictionary has. *The Professor and the Madman* stirs a new interest in the collection and an awesome [f. Awe sb. + -some. Chiefly Scotch.] appreciation for its achievement.

Simon Winchester's book tells the tale from the perspective of two seminal figures, Professor James Murray, the editor of the OED project for the first 38 years, and Dr William Chester Minor, an American Civil War surgeon who spent the last decades of his life supplying just the right passages to illustrate the evolution of this and that word.

Murray was appointed editor in chief in 1879, after an earlier editor's effort had petered out. He worked steadily from then

until his death in 1915. There were many disappointments along the way, mainly with the speed. All along he anticipated finishing, but in fact the last volume of the OED was not published until 1928. There is justice, though, in that the size of his effort was recognized, and he was eventually knighted.

Minor entered the fray soon after Murray, in 1880. Shut up in Broadmoor, Minor responded to Murray's public call, "An Appeal to the English-speaking and English-reading public", to read books and make extracts for the Philological Society's New English Dictionary. Minor at first supplied words essentially at random from his own reading. Eventually he devised a system by which he systematically recorded passages so that he could supply them as the compilers of the dictionary needed them. So uncanny was Minor's anticipation of the needed material that Murray began to feel as though Minor worked right there in the sheds alongside the editor, subeditors, and clerks.

All this time, two rooms in the Asylum for Criminal Lunatics, Broadmoor, Crowthorne, Berkshire, were Minor's home. He had been sent there for killing a man that he fantasized was secretly molesting him in his London flat. His colleagues speculated that his madness was the result of having been forced, as a doctor during the Civil War, to brand a man on the cheek with red-hot steel because the man was judged a deserter. Eventually, his disease was diagnosed as dementia praecox of the paranoid form, now known as schizophrenia. But he read incessantly, and as he was a pensioned war veteran with no daily living expenses, he could afford a fine library. When he learned that 17th-century passages were most wanted by the OED staff, he began to concentrate his book-buying in that period.

It was some time after Minor and Murray became correspondents that Murray learned of Minor's incarceration. Even then, they maintained a good friendship, and Murray went to the docks to see Minor off when he was finally released to his home in the United States under his brother's care.

That is the skeleton of the tale. But inside it we learn the history of English-language dictionaries and the early story of a need for a "big dictionary". We learn how the compilers kept track of so many passages from so many people, how before the dawn of computers they filed slips away in pigeon-coop-like assemblages. The commitment of Murray and his staff to such a vast undertaking, when days and weeks could be spent on defining and illustrating the use of a single word, challenges the modern reader's own sense of what vocation might mean. And the pleasure of accomplishing a great feat comes through, too—one that we depend on in our everyday work. All of us who love words would find this book a pleasure.

Walter J Pagel

Walter Pagel, ELS(D), is director of scientific publications at The University of Texas M D Anderson Cancer Center, Houston, Texas.

Her-2: The Making of Herceptin, a Revolutionary Treatment for Breast Cancer. Robert Bazell. New York: Random House; 1998. xx + 214 pages. Hardcover \$23.95. ISBN 0-679-45702-X

As recognized at the most recent CBE Airlie House retreat, editors from journals, academe, industry, and elsewhere can gain much from a better understanding of sectors other than their own. *Her-2: The Making of Herceptin, a Revolutionary Treatment for Breast Cancer*, which traces the development and testing of Herceptin, a bioengineered monoclonal antibody recently approved for treating metastatic breast cancer, provides engaging glimpses of various sectors and their interaction.

Among those sectors are academe, where underlying research and later clinical testing occurred; industry, especially the biotechnology company Genentech, which brought Herceptin to market; corporate philanthropy in the form of research sup-

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port to academe from the cosmetic company Revlon; the US Food and Drug Administration; health insurers; breast-cancer activists; and the popular media. Stories of several women who have benefited from the treatment serve as a unifying framework for the book. Historical and scientific contexts are presented, ethical issues are touched on, and background is provided on such items as the conduct of clinical trials. The repeated role of serendipity is portrayed, as is the influence of personal factors. And politics receives considerable play.

The author of this book, which targets a general readership, is Robert Bazell, who is chief science correspondent for NBC News and has done graduate work in immunology. As mentioned in the end notes, the book draws mainly on interviews and observations by the author. However, the notes also cite journal articles, especially those reporting research on which the treatment is based, and identify works that provide historical, sociologic, and other context.

In keeping with the author's background and profession, the book appears scientifically sound and is readable, with clear explanations overall, effective pacing, and abundant human interest. It is timely, opening and

closing with the May 1998 American Society for Clinical Oncology meeting, at which findings from trials of Herceptin were presented. The book sometimes seems to verge on the melodramatic or sensational—for example, in wording used, in some of the discussion of the women with breast cancer, and in the subtitle, “The Making of Herceptin, a Revolutionary Treatment for Breast Cancer”. (“Novel” might have been more apt than “revolutionary” and might have represented nicely the sometimes novelistic quality of the tale.)

A section of the book that may interest editors especially is that on the origin of the trade name Herceptin. “From the outset”, Bazell writes, “everyone [at Genentech] assumed it would begin with Her because of the gene's name and the obvious connection to a woman's disease.” (Herceptin is used for tumors that overexpress Her-2/neu, the protein coded for by the Her-2/neu gene.) The “ceptin” portion, standing for “intercept”, comes from part of a name proposed by a company specializing in naming drugs. Before choice of the name Herceptin was final, extensive searches were done “to find out whether the name meant something offensive in any language and whether any-

one had ever tried to copyright any part of it”.

Among the acknowledgments in the book are brief thanks to 3 persons for help with writing, editing, or research. On reading such credits, I often wonder whether the persons' contributions ought to be described more specifically. Perhaps while CBE is considering authorship issues regarding scientific papers, it should look at assignment of credit and responsibility with regard to books.

In short, Her-2 is an informative and lively read. Care must always be taken, of course, not to generalize too widely from case studies. Nevertheless, for biology editors and others wanting to learn about various sectors and their interplay in developing new medical treatments, this book is an absorbing and instructive start.

Barbara Gastel

Barbara Gastel is a faculty member at Texas A&M University, where she coordinates the master's degree program in science and technology journalism. Her recent publications include *Health Writer's Handbook* (Ames: Iowa State University Press; 1998).