

♦ The Ways and Words for Communicating Science

Selling Science: How the Press Covers Science and Technology

Dorothy Nelkin. New York: W.H. Freeman and Company; revised edition, 1995. x + 217 pages. Softcover \$15.95, ISBN 0-71672-595-9

Victor Cohn, a science writer at *The Washington Post*, said, "There are only two kinds of medical reporting: New Hope and No Hope." This "guideline", sometimes referred to as Cohn's Law, usually results in sensational stories in the press that later fizzle out or prove to be other than what they initially seemed to be. Such reporting gives both science and journalism a bad image in the public mind. Does the blame lie with journalists or scientists?

With both, says Dorothy Nelkin, a professor at New York University whose research is in the areas of science, technology, and society. In this book, Nelkin examines the images of science and technology presented to the public through the media (the focus is on print journalism), and the characteristics and constraints of both science and journalism that lead to the generation of these images.

Most people get their perception of science through the media. In a world where science and technology are rapidly evolving and affect decisions that have a communal impact ("Ought we to permit a nuclear plant in the neighborhood?") or a personal impact ("Ought I to be taking Prozac?"), it is important for scientists, communicators, and lay people alike to understand the process of communicating science and technology so they can better evaluate what is being presented in the media.

This well-organized book guides the reader through this process, focusing on the recurring images used by journalists to describe the work of scientists and the impact of technology, and then goes on to examine how these media messages are received and how they influence decisions. The author then briefly explains the press culture that leads to certain images being repeated and how the editorial process leads

to the selection of certain stories.

The book illustrates its points with many examples (it was revised in 1995 to include more current examples). Early in the book, using the story of interferon as an example, Nelkin unfolds a pattern that is later elaborated in the book. The author remarks that all too often imagery ("wonder drug", "killer drug", "dramatic new cure") replaces content ("what is the actual nature of the research?"). Even when the focus is on research, it is often presented as a series of dramatic events with scant attention to the substance of science—how slow and painstaking it can be, and more importantly, what its limits are.

Another distracting feature is the presentation of the race to be first. If a new technology is being developed, who are the scientists (or institutions) involved? Who will make the breakthrough? Even the Nobel prizes are reported as though they were the Olympic Games ("America sweeps the Nobel Prizes").

Scientists, far from being neutral, want a favorable press because they equate public interest with research support—that is, a favorable press has a positive influence on those who control the purse strings. But the public is often confused; the same people who support a certain kind of research may also endorse animal-rights movements that oppose the procedures on which that research is based. So while scientists criticize journalists for inaccurate reporting, journalists blame their sources for giving them misleading, inaccurate, or incomplete information.

The journalistic process is also not well understood by the public or by scientists. After the story is written, the reporter or staff writer has no control over it. An editor (or editors) decides whether or not it will be used and in what form it will appear. Then it is copyedited, given a headline, and slotted to page 1—or page 12. All this is done without consulting the reporter, who first sees the final version in the paper along with the other readers.

Just as a biotechnology company is a business based on science, a newspaper is a business based on the dissemination of

information. And editors are concerned with attracting readers and stepping up the circulation—otherwise they do not remain editors for very long! The accent can therefore shift from accuracy and significance to color and excitement. Reporting on the Human Genome Project often focuses on discoveries of genes linked to various cancers; what is not made clear is that discovering the link does not automatically mean that the disease can be cured, but now public expectations are raised nonetheless.

The issues of a journal (*Science* and the *New England Journal of Medicine* are cited by the author) are often sent to members of the press before they are sent to subscribers; the journals want to maintain an image of being key sources of scientific information—information that is also newsworthy. They will not publish any article that has appeared in the press or in other journals. This often upsets journalists, who feel that this violates the public's right to know.

Obviously there is much that journalists and scientists need to know about each other—and that the public needs to know about the process of how they get their information about science. This book is a good overview of the subject. Although one feels the author could have delved more deeply into various issues, doing so would have added to the book's length. Perhaps it is best the way it is—a summary that can provoke readers to think about issues that they have glossed over previously, even those readers who are professional science communicators.

Vishwas Gaitonde

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The Scientific Voice

Scott L Montgomery. New York: The Guilford Press; 1996. 459 pages. Hardcover \$44.50, ISBN 1-57230-0126-7; Softcover \$19.95, ISBN 1-57230-019-1

When I was asked to review Scott Montgomery's new tome, *The Scientific Voice*, I discovered that to do so would be a formidable task. This is an imposing piece of scholarship that offers an enormous amount of material. It is neither an easy, straight-through read nor an easy work to put in a nutshell. Instead of reviewing it, I offer a radio episode (which I based largely on Chapter 3 of the work) in hopes that it will give something of the flavor of the work and attract anyone who would profit from pursuing it further. The episode (which aired in Houston on 31 January 1997) follows.

Geologist Scott Montgomery's book, *The Scientific Voice*, dives deeply into the language of science, and what he finds is anything but scientific detachment. He tracks the way the language of science bends science itself to fit cultural norms and metaphors and gives examples: psychology, Japanese science, and how we've studied the moon in terms of the language we use to describe it.

His most telling chapter might be the one on medicine and language. For example, when Harvey studied blood flow in the 17th century, most people thought blood made 1 pass through the body—that it was generated, then consumed in various tissues. Harvey showed blood moved in a closed loop, and he called that motion "circulation". Others had suggested a closed loop, but it hadn't caught on. Blood didn't circulate until Harvey gave us the right word.

A huge linguistic transition occurred around 1870, and Louis Pasteur had much to do with it. Early 19th-century doctors still said the plague "infected" people or "lay upon" them. It didn't "attack them", or "strike them down". That's what armies did, not diseases. When Pasteur was young, disease was caused by an "excess of irritation" or an "overabundance of vital force". But, at the

same time that he articulated his germ theory, the language of Europe was shot through with military metaphors. Politics also used metaphors that cast the nation-state as a living being. Bad policy might be called a "disease" in the body politic. Germs then became an invading army. While the Prussians lay siege to Paris, Pasteur was saying that, in fermentation, germs "laid siege" to beer and wine. He pressed the analogy relentlessly. When he wrote on public affairs, he said France had been "enfeebled" by revolution and "rendered sterile" by political theory.

For over a century since, medicine has embraced those metaphors. AIDS stalks us; it uses many strategies in its attack, and it invades and kills T-cells. Disease strikes the body's defenses. As doctors became soldiers at war with illness, the metaphor carried into medical practice. An intern's training resembles nothing more than my own experience in basic training. Hospitals are organized in a militaristic hierarchy with the doctor as general.

Alternative medicine has become less a body of technical knowledge than an attempt at linguistic reform, and as it tries to claim legitimacy, it too slips back into mili-

tary metaphor. It calls the mind to marshal "forces" of good in the "battleground" of the body.

The only way we'll bring medicine into better alignment with our human nature, Montgomery says, is by heightening awareness. Just as we've had to do in areas of sexism and racism, we have to be aware of the words we use. Medicine can be changed and, indeed, it must be. The military metaphor has reached the end of its usefulness, but the necessary changes are ones we can make only after we've created a new language of medical discourse.

John Lienhard

John Lienhard, professor of mechanical engineering at the University of Houston, Houston, Texas, teaches courses in engineering and the history of science. He is the writer and narrator of a nationally syndicated daily radio program, "The Engines of Our Ingenuity", a series about "the machines that make our civilization run and the people whose ingenuity created them." This review first appeared as a segment entitled "Pasteur and Biomilitarism: The Language of War Attaches Itself to Medicine".

Medical Science Writer

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