Writing Science

Even when it's for a popular audience, the process educates reader *and writer*

By Karen Young Kreeger

Some scientists would call writing the most excruciating part of their jobs. Others would say it's an act of joy, or at least it doesn't cause great pain. For a small cadre, writing for audiences outside of their peers--the communications that generally don't count toward promotion and tenure--is also a second career.
To be sure, writing for the popular press is nothing new in science. Veteran scientist-authors such as **Carl Sagan** were profiled in *The Visible Scientists*,[1] a book that was published more than two decades ago. These researchers and many more are attracted to writing for general audiences in various outlets--books, magazine articles, newspaper columns, encyclopedias, educational CDs--for many reasons.
"The motivation is a very sincere desire to get the word [about discoveries] beyond the academy out into the culture," says **Angela von der Lippe**, a senior editor with W.W. Norton & Co. in New York. "Oftentimes the language of science is very different [from everyday talk], so it's especially fortuitous when a scientist is able to translate those ideas beyond the jargon into common parlance." She adds that when news about scientific findings comes from researchers, it reaps more credibility with readers.
"I found that writing for a popular audience is actually a good test of how understandable experiments are," remarks **Dean Hamer**, a molecular geneticist with the National Cancer Institute. Hamer has written two popular books and is working on a third, which is about the biology of the religious experience. "If you can't explain to someone what you've discovered in regular words, then what you've discovered is probably not very fundamental."
Lawrence M. Krauss, Ambrose Swasey Professor of Physics, professor of astronomy, and chairman of the department of physics at Case Western Reserve University, echoes von der Lippe. He says he has a personal sense of returning a favor to scientist-writers such as **Albert Einstein,** who sparked his interest in the universe as a child. "Then there's a more general feeling that scientists funded by the public owe it to them to explain what they do, and the less altruistic aspect that unless we explain what we do, we can't expect the funding to last."

Seeds of Inspiration

The motivations for writing for a general audience are as varied as the scientists who do it. **Barbara Gastel**, an associate professor of journalism and of humanities in medicine at Texas A&M University, and others are interested in enjoyment, a chance to stretch their creativity and breadth of subject matter, and the opportunity to reach a larger, more diverse audience. "Very often, for journals, one ends up writing about very narrow areas," she notes. Gastel writes for science magazines and most recently authored *Health Writer's Handbook*.[2] Another reinforcement, she says, is the rapid publication, which is on the order of days to weeks for newspapers and some magazines, compared to a year or more for scholarly journals.
Writing began as a necessity for **Meredith F. Small**, a professor of anthropology at Cornell University: "Initially I did it because I needed to pay the rent. The surprise was that I could do it." She started out writing humor pieces for local newspapers under a pseudonym. "That's where I learned how to interview and write fast."
Small's been at it for 10 years, and science writing has become the primary way she makes a living. She now writes for such magazines as *Discover*, *Natural History*, *The Sciences*, and *New Scientist* and has authored several trade books on anthropology. "My favorite part is getting a complex subject that has different threads and pulling it together in 3,000 words," she adds. "And, of course, it's really fun when you see your article on the cover of a magazine."

Scott Elias, a fellow at the Institute of Arctic and Alpine Research at the University of Colorado in Boulder, who studies fossil insects, has written--among other popular and scholarly books--a series on Ice Age environments in national park regions of North America. He's also penned articles for such magazines as *Earth* and *BioScience*, and for encyclopedias. He is writing the content for an interactive CD-ROM, funded by the National Science Foundation, on Arctic science for Alaskan middle-school students.

"One of my main motivators is to be a teacher other than in the classroom," says Elias. "It's pretty gratifying when someone tells you that they read your book and now they understand a topic they didn't understand before. I don't want to sound altruistic, but I do want to reach the general public, especially when it concerns natural history and conservation issues."

Whit Gibbons says that a point of popular science writing is that an interesting subject, such as an alligator, is always a good prop for catching a reader's interest.

More than 25 years ago, a local newspaper asked **Whit Gibbons**, a professor of ecology at the Savannah River Ecology Laboratory of the University of Georgia located in Aiken, S.C., to write a short popular article about the lab's research. "The response was amazing," recalls Gibbons. "There was a hungry audience out there. So we decided to make it a regular column." It now appears in several newspapers that belong to a New York Times Co. regional group. Gibbons also writes for magazines and encyclopedias and has authored popular and scholarly books.

He says that the initial column made an enormous difference in local attitudes toward the Savannah River lab. "Instead of being this mysterious, elite, white-coat set of people, we demonstrated that we do real things."

The nature of his scientific work also is important to Hamer, who feels that because he researches controversial topics, he has a responsibility to communicate to a wider audience. His first book, *The Science of Desire*,[3] chronicled his lab's efforts to find genes involved in sexual orientation. His most recent, *Living With Our Genes*,[4] covers genes and personality. "I've worked in areas that have social impact and I've always felt that [scientists] really have an obligation to express our view on how the research should or should not be used and to make sure, where we can, that the information is used in a good way. Writing popular books is part of doing that."

Career Enhancer

Another motivator, Elias says, is that he learns a lot during the writing process, which in turn informs his scholarly work. "It broadens your outlook and makes you a better scientist." His general writing also helped him land the NSF CD-ROM grant.

As with Elias, Small says that the subjects she writes about also inform her teaching. "I just finished a piece for *Discover* on chimpanzees, and today I gave a lecture that was totally different from what I gave a year ago because I learned something new." Small most recently wrote *Our Babies, Ourselves: How Biology and Culture Shape the Way We Parent*,[5] which she says has changed how she thinks as an anthropologist.

Writing popular science books has opened up new opportunities for Krauss. He has written three popular books about the physical sciences. The most recent is *The Physics of Star Trek*.[6] "Now I interact in areas that I never dreamed I would." For example, in addition to his responsibilities at Case Western, he works with groups such as the Department of Energy, where he is helping to develop a strategic plan for research. "This enables me to be an advocate and defender of science."

Support and Criticism

Barbara Gastel

Many scientist-authors say they have received mixed reactions from other researchers regarding their outside writing pursuits. Gastel ticks off a list of potential reasons why colleagues would criticize popular writing efforts: "One, there's a limited amount of time that one can spend working, and there are some who feel that if [scientists are] not doing straight scientific research and publishing, they're not making good use of their background. Second, in general, writing for popular media is not heavily rewarded when one's up for promotion. Possibly there may be some people who are jealous of the attention."

"Professionally it's an interesting quandary because some of my colleagues think it's a total waste of time," says Elias. "But the dean of our graduate school thinks it's a great idea--so as long as you have a few people above you in the hierarchy on your side, it helps." On the other hand, he adds, his general-interest books don't get any more weight than a three-page article in *Science* or *Nature* on annual evaluations.

At the time Gibbons started his regional newspaper column, he says he wasn't popular among some colleagues. "They tried to belittle it. What you have to do is build up your scientific credentials to be immune from that." He says that first an aspiring scientist-writer must establish credentials as a scientist.

For others the experience has been more positive. Anthropology, notes Small, has a long history of writing for a popular audience. "Think about **Jane Goodall**, **Richard Leakey**. I find that my primate [researcher] friends are absolutely thrilled. They say, 'Thank goodness you're doing this because you'll get it right.'" But, she adds, "I think some of my other colleagues are less pleased. They see it as fluff. But two years ago, I made full professor at Cornell and was completely honest about what I was doing; and to my surprise, the department--only the full professors vote--said they thought it was great."

Krauss has had a positive experience as well. "I have found among the science community nothing but support. I was surprised, especially with *The Physics of Star Trek*." He was concerned about the reaction from both the scientific community and the *Star Trek* fans themselves. "One of my first fan letters said: 'I've been waiting 30 years to read a *Star Trek* book in the science fact section of a bookstore.' But as far as the scientists are concerned, because I try to remain true to the science, I think that explains their reaction," he concludes.

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