

Physicists as Journalists

A background in physics has given many journalists an advantage in the rewarding field of science writing.

BY ROBERT IRION

As an undergraduate at the Massachusetts Institute of Technology I survived the infamous “8.03”—one in a series of brutal physics courses at MIT designed expressly (or so it seemed) to put students through the intellectual wringer. They have names—8.03 is Physics III: Vibrations and Waves—but at MIT students simply spit out the number: “8.01” instead of Classical Mechanics or “8.02” for Electricity and Magnetism, and so on. By the time I got to 8.07 and 8.08 I had grave doubts about whether I was cut out to be a scientist. And when my senior research project in astronomy became a horrendous slog of data analysis, I knew I couldn’t face five years of graduate school to earn that Ph.D. in astrophysics I’d always thought I would pursue. Fortunately, an enlightened instructor named Rae Goodell steered me toward a new path during my last semester: science writing.

In Goodell’s writing course, Science Journalism, she asked us to interview MIT researchers doing interesting work that no one knew about. I approached this assignment by wandering the hallways of the physics and chemistry lab buildings until I came upon a poster on utilizing lasers to study how proteins in the eye bind to form cataracts. The research team was happy to talk to me, and to my amazement my story made the pages of an MIT research newsletter—a published article on my first try.

Nonetheless, I wondered whether I could possibly combine my costly training in science with my love of writing—a passion that had started in junior high school. Professor Goodell and her guest lecturers, editors and reporters from around the country, assured me that I could. By semester’s end, my cloudy vision of the future had become clear.

I worked for two years as a general-assignment reporter at a weekly newspaper near Boston, then I enrolled in a graduate program in science writing at the University of California, Santa Cruz. In the 20 years since, I have found continued challenges and rewards in science journalism. I’ve published articles on topics in astronomy and beyond, including magazine cover stories about matter clashing with antimatter following the Big Bang, microbes in Arctic sea-ice providing clues to possible life on Jupiter’s icy moon Europa, and the influence of giant black holes at the centers of galaxies. I’ve interviewed Nobel laureates and

young scholars who, prior to talking to me, had never spoken to a reporter. I’ve gotten “fan mail” from readers convinced they have the final word on alien life, alternative theories of gravity, and traveling faster than the speed of light. Indeed, this career I happened to stumble upon—while grimly journeying through the physics curriculum at MIT—has never been boring.

Academic programs that focus on training scientists and science-interested students in the art and craft of science journalism arose in the 1980s at Boston University, New York University, UC Santa Cruz, and elsewhere. (For a list of the most prominent such programs today, and a link to all science-writing courses at U.S. universities, see the sidebar “Graduate Programs in Science Journalism.”) Since then, the ranks of the reporting profession have swollen with writers sporting Bachelor’s Degrees in science, or Master’s Degrees, or even Ph.D.s. These journalists draw upon their knowledge of the working lives of scientists to write rich stories about the research enterprise, not just news about the hottest new cure or the latest climate scare.

Former physicists are part of this cadre of writers. But the balance is skewed: Most science-trained journalists studied the life sciences earlier in their careers. The UC Santa Cruz program—which I now direct—usually has just a couple of physical scientists in each year’s class of 10 students. This tilt toward biology and medical writers—also reflected in informal figures from other programs—makes talented physics writers in high demand by editors worldwide.

When *Interactions* asked me to write about journalism as a possible career choice for physics majors, I had a great excuse to quiz some of my writing colleagues around the country about their pasts. I wanted to know about their transition from scientists to writers and editors for newspapers, magazines, and research organizations. Although some dove into the uncertain waters of science writing sooner than others, no one has looked back with regret. Here are some of their tales.

The magazine industry

Scientific magazines must cater to a targeted niche of readers. For instance, *Popular Science* offers a wide variety of research

Matt Payne

and technology content for nonscientists, while *Nature*, a leading science journal, plumbs the rich depths of science and policy primarily for an academic audience. Former physics students play central roles as writers and editors at both magazines.

In 1998 a team of astrophysicists at the University of California, Berkeley, produced the first convincing evidence that “dark energy” causes the cosmos to expand at an accelerating rate. Michael Moyer was an undergraduate research assistant on that team. While Moyer enjoyed explaining the research findings and its “weird” implications to friends and family, the work was high-pressured and hectic, due to an intense competition with a rival team. Furthermore, he loathed the many hours of elaborate computer coding.

Not yet ready to abandon academia completely, Moyer enrolled in Columbia University’s master’s program in philosophical foundations of physics as a trial run for a possible career in academia. But then Moyer attended a job fair in New York City that led to a writing internship at *Popular Science*. “As the person on staff who understood physics,” recalls Moyer, “I was a great asset to them.”

Moyer later became a full-time department editor at *Popular Science* for articles on new products and gadgets. He is now the magazine’s executive editor—a post he landed just six years after first arriving as an intern.

Geoff Brumfiel also turned away from graduate school in physics research, but for a different reason. As an undergraduate at Grinnell College in Iowa, Brumfiel majored in both physics and English. During summer research programs, his mentors seemed unhappy with their work as graduate students. Instead, another option caught Brumfiel’s attention: writing seminars at Johns Hopkins University, advertised on a poster.

Brumfiel enrolled at Johns Hopkins intent on earning a Master’s Degree in creative writing. His goals changed yet again once he got an internship at *Physical Review Focus*, an online news service published by the American Physics Society (APS). His editor, David Ehrenstein, who has a Ph.D. in physics, demands that writers understand a scientific study thoroughly before try-

ing to write about it. “He always wanted more details,” Brumfiel says. “It was a great place to learn persistence as a reporter.”

After the internship at APS and several rejection letters, Brumfiel landed a job as a correspondent in the Washington, D.C., office of *Nature* magazine, where he covers science and politics. He is moving to London to continue this work in the home office of *Nature*.

Science at *The New York Times*

Kenneth Chang also is no stranger to rejection letters. He estimates that he opened about 50 such notices when he applied for newspaper writing internships during the mid-1990s. But today, through dogged persistence, he works as a science reporter at *The New York Times*.

Chang studied physics as an undergraduate at Princeton and spent seven years in the graduate program at the University of Illinois. But during his doctoral research on controlled chaos, Chang felt his grasp of physics slipping away as he focused on the minutiae of one project. He turned to a position at the *San Francisco Chronicle* as a Mass Media Fellow—an annual program sponsored by the American Association for the Advancement of Science that gives scientists exposure to the working world of journalism. Chang wrote 30 articles during a 10-week stint at the *Chronicle*. “That was the first time I realized I could combine writing and science,” he says.

While enrolled in the science writing program at UC Santa Cruz, Chang met guest lecturer Cornelia Dean, who at the time was deputy science editor at *The New York Times*. Dean read his *Chronicle* clips, and she encouraged him to keep in touch. Chang worked at a few other newspapers and at ABCNews.com, but after five years of correspondence with Dean his persistence paid off. After Chang endured numerous interviews with editors, *The New York Times* created a position for him to cover the beats of other science writers when they were away.

Today Chang writes and reports on subjects ranging from geology and chemistry to solid-state physics and the space program. When he conducts interviews, he doesn’t volunteer that

GRADUATE PROGRAMS IN SCIENCE JOURNALISM

by Robert Irion

Many graduate schools offer courses that focus on writing about science, health, or the environment as part of a broader curriculum in journalism. A website maintained by the University of Wisconsin (www.journalism.wisc.edu/dsc) provides a comprehensive directory.

Graduate programs specializing in science journalism:

Boston University

Degree program: Master’s (1.5 years)

Website: www.bu.edu/com/jo/science

he has a physics background. "When asked," Chang explains, "I say, 'Yes, but assume I don't.'" The main advantage of his training in physics is knowing how to judge the reliability of research results, he says.

Physics and Public Affairs

The slide in newspaper readership and corresponding revenues has made Chang's career path rarer in recent years. However, writers with physics training continue to prosper at scientific institutions that promote research directly to the public.

The Stanford Linear Accelerator Center in California, for example, produces *SLAC Today*, an electronic daily publication featuring news and information by and about the SLAC community. "It's just like working at a newspaper," says Kelen Tuttle, *SLAC Today's* editor. "The pace is absolutely insane."

Moreover, Tuttle has been pleasantly surprised at the lack of "spin" demanded. Specifically, no one exerts pressure to hide news that could cast a negative light on the U.S. Department of Energy facility, Tuttle says.

Her path to SLAC started at Carleton College in Minnesota, where she studied physics, astronomy, and English. But it was her summer work experiences that foreshadowed what career lay ahead. She far preferred writing for the Association for Women in Science, located in Washington, D.C., to conducting astrophysics research at the University of Wisconsin, Madison. Accordingly, Tuttle enrolled in the master's program in science journalism at Boston University. In 2005 she started work at *SLAC Today*—just days after completing her degree in Boston.

As head of public information at the Fermi National Accelerator Laboratory in Illinois, Kurt Riesselmann works in a set-

ting similar to Tuttle's. But for years earlier in his career, he was a working physicist. Riesselmann, a Fulbright scholar, studied at the University of Oldenburg in Germany, and earned his Ph.D. at the University of Wisconsin. His doctoral work focused on devising theoretical calculations of the Higgs boson. But Riesselmann faced an uncertain future when the U.S. Congress axed funding for the Superconducting Super Collider (SSC) just as he was finishing his doctorate.

Riesselmann returned to his native Germany and landed a postdoctoral position at the Zeuthen branch of the DESY particle physics lab. At the end of his postdoc, he accepted an invitation to coordinate the lab's public outreach program.

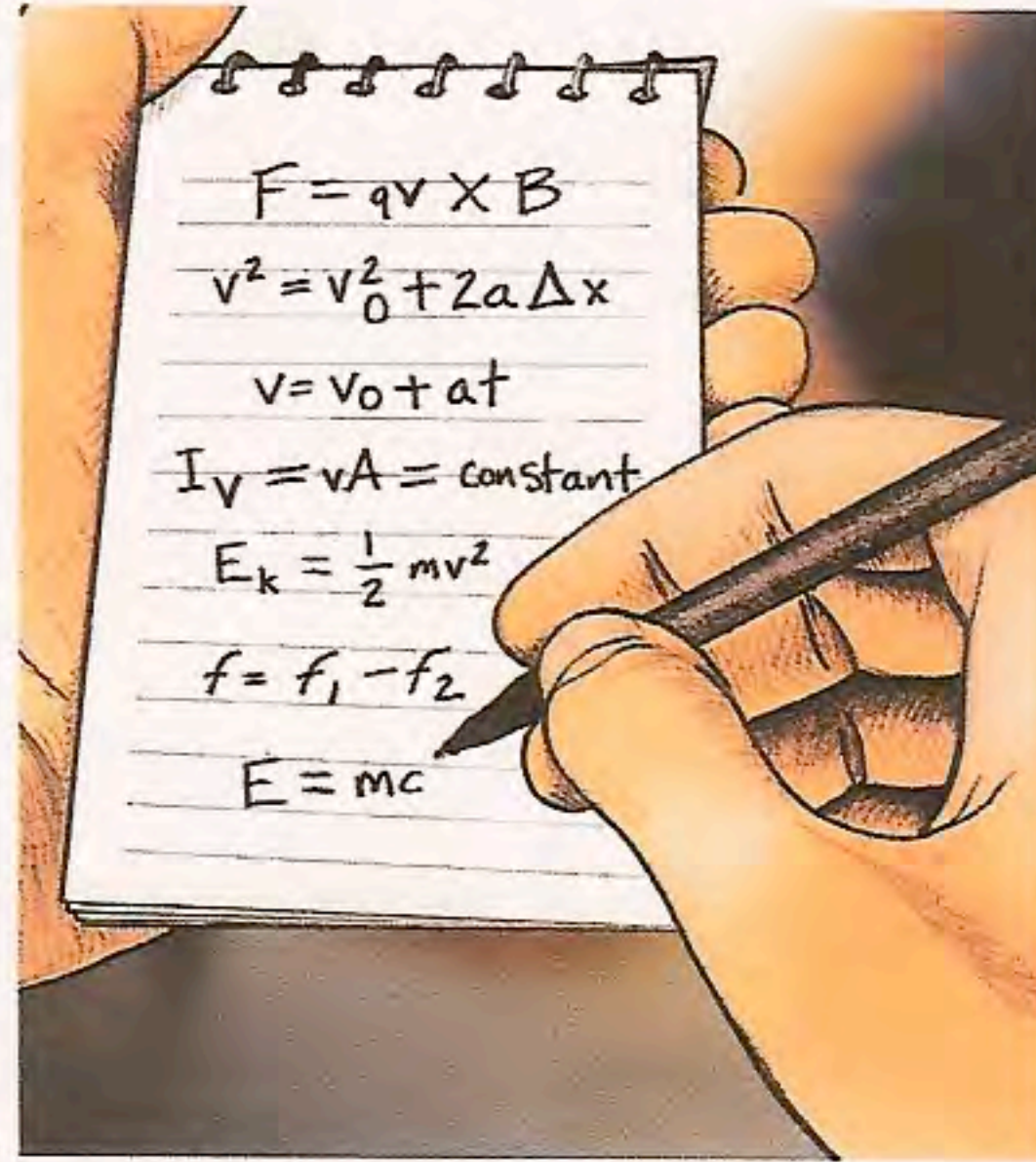
Two years later, Fermilab hired Riesselmann for its public affairs office, where he now edits the online newsletter *Fermilab Today* and the joint Fermilab-SLAC magazine *symmetry*.

In a twist of fate the search for the Higgs boson has heated up at Fermilab. So, does Riesselmann miss the science? No, he confesses, [because] "I'm right in the middle of it."

Ben Stein also is in the midst of national physics, by virtue of his 16 years at the American Institute of Physics (AIP) in College Park, Maryland. Stein serves as manager of media relations for AIP's member societies, including the Acoustical Society of America, the

American Association of Physicists in Medicine, and the AAPT (publisher of *Interactions*).

Stein worked in a condensed-matter lab while an undergraduate at Binghamton University in New York. While struggling through his senior research project, he visited the campus career office "out of desperation." Stein had been editor of a campus magazine; so, he recalls, "The counselor asked if I had thought



Johns Hopkins University

Degree program: Master's (One year)
Website: web.jhu.edu/writingseminars

Massachusetts Institute of Technology

Degree program: Master's (One year)
Website: web.mit.edu/sciwrite

New York University

Degree program: Master's (1.5 years)
Website: journalism.nyu.edu/prospectivestudents/coursesofstudy/serp

University of California, Santa Cruz

Degree program: Certificate (One year)
Website: scicom.ucsc.edu

about science writing.” He decided to enroll in the writing program at New York University, where he had the distinction of being the only physicist in his class. His first internship offer came from AIP, and he liked the work well enough to stay.

Life as a Freelance Writer

Like Stein, Don Monroe distinguished himself at New York University’s journalism school, but for a different reason: Monroe, who had earned his bachelor’s and doctorate at the Massachusetts Institute of Technology and had worked as a physicist for nearly 20 years, was also the oldest student in his class.

Starting in 1985, Monroe devoted his working hours to integrated circuits and optoelectronics at the famous Bell Labs in New Jersey. However, progress on his research stalled when Lucent Technologies, the parent company of Bell Labs, spun out its microelectronics research into a separate company called Agere Systems in 2002.

“Once you get into research, it’s hard to do something else,” Monroe recalls. But an appointment onto a panel investigating charges of scientific misconduct against a Bell Labs researcher and the opportunity to write part of the report on the panel’s findings “planted the psychological seeds of being a writer.”

At NYU, Monroe initially found the pace of producing a news story daunting, but his confidence rose after only a few classes on the basics of news writing and reporting. “I got the hang of [shaping] a story out of a bunch of interviews and facts. I began to feel like a journalist.”

Indeed, by the time he finished at NYU, he was confident enough to branch out on his own as a freelance writer. Today, his clients include the New York Academy of Sciences, a magazine on supercomputing published by the Department of Energy called *SciDAC Review*, and a newspaper for biologists called *The Scientist*.

“I’m making significantly less than I did as a full-time scientist, but I learn so much more now, about so many different things,” Monroe says. “And the flexibility of choosing when to work is wonderful.”

For Monroe and for many others, science journalism has been an appealing path. The profession does take a relentless drive to tell others about science, as well as a natural talent for writing. Scientists can contribute to society’s understanding of science in many other ways (see sidebar, “Physicists and the Public”). But for those with a yen to devote their lives to the written word, journalism can shape those years of scientific training into a satisfying new career. Δ

Robert Irion directs the Science Communication Program at the University of California, Santa Cruz. He has written about physical sciences for Science, Discover, New Scientist, Smithsonian, and other magazines, and he is coauthor of One Universe: At Home in the Cosmos (Joseph Henry Press, 2000).

PHYSICISTS AND THE PUBLIC: HOW TO MAKE A DIRECT CONNECTION

You don’t need to change careers to make an impact on the public understanding of science. Indeed, there are many ways for physicists and physics teachers to reach audiences beyond the classroom. Some are old-fashioned; others rely on the new era of Web 2.0. If you care about how our society perceives physics, try some of the following approaches:

- **Contribute to an “Ask a Physicist” column online.** Magazine readers love to send questions for experts to address, from the obvious to the obscure. Many departments now create ties with their communities by posting such queries on their Web sites. It’s a kick for faculty and grad students to reply.
- **Design your Web site for a lay audience.** Most federal grants now require an “Education and Public Outreach” program to describe the research to taxpayers and students. University labs should do this routinely, with text and photos. High-school classes can post news about field trips, science fairs, and cool videos of kids learning how the world works.
- **Write op-eds about issues in science.** Opinion editors at local newspapers seek fresh voices and perspectives on news stories. Your expertise will draw readers into a well-written column. Tackle pseudoscience, deflate misconceptions about global warming, or (if you dare) explain why the quest for nature’s basic laws is worth billions of dollars.
- **Blog about physics or science in general.** Current or former researchers write some of the most widely read blogs in science. The technology is a snap, but be warned that a blog only gains readers with regular and topical postings.
- **Host or speak at lectures and science book clubs.** The Web is wonderful, but a live talk is still the best way to excite an audience. Seek out community groups that might value your insights for an evening, or start one of your own. It will grow with time, and it’s a great way to keep in touch with popular opinions about life, the universe, and everything.