BOOK REVIEWS

Serious Thrills

William Frucht

Over the past decade or so, the "trade" publishing world—the part of book publishing that normally deals with celebrity bios, diet books, insiders' memoirs of the Reagan administration, and anything else most readers buy for entertainment—seems to have discovered that there is an audience for serious science books. The appearance on the bestseller lists of authors like Stephen Jay Gould, Roger Penrose, James Gleick, and especially Stephen Hawking, and the lively sales of many science books that didn't make bestsellers, have convinced many publishing professionals who once thought otherwise that science books sell well. It is one thing to know this as a fact, however, and another to understand the reasons (and the readers) behind it. People who specialize in publishing science books for general readers may be thought of as a small cult that is unsure whether to spread the word or not.

The great publisher Kurt Wolff once wrote,

> Either you publish books you think people *ought* to read, or books you think people *want* to read. Publishers in the second category, publishers, that is, who slavishly cater to the public's tastes, do not count in our scheme of things. . . . For publishing activity of this kind you need neither enthusiasm nor taste. You simply supply the products for which there is a demand. You need to know what activates the tear glands, the sex glands, or any other glands, what makes the sportsman's heart beat faster, what makes the flesh crawl in horror, and so on.
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> Those of us publishers who belong to the other category make an effort—even though it is certainly of the most modest scope—to be creative; we try to win readers for works which appear to us to be original, of literary merit, and important for the future, no matter whether they are easily understood or not. This applies both to nonfiction and to fiction.

Only a publisher of Wolff's genius could have lived by this credo and stayed in business. For most of us in publishing, it is bad advice, leading either to alienation from one's readers or to a sense of having sold out. Yet the central idea—that a publisher may value either substance or sales, but not both—exerts a strong unconscious influence. In trade publishing, it explains why hardly any manuscript meant for a general audience gets sent to an outside expert for review before it is accepted for publication. In scholarly publishing, it explains why good, thorough editing is widely considered a waste of money. And it explains, by negative example, how we should think about science books.

If we accept that Wolff has presented us with a false dichotomy, then it follows that some books both activate the glands and are, if not quite "important for the future" in the same sense as the novels of Wolff's author Franz Kafka, at least intellectually satisfying to us in the present. It turns out that in science publishing examples are not so hard to find. They are the most popular science books on the market. Taking an important subject seriously and giving readers a thrill turn out to be mutually reinforcing qualities.

What are the characteristics of these books?

It's an inescapable and often infuriating fact that not all areas of science make subjects of salable books. Moreover, the popular reception of a book cannot necessarily be predicted from the level of excitement among the people who work in the field. When high-temperature superconductors were making headlines in the late '80s, a handful of books on the subject came out—none of them were classics, but one or two weren't bad. As far as I know, none of them sold well. Similarly, today I can imagine someone writing a very good book on fullerenes, but I can't imagine it selling. (Recently I learned that someone is at work on what promises to be an excellent book on fullerenes. I hope he proves me wrong.)

When you look at what does sell, a striking pattern emerges. One publisher I know describes what he looks for in a science book as "making readers feel they are touching God." Let me be careful to interpret this remark in the shallowest possible manner: without commenting on either modern science or modern religion, I would suggest that *in the marketplace* science books perform a role that has much in common with the role of religion. They address ultimate questions. When readers want to know how the world was made they read books on cosmology. When they want to know how human beings came to exist they read books on evolution or paleoanthropology. When they wonder what makes humans unique among all of creation they read books on the mind and artificial intelligence.

Although this scheme accounts for the popularity of some subjects, it leaves out others, such as fractals, history of mathematics, dinosaurs, and the lives of famous physicists. I would therefore subject this idea to cosmic inflation and employ a phrase the science-fiction community uses: sense of wonder. The sense of wonder is the feeling of catching a glimpse of some profound truth, that someone has moved aside the veil of our everyday ideas and perceptions and revealed a bit of the world as it actually is.

Why is providing a sense of wonder not merely a cynical pandering to the desires of the market? When I was an editor I once stopped by a physiologist's office to discuss his plans for writing a scholarly monograph on the regulation of intracellular acid-base balance. This fellow had uncovered some novel mechanisms, and he took half an hour or so to outline them for me. I don't remember the mechanisms any more, but I do remember the man's satisfaction in describing them—they were an elegant and beautiful system that had been unknown until he discovered it. I think his experience, which almost all good scientists share, is very close to the sense of wonder that the reader of science books wants to feel. In the

Making choices in a bookstore. [Photograph by Rick Kozak; courtesy of Chapters Bookstore, Washington, DC]

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best books, the reader's reason for reading them, the author's reason for writing them, and the author's reason for studying the subject in the first place are all bound tightly together.

With only a few exceptions, the most popular science books are written by scientists rather than journalists. If readers want to participate in some revealed truth, then they want to hear it from those closest to the revelation. Let me state a deeply held prejudice of mine that I think prevails in the scientific community, among lay readers generally, and in many of the reviews appearing in this journal. A journalist does research, reads some textbooks and review articles in an area, interviews people, may spend weeks or months at a laboratory every day, and may take a few years of research and writing to produce a book. Still, we don't expect that level of immersion to give the journalist a better grounding in the book's subject than that of, say, the average graduate student—a level at which one may still make, as a biochemist I know puts it, "rookie errors." Science is a complex business, full of nuances and subtleties, and explaining scientific facts and debates simply and correctly is a tremendously difficult thing to do. Many textbooks fail at it. I'm convinced that you can't explain what you haven't lived, and the longer you've lived it, the stronger and deeper your sense of what's truly important. Even a few years of living a subject is not comparable to 20 or 40 years.

The increasing population of journalists with advanced degrees in the subjects they're writing about does rather annoyingly blur this neat distinction. Still, the more you know, the greater your credibility. And very few journalists spend an entire career covering one area of science—most eventually find themselves writing about subjects they *didn't* study in graduate school.

More important than their grasp of the subject, however, is that scientists and journalists tend to write books of different kinds.

Robert Kanigel is certainly one of the better science journalists working today. His book *Apprentice to Genius* was highly acclaimed, and his latest book, *The Man Who Knew Infinity: A Life of the Genius Ramanujan*, has been praised by mathematicians who know Ramanujan and his work as well as anybody. We wanted to carry it in the Library of Science but lost it at auction to Book-of-the-Month Club, which made the book a featured alternate. (In 1990, our two organizations stopped sharing books, so whenever we want to carry the same book we now hold an auction for the exclusive book-club rights.) It can certainly serve as a typical example of a good science book by a

Reviewed in This Issue

journalist. As a typical example of a science book by a scientist, I have chosen (not at all randomly) Daniel Dennett's *Consciousness Explained*. In proposing a new theory of consciousness in a form meant to be accessible to a wide readership, Dennett is working within a tradition that goes back at least as far as Galileo's *Sidereus Nuncius*. But the difference between this book and the more common variety, which explains ideas that have previously appeared in the specialized literature, is for the lay reader largely a matter of timing.

In marketing terms these books are roughly equivalent: we won *Consciousness Explained* at auction from Book-of-the-Month Club for the same amount they paid for *The Man Who Knew Infinity*, and the two books' sales in the trade were comparable. In terms of salability and the size of the advance they could command for their next book, these authors are, if not exactly equal (I would say they differ by a factor of two), certainly in the same quite respectable league. Here is a passage from Kanigel's preface:

> Like most books, this one started with an idea. Sadly, it was not mine, but that of Barbara Grossman, then senior editor at Crown Publishers, now publisher at Scribner's. Barbara first encountered the name of Ramanujan in late 1987, a time when magazines and newspapers in the United States, India, and Britain were full of articles marking the hundredth anniversary of his birth. . . . Barbara was smitten. First, with the sheer romance of his life—the *story* in it. But also with how today, years after his death and long into the computer age, some of his theorems were, as she put it later, being "snatched back from history."
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> "Ramanujan who?" I said when my agent, Vicky Bijur, told me of Barbara's interest in a biography of him. Though skeptical, I did some preliminary research into his life, as recorded by his Indian biographers. And the more I learned, the more I, too, came under Ramanujan's spell.

Compare that account of a book's conception with the following, from *Consciousness Explained*:

> My first year in college, I read Descartes' *Meditations* and was hooked on the mind-body problem. Now here was a mystery. How on earth could my thoughts and feelings fit in the same world with the nerve cells and molecules that made up my brain? Now, after thirty years of thinking, talking, and writing about this mystery, I think I've made some progress. I think I can sketch an outline of the solution, a theory of consciousness that gives answers (or shows how to find the answers) to the questions that have been just as baffling to philosophers and scientists as to lay people. I've had a lot of help. It's been my good fortune to be taught, informally, indefatigably, and imperturbably, by some wonderful thinkers, whom you will meet on these pages. For the story I have to tell is not one of solitary cogitation but of an odyssey through many fields, and the solutions to the puzzles are inextricably woven into a fabric of dialogue and disagreement, where we often learn more from bold mistakes than from cautious equivocation. I'm sure there are still plenty of mistakes in the theory I will offer here, and I hope they are bold ones, for then they will provoke better answers by others.

What's the point of this comparison? I'm not saying that because Dennett studied his subject longer he wrote a better book. Kanigel is actually the one who cleared the higher hurdle. The number of journalists who can come to a scientific subject absolutely cold and produce a first-rate book, as Kanigel did, is far outweighed by the number of scientists who write well enough (and Dennett writes very well indeed) to explain their own work. *The Man Who Knew Infinity* is probably the best popular account of Ramanujan's life that we will have for many years, and it brings his story to thousands of readers who otherwise might never know he existed. But it is just that, a *story*, and though Kanigel tries valiantly to explain some mathematics as he goes, at times sweating audibly, no one would send any reader to this book to learn about infinite series or prime numbers. The story's success does not depend on mathematics: if Ramanujan had been a violinist or a poet, Kanigel could have written a very similar book. *Consciousness Explained*, on the other hand—while it runs the risk of being dead wrong, something I am not competent to judge—is quite a good place to learn some modern ideas about cognition and the mind-body problem. It could not have been written by anyone but a philosopher with a wide knowledge of cognitive science and neurobiology. If you remove the science from the book, you remove the book.

These two books are extreme cases, of course, but they illustrate an idea that is spreading (slowly!) through the trade publishing world: with the possible exception of biographies, science books are not about people. They are about ideas. One of the more striking effects of Hawking's *Brief History of Time* is that it has convinced editors at New York publishing houses that you can publish books that focus on the science, rather than the people who do it, and still sell books. Some people, of course, always knew this; and good books that have really put the scientific content first have always been published. But I suspect that for a long time many humanistically trained editors considered them an aberration. I've actually heard one editor rather bleakly mention "the science lump" in a book she was editing, as if it were some sort of ghastly dumpling one had to endure in order to get to dessert.

I have a vision of the editor as frustrated novelist, having just that week concluded a deal for a major sports biography and a three-book contract for a series of spy novels, reading a well-written science manuscript, putting it down, and saying, "But what's the *human* story? What *drives* these people? Readers want to hear about their personal lives, their quirks, their hopes and disappointments. They want to be able to see them in their mind's eye."

So the author, eager to be published and figuring the editor knows what he's talking about, does major revisions and comes back with passages like this:

> Clayton Green, whom even his undergraduate students called Rusty, flung his lanky marathoner's frame into a swivel chair and began logging onto his computer. "Let's see if Chaingangkov put anything on the bulletin board today," he mused. Chaingangkov, his Russian collaborator and longtime friend, was as different from Rusty as night from day, and the two often made a hilarious Mutt-and-Jeff pair at microbiology conferences. But Chaingangkov was also, at the moment, Rusty's fiercest rival . . .

And so on. This is no longer a science book, it's a docudrama with scientists in it.

The editor being satisfied that the author has really gotten to the bottom of what science is all about, the book is then published with high hopes. It doesn't sell, the editor is vaguely disappointed, and he concludes, much as he did after getting a C in tenth-grade biology, that he isn't good at science. Now, mind you, I don't know that any such scenario ever actually occurred. But many books read as if it did.

What's missing here is an understanding of the readers of science books. I think the publishing community is coming to understand those readers better and better. You don't have to talk down to them—by which I mean you don't have to sugarcoat your message with a lot of irrelevant, "exciting" diversions. They recognize the intrinsic value of science, and its intrinsic fascination. If they aren't familiar with all the details of a subject (that, after all, is one of the reasons they're reading science books), they are certainly willing to follow a lucid explanation, even a fairly involved one, if it promises a sufficiently interesting conclusion. They are interested in opinions, controversies, surprises, and revelations. They are interested in history, and they have a sense of humor. They are an intelligent, demanding readership, and they expect authors to write with clarity and passion. They are, in short, that most implausible of all audiences: they don't require one to be cynical, and they repay our trust.

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