The Pop-Science Paradox

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On the first page of Lisa Randall's "Warped Passages," there is a cartoon of two babies in a crib. A casual flip through the book shows a rabbit dancing in front of a projector, several spinning spheres, and man in a falling elevator.

Upon a closer look, the reader would be surprised to discover that, despite the title and illustrations, "Warped Passages" is not a surrealist young adult thriller, but rather a book about particle physics and dimensions written by one of the nation's most prominent physicists.

Despite the complexity of the book's material, "Warped Passages" sold well and became a New York Times "Notable Book of the Year."

The tradition of top Harvard scientists writing popular books did not begin with Randall: the famous paleontologist Stephen Jay Gould won widespread acclaim for his essays on popular science and his bestselling books on evolutionary biology, a tradition that has been continued by scientists like psychology professors Marc D. Hauser and Steven A. Pinker, who have written a combined 7 books on cognitive psychology.

"It used to be reaching out to the public was something that scientists looked down upon," said Bruce V. Lewenstein, a communications professor at Cornell who specializes in how the public understands science. "But that has been changing in the last decade, and there has been a lot of pressure for scientists to be more active in outreach."

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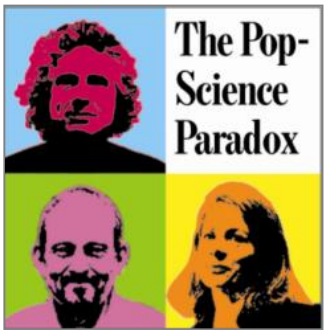

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Randall, Hauser, and Pinker are among a group of prominent scientists who are venturing out of the Ivory Tower—or the sterile lab—to share their findings with the world at large.

But while "pop science" may be easier to read than research papers, these authors have found that the process of turning complicated scientific theories into digestible bits of popular science requires them to learn to write without jargon but also to avoid oversimplification. As the professors have learned, it is often difficult to strike the right balance between advancing science and popularizing it.

'POPULAR' NOT 'POP'

Pinker said that he disdains the term "pop science," insisting that he does "not water down the science" and that the work that he produces for the public is serious.

"If I simplify, it's due to space constraints," Pinker said. "Simply put, I do not dumb down the ideas."

But maintaining complexity in their works comes at a cost—writers like Pinker, Hauser, and Randall lose a significant portion of potential readers who are turned off by the difficulty of the material, even if it is free of jargon.

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Hauser acknowledges that popular science is consumed mostly by the educated elite—businessmen, humanities professors, or even other scientists.

“A huge part of the population never thinks about picking up books about science,” Hauser said. “I am writing not for the average American, but [for] the average New York Times reader because people below that level won’t buy my books.”

Randall said that her refusal to distill physics into easily understood soundbytes prompted some to call her book “difficult” and criticize her for not being as accessible as they had expected.

“Readers who found it hard to get through blamed me, although it’s simply the material that is difficult,” Randall said. “It would have been easy to change my presentation of physics, to fib a little, but I wanted to tell the whole story.”

Indeed, one of the reasons that Pinker takes issue with the term “pop science” is that other terms that begin with the prefix—”pop music,” “pop culture”—have consumers that are not in the same demographic as his readers.

In fact, as science becomes more complex—and, by its nature, more specialized—an increasing number of Pinker’s readers are also his colleagues. Pinker said that his four “popular science” books are cited actually more often in the scholarly literature than are his research papers.

“I see the popular books as part of my scholarly mission,” Pinker said. “There is a niche for someone who can integrate and summarize an entire field, even for people in the field itself.”

A PUBLIC DUTY

Every year, billions of dollars of federal funds are disbursed to fund scientific research. While some of the result is translated into new technologies or new medical treatments, most research yields knowledge for knowledge’s sake, and is filed away in academic journals.

Pinker believes that since taxpayers have a right to access the research they fund, scientists who write popular science are performing a valuable public service.

“People have a right to have their intellectual curiosity satisfied,” Pinker said.

History of science professor Steven Shapin said that the recent influx of popular science books comes at a particularly opportune time, both because of the unique nature of 21st century science and the growing importance of science in everyday life.

“Because research is getting so specialized, we know less and less about more and more because science is getting too detailed to explain,” Shapin said. “Yet at the same time, science and technology is becoming more important in people’s life and they want to know what’s going on.”

Hauser agreed with the idea that popularized science could benefit society in tangible ways, and said that he hoped to enrich people’s lives by giving them a better understanding of science, which would allow them to make informed choices in an increasingly scientific world.

“Ninety percent of people who go to a doctor don’t think that science is behind this, they just say, ‘tell me how to feel better’” Hauser said. “When I enter a doctor’s office, the first thing I tell them is that I’m a biologist.”

“Not only do I get much better treatment, but my doctor and my dentist actually give me the reason behind their advice,” he added.

In addition to the practical use that science has in everyday life, there is also the spiritual value to be derived from simply by understanding how the universe functions, Randall said.

“Just because you don’t spend your entire life learning about particle physics doesn’t mean you don’t want to see how it all fits together,” Randall said. “I wanted to make the point that the universe isn’t necessarily so neat, I wanted the public to be able to go beyond the elegance and beauty to understand a physics that matched their reality.”

THE TRADEOFFS

Though Randall, Hauser, and Pinker all said that they enjoyed writing for the public, they also admit that becoming a popular author sometimes clashes with their primary role: to put out high-quality research.

Randall acknowledged that during her stint as an

author, she was not as active a researcher as usual. And Pinker said that in his pre-book days, he ran a lab with half a dozen graduate students, and that now he just has one or two at a time.

While Hauser acknowledged that such sacrifices are unfortunate, he said that the benefit to the public from popular science books outweighs any potential costs to the scientific community.

“[Pinker] chose to be a public intellectual as his day job, and thus, we partly lost a really good mind in cognitive science,” Hauser said. “But we gained a spokesperson who can expose the excitement of the field.”

In addition to being caught at the center of the tug of war between writing books and producing primary research, popular scientists are constantly debating exactly how to present the diversity of their fields to the public.

Pinker said that he had received criticism from scholars who accused him of ignoring evidence that did not support his views, although he said that it would be impossible to come to a conclusion if he represented everyone’s views.

“Academia is all about splitting hairs and finding flaws,” he said. “Most academics, if you ask them a basic question, they will reply that it’s a complicated question, [and] that there are 17 theories with flaws in all 17.”

But while Pinker strives to provide a straightforward answer in clear prose, Lewenstein said that even simplification is a complicated business.

“This question of what counts as an appropriate simplification is based as much in the social forces as it is in any assessment of accuracy,” he said. “Scientists who popularize are often accused of oversimplifying, but what counts for appropriate simplification is often up for negotiation.”

Despite the complications associated with popularizing science, Pinker said that he ultimately found writing accessible books about cognitive science satisfying on both a professional and personal level.

“Now, my mother can finally understand what it is that I do all day,” he added.

Hauser also said that there are other benefits—not relating to mothers—that come from being a popular writer.

“Getting six-figure advances has definitely made life more comfortable and college tuition less stressful,” he said.

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