To Beginning Writers

If you like audio, I have also spoken to audiences about my own experiences in science writing.

Here's a talk (https://carlzimmer.com/wp-content/uploads/2018/02/Carl-Zimmer-New-York-Times-science-essayist-blogger-reporter-and-author-on-the-challenges-in-science-journalism..mp3) I gave at the University of British Columbia.

And here's a talk (http://www.radiolab.org/blogs/radiolab-blog/2011/oct/31/sleepless-south-sudan/) I gave at Story Collider, which was later aired on Radiolab.

(For some of my writing guidelines, see here.) (https://carlzimmer.com/science-writing-guidelines-and-guidance/)

From time to time, I get letters from people thinking seriously about becoming science writers. Some have no idea how to start; some have started but want to know how to get better. At first I responded to these requests with hasty emails, so that I could get back to figuring out for myself how to be a science writer. But then I thought it would be better for everyone — the people contacting me and myself — to sit down and write out a thorough response. I first wrote this essay back in 2013, and I've updated it a little from time to time.

But first a caveat. I may be the wrong person to ask for this advice. I stumbled into this line of work without any proper planning in the early 1990s, when journalism was a very different industry. The question "How do ***I*** become a science writer?" is not equivalent to "How did ***you*** become a science writer?"

While I didn't know I wanted to write about science, I have written for as long as I can remember. I was the sort of kid who wrote stories, cartoons, and failed imitations of *Watership Down*. By college, I was working on both fiction and nonfiction, majoring in English

to learn from great writers while trying to avoid getting sucked into the self-annihilating maze of literary theory. After college, I spent a couple years at various jobs while writing short stories on my own, but I gradually realized I didn't have enough in my brain yet to put on the page.

In 1989 I wrote to some magazines to see if they had any openings for entry-level jobs. I got a response from *Discover*, saying they needed an assistant copy editor. I got the job but turned out to be a less-than-perfect copy editor, which means that I was a terrible copy editor. Fortunately, by then my editors had let me start to fact-check stories, which is arguably the best way to learn how to write about science. I then got a chance to write short pieces.

At some point, I realized this was an experience unlike any previous writing I had done. In nature, I was discovering strangeness beyond my own imagining. And scientists were willing to help me understand their discoveries, in long conversations over the phone or visits to their labs and field sites.

I stayed at *Discover* for ten years, the last four of which I served as a senior editor. Then I headed out on my own, to write books, features, and other pieces.

In other words, I did not know in college that I wanted to be a science writer. I didn't prepare for the career by taking a lot of science classes or going to graduate school for science journalism. I can only take credit for being able to recognize when I fell into a deeply satisfying kind of work.

That's one reason to take my advice with a grain of salt. Another reason is the fact that for the first five years of my career, I did not have access to the Internet. I did not have email. At the time, magazine publishers did not see the point of rigging their computers to telephone wires.

This was an age when magazines and newspapers held a near-monopolistic control over science writing. The only alternatives were crudely printed zines, which attracted only a tiny fraction of the circulation of large magazines and none of their big-ticket advertisers.

All of that has changed, of course. It took a very long time for many in the science writing world to realize that change was coming, and many tried to ignore it once it had arrived. Just as I had stumbled into science writing, I stumbled into its online world. In the early 2000s I began enjoying the handful of blogs about science. At the time, I had been writing essays for *Natural History.* When they stopped running essays, I decided to set up a blog where I didn't have to pitch ideas to anyone beside myself.

In 2004, when I began blogging, many professional journalists looked at it as an odd distraction from real work. Along with everyone else, I had no idea that it would end up at the heart of science journalism. I also didn't realize that traditional science journalism—and

journalism in general—was undergoing a drastic change. Depending on who you talk to, a better word might be *metamorphosis*. Or *collapse*.

And so, while I personally feel very lucky to have ended up making a living as a science writer, I am very cautious in recommending it to others as a line of work. I still find science writing wonderful after three decades, but the industry is full of upheaval and uncertainty. If you have decided that you want to become a science writer, make sure that your impression of the field is accurate. If you have a hazy sense of journalism as it was circa 1990, then you have to update your perceptions.

American newspapers enjoyed a great boom after the end of World War II, but that boom crested around 1990, and newspapers now employ fewer people (http://www.aei-ideas.org/wp-content/uploads/2013/04/newspaper.jpg) than they did in 1950. During the boom years, newspapers hired lots of science writers for weekly science sections. At their peak, in 1989, there were 95 in the United States. By 2013, they were down to 19. When newspapers make cuts to shore up their profits, the science section is often the first to go.

The same goes for magazines: if your image of science journalism in magazine dates back to the Reagan administration, it's time to take stock. During the 1980s, there was an amazing boom of magazines dedicated solely to science–*Discover, Omni, Science Digest*, and on and on. The big magazines like *Time* and *Newsweek* had a number of full-time staffers who wrote only about science. Like newspapers before them, magazines are now sliding (http://stateofthemedia.org/2012/magazines-are-hopes-for-tablets-overdone/). Many of the science magazines of yore have shut down altogether.

All that being said, some venues for science writing are thriving. They include traditional publications that are working out new ways to stay in business. And they include new publications that are not burdened by journalism's bruising history. These old and new outlets will probably never support the same number of science writers there were the 1980s. An article in the *Los Angeles Times* and an article in the *Boston Globe* are no longer separated by the 3000 miles that divide the two cities. They can sit side by side in two tabs on the same browser. But that doesn't mean that science writing is going to disappear altogether. It would be absurd to extend its trend in a straight line until it reaches zero.

If you have developed a clear-eyed view of science journalism, the next question to ask yourself is, "Is this a field I want to enter?" Once you set off into science writing, you do not automatically receive a staff job, a retirement package, and a list of great stories to write for the next fifty years. You enter a fierce competition, whether for an entry level job or freelance assignments. Pay can be lean, even at high-profile publications. Find in yourself the strength to cope in this environment. Rejection is not a career-ending catastrophe in the world of science writing; it is a regular part of experience.

If you remain determined to go into the field, you may now be asking, “How do I start writing about science?” The answer is you start writing. It’s a bit like playing the trombone. If you walked up to a jazz band and announce that, after much thought, you think being a trombonist would be fun, they probably won’t hire you on the spot. They want to hear you play. A trombone teacher can help you become a better player, as can performing in school bands. But what matters most of all is those hours, day in and day out, that you spend alone practicing the trombone.

I direct this advice in particular at those graduate students in science who think that writing about science is more fun than doing it. I share your view. But that doesn’t mean that your hard work in graduate school has prepared you very well to write about science for a popular audience. The kind of writing that gets a paper published in the *American Journal of Botany* is not the kind that will get a story published in the *Atlantic*. Learning how to write about science takes work. To embark on that work, you should begin doing research for stories and writing several hundred words every day. Don’t be discouraged if, after several months, you still feel like you’re just getting the hang of writing about physics for a wide audience. It’s not easy. (For what it’s worth, I’ve written my own suggestions here (https://carlzimmer.com/science-writing-guidelines-and-guidance/).)

One valuable way to learn how to write is to reverse engineer great science writers. If you like John McPhee, plow through *Annals of the Former World* and look at how he assembles his stories. If you want to be a scientist-writer, check out the best work out there, like the books of Siddartha Mukherjee or Steven Pinker.

Of course, in order to build up your skill at writing, you need something to write about. Fortunately, there’s no end of things that are happening in the scientific world, from new research to new controversies. You can sift through press releases, plow through journals, or just talk to people to find out what’s new. Don’t feel an obligation to write about what everyone else is, unless you have something new to say. It is remarkably easy for most journalists to ignore the real crux of a story, so don’t be afraid to pursue a different line.

Each budding science writer has to decide which path to take. I took the blind, twisted path I described earlier, but I’ve watched others take very different ones that led to solid careers. Some have started their own blogs, where they’ve taught themselves how to write in public. Others have simply boot-strapped themselves as freelancers, starting with small publications and using those clips to get into bigger ones. Some have gone to graduate school for science journalism, where they’ve been trained by seasoned veterans and have been placed at leading publications as interns. Some scientists-in-training have become AAAS Mass Media Fellows. And other people veer off in unexpected directions. They started out in science writing and became radio producers, for example, or made animations, or built apps. These days, it’s vital to be prepared to go in a direction you couldn’t have predicted at the outset.

Along with strong writing in articles themselves, another important skill that often goes unappreciated is learning how to write a good proposal. You have to entice editors to get them to give you an assignment. And that requires a few things. First, you have to understand the story you want to write clearly enough that you can describe it in miniature in a pitch. You also have to understand the spirit of each publication you approach. Some magazines pride themselves in their intense nerdiness, while others see themselves as magazines for people who are curious but lack expertise. Some care most about a gripping narrative, while others put scientific detail above all else. Know the difference. And find stories that the editors can't find themselves, the stories that they crave on their pages.

I could go on, but others have already done so and I shouldn't replicate their fine efforts. Here are a few places to continue reading and learning:

The Craft of Science Writing (https://www.theopennotebook.com/the-craft-of-science-writing/) & The Open Notebook (https://www.theopennotebook.com/)
A book and the web site it's based on

On the Origin of Science Writers (https://www.theopennotebook.com/on-the-origin-of-science-writers/)
The Open Notebook offers dozens of stories of how people got into the business.

Pitch Publish Prosper (https://www.nasw.org/pitch-publish-prosper-online-resources-science-writers-handbook)This site is the online home of an excellent book, *The Science Writers' Handbook*.

New To Science Writing? (https://www.nasw.org/articles/new-science-writing)The National Association of Science Writers has a collection of articles for people starting out.

Advice for Aspiring Science Writers (http://sciopic.wordpress.com/2013/01/29/carl-zimmers-advice-for-aspiring-science-writers/)Kristen Delevich, one of the students who took my workshop (http://www.eeb.yale.edu/zimmer/) at Yale, distilled some of my remarks about the craft of science writing (such as choosing your words carefully and building paragraphs like cathedral arches) in this blog post.

Probing the Passions of Science (http://blogs.scientificamerican.com/primate-diaries/2011/12/20/carl-zimmer-part-two/)Eric Michael Johnson, a fine writer on things anthropological, interviewed me at length about science writing for his blog at *Scientific American*.

Reading and Negotiating a Freelance Contract (http://blogs.scientificamerican.com/primate-diaries/2011/12/20/carl-zimmer-part-two/)Along with developing your craft, you also have to learn how to champion yourself in the business. Shira Feder offers some good advice.