

Becoming a physicist

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My high school in North Wales required me and other university-bound students to choose, at the age of 16, three subjects to study for our final years of school. Our choices mattered. Then, as now, British universities offered specialist degree courses. Applying to study, say, history at Warwick University without having focused on the subject in high school would be risky.

I can't remember when I decided to pursue physics. My misty recollection is that I was smitten when I encountered classical mechanics for the first time. The same equations could yield the range of a projectile hurled by a medieval catapult, the orbit of a comet flying around the Sun, and the time it takes a boulder to roll down the side of a mountain. Physics was like a skeleton key to unlock the myriad secrets of the natural world!

Still, if you'd asked me at the end of my undergraduate course whether I considered myself a physicist, I might have said no. I was studying physics, but I wasn't practicing it.

That changed when I started analyzing x rays emitted by neutron stars for my PhD. I began to think of myself as an astronomer. The identity felt fitting. Astronomers often work with data at the margin of statistical significance; with a biased, photon-centric view of the cosmos; and with models that can be tested only to first order. Negotiating that fuzzy scientific terrain felt oddly liberating, as if the absence of detailed data freed my fellow astronomers and me to weigh only the most important physical processes.

My identity as an astronomer also felt comfortable. When I met people outside the world of research, they seemed intrigued to encounter an astronomer. Although I fielded occasional questions about star signs, members of the public were genuinely interested in the cosmos, especially in the possibility of extraterrestrial life.

Most readers of *PHYSICS TODAY* have an advanced degree in one kind of physics or another. But many, like me when I was a professional astronomer, might not call themselves physicists—at least not as their first

identity. You might be among the magazine's readers who are protein crystallographers, marine acousticians, physical oceanographers, or radiation dosimetrists—to name just four groups of our wide and diverse readership.

Now that I've been at *PHYSICS TODAY* for 19 years, I consider myself an editor first. But over those years, as I wrote about an increasing variety of research, I came to think of myself as a physicist too. That's because it's only as a physicist that I can make sense of, say, spontaneous symmetry breaking in chiral molecules, weathering on the Martian surface, gene expression networks in bacteria, or two-dimensional phase transitions in cold-atom condensates.

How undergraduates come to think of themselves as physicists (or not) is the question at the heart of Paul Irving and

Eleanor Sayre's article, "Developing physics identities," which starts on page 46. To answer it, Irving and Sayre interviewed 20 physics majors at Kansas State University and watched them perform experiments in a lab class. The authors illustrate the different ways in which identities can emerge and evolve by recounting the stories of three of the students in the study.

What struck me most about the three students is that their choices, despite being different, seemed freely made. From their courses, the students acquired a view of what it's like to be a practicing physicist, and on that basis they decided whether to pursue physics further.

But how complete and accurate was that view? I agree with Irving and Sayre: The more students encounter the diversity of physics and the variety of jobs that physicists do, the better placed they'll be to make a rewarding choice of career. **PT**

