



The Job Market

Transitioning from Researcher to Outreach

Shelley Bolderson was scraping mud from a trowel one day in an Anglo-Saxon midden in St. Neots, United Kingdom, when she realized she didn't want to be an archaeologist

any longer. "It was winter, and I'd spent ages on that particular site," she recalls. "It was really kind of soul-destroying work."

Until that point, Bolderson had worked as a freelance archaeologist around England, mostly in urban environments, where she assessed building sites before development. She had a bachelor's degree in archaeology from the **University of Southampton** (<http://www.soton.ac.uk>) in the U.K. and wasn't interested in doing a master's or Ph.D. She sought temporary work while deciding what to do next.

One of her temporary jobs was at the **University of Cambridge** (<http://www.cam.ac.uk>) in the U.K. in the office that coordinates the **Cambridge Science Festival** (<http://www.admin.cam.ac.uk/sciencefestival/>), an annual, weeklong event that shares Cambridge-area science research with the public. "I saw a new career I had no idea existed beforehand and thought it looked really exciting," she says. When a position coordinating the science festival opened up in the office, Bolderson applied for it.

It's common for scientists do some outreach work alongside their research jobs -- an occasional public lecture, say, or a talk at a local school. But a few scientists, including Bolderson, have turned outreach into a full-time job, connecting science and scientists with the public via their jobs at universities, associations, museums, or other organizations. Andrew Hickley, Bolderson's former boss who's now an independent consultant, says the mission and motivation of science outreach "is helping people understand science more effectively, helping them understand the role that science has got to play in society [and] in people's lives."

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What is outreach?



(Sir Cam/Flickr)

Shelley Bolderson

For Bolderson, that has meant organizing the annual science festival and training graduate students, postdocs, and other researchers to host their own public-engagement activities during the year. She also helps manage the ongoing relationship between the university's scientific community and the city government, with which she coordinates a summer science program for young people. Managing relationships with colleagues and community members is an important element of her work, she says.

Science outreach careers bring science to the public in many settings, whether it's by putting on special programs at the university, giving workshops in the community, or going into school classrooms. It's a teaching gig, with the widest possible audience. Still, Hickley says, "there's absolutely no substitute for standing up in front of a classroom full of kids."

Chris Vanags of the Vanderbilt **Center for Science Outreach** (<http://www.scienceoutreach.org/>) (CSO) in Nashville, Tennessee, is a quintessential example. He coordinates a program that brings local high school students to the university once a week for science classes. He and his colleagues prepare lesson plans and teach just as if they were high school teachers but within a university setting. "Our goal is to teach kids to think like scientists though not necessarily to be [scientists]," he says.

Outreach coordinators at academic institutions also work with the scientists and departments within the university. Scientists with outreach components to their research funding may look to the university's outreach specialists for assistance in designing outreach

plans that complement their research, in writing the outreach portion of a grant application, or in executing the outreach plan once that funding comes in. Jennifer Ufnar, director of the **Science Teacher Institute** (<http://sti.vanderbilt.edu/>), also at the Vanderbilt CSO, often helps Vanderbilt scientists write broader-impact statements for their National Science Foundation (NSF) grant applications.

Outreach officers at scientific societies have some similar responsibilities, especially in interacting with the public. The **British Science Association** (<http://www.britishecienceassociation.org/web/>), for instance, organizes its own annual science festival, as well as a science and engineering week aimed at the general public. The rest of the year, the organization offers enrichment activities and material to schoolteachers and their students, coordinates student science project competitions, and helps organize local science and engineering clubs. Katherine Mathieson, the association's director of education, supervises the managers of each of those outreach areas; she does little direct science outreach today, she says, but she enjoys having a hand in a variety of projects, established and new.

Mathieson notes that science-related businesses are another place to look for jobs with an outreach component, as those companies want to build good relationships with the community. However, "the major opportunities are going to be related to universities or similar institutions, such as museums," Hickley says.



(Courtesy, Katherine Mathieson)

Katherine Mathieson

An outreach incubator at Vanderbilt

Ufnar's career got a major boost when she connected with pathologist Virginia Shepherd, the director of the Vanderbilt CSO. Early in her career, Shepherd attended a session at a scientific meeting at which a speaker proclaimed that scientists have an obligation to the public, which funds their research, to devote 4 hours a week to teaching. Shepherd was attracted to the idea, and today she devotes far more of her time to outreach at the Vanderbilt CSO, where she coordinates the efforts of 15 postdocs and graduate students who handle more than half a dozen different science outreach initiatives. "It started off very modestly, and now we have funding of around \$1.5 million a year," she says. In addition to directing the Vanderbilt CSO, Shepherd still runs her pathology lab and publishes in biochemistry and microbiology journals.

The work has given Shepherd and her protégés -- including Vanags and Ufnar -- an idea of the skills aspiring outreach workers need to communicate science to teachers and students. One key: laboratory experience. "Having worked in a lab really did help me because I was comfortable with the science," Ufnar says, referring to her Ph.D. research in environmental toxicology at the **University of Southern Mississippi** (<http://www.usm.edu/index.php>) in Hattiesburg. Another key, Shepherd says, is the ability to create partnerships. She points to NSF's **Graduate STEM Fellows in K-12 Education** (<http://www.nsfgk12.org/>) program, in which science graduate students commit to visiting a classroom on a weekly basis. "If I were going to hire somebody," Shepherd says, "I'd certainly look to see if they'd been involved in leading a program or if they were involved in a program for training" during their scientific career.

Ufnar also teaches in Vanags's high school program, brings schoolteachers into her water-contamination lab at Vanderbilt to teach them how to do research, and teaches at a nearby community college. A portion of her time is spent writing grant proposals, for her research in water contamination and to support her outreach efforts. "I do everything a traditional scientist would do, just in the outreach field," Ufnar says. She hopes eventually to take the skills she is accumulating at Vanderbilt to another university, directing her own outreach center and forging closer links between the research community and the public.



Courtesy, Jennifer Ufnar

Jennifer Ufnar (*far right*) works with students at the Vanderbilt Center for Science Outreach (CSO).

Getting started

It's possible to earn an advanced degree in science communication, but most scientists interested in outreach begin with small steps out of the laboratory. The ready availability of volunteer work makes it possible to try before you buy. For a one-time taste of outreach that doesn't require a long-term commitment, Hickley suggests looking for a nearby science festival to see if they could use volunteers.

"With educational outreach, contacting the outreach center on campus is the perfect first step," Ufnar says, adding that outreach officers would usually be delighted to utilize volunteer help from a grad student or postdoc. Even undergraduates can volunteer in outreach, as Ufnar did when she was still an undergrad.

Mathieson recommends volunteering at your institution before abandoning research to pursue a full-time outreach career. She got started in outreach as a volunteer answering calls from the public on Science Line, the now-defunct science-questions hotline. It was "anything-could-happen outreach," she says. "It was really good fun getting a sense of the kind of questions people would ask and why they ask them." When Science Line needed a full-time staffer, they hired her. "A lot of charities and small enterprises who do science outreach operate in that way. They'll need volunteers for particular activities or events, and then when it comes to recruiting there's an obvious pool to recruit from."

Like many science-related jobs, outreach requires a combination of skills. "You need to be a good communicator first of all, ... good at working with people, empathic; you need to understand what stage they've reached in their understanding," Hickley says. Even if you decide not to pursue outreach as a career, the interpersonal skills you gain will help if you go into outreach full time -- or even if you don't. "You don't have to be a scientist to do this stuff," Hickley says, but if you are, there is absolutely nothing stopping you acquiring the skills for doing it."

Photo (*top*): Junichiro Aoyama (<http://www.flickr.com/photos/jam343/3502673/>)

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