

## How to Exploit Postdocs

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# How to Exploit Postdocs

PAULA STEPHAN

**I**magine working for less than \$16.00 an hour with minimal fringe benefits and little job security. It may not sound that bad in an economy where 8.0 percent of the labor force is unemployed, but if you are a 30-something-year-old PhD, it is not a good return on your 7-year investment in graduate education. Yet, thousands of PhDs routinely work for approximately \$16.00 an hour as a postdoc. Many have minimal fringe benefits; most do not have paid family leave. Yet, they do so at a time when the average hourly wage for fulltime workers—regardless of their level of education—in the United States is \$23.22. This means that the average US worker takes home just about the same amount every week as a postdoc. But the average US worker works only 34.4 hours a week, whereas postdocs work on average about 2650 hours a year, or 53 hours a week, to bring home a comparable annual salary of around \$40,000 (Stephan 2012a, US Department of Labor 2012).

Some, particularly those who hire postdocs to staff their labs, see the postdoctoral period as one of training and, therefore, discount (or justify) the low wage as a down payment on a research career—a necessary step to becoming a tenure-track faculty member. The training argument is faulty on two counts. First, the vast majority of postdocs will never get a tenure-track position. In 2006, for example, less than 15 percent of PhD recipients in the biological sciences held a tenure-track position 5–6 years after they had received their PhD (Stephan 2012a). That was when the economy was strong. The odds of getting a tenure-track position have only gotten worse as funding for research remains flat, or in some instances, falls, and as many state universities find their public support continuing to erode. This

means that many postdocs will end up in non-tenure-track positions or with jobs in other sectors of the economy. Many of these will be in nonresearch positions. At last count, approximately 25 percent of PhDs in the biomedical sciences held nonresearch positions outside academia 6–10 years after receiving their PhDs, approximately the same percentage that held non-tenure-track academic jobs. Almost 40 percent of the PhDs in the biomedical sciences say that they are working in an occupation only somewhat related to their field of training, and almost 10 percent say that they are working in an occupation that is not related to their field of training (US National Institutes of Health 2012).

The second reason the training argument is faulty is that many postdoctoral scholars—especially those not funded by training grants or fellowships—are but poorly paid research assistants who receive little mentoring and have few opportunities to develop an independent research agenda. To put it bluntly, they are not acquiring skills; they are biding time, hoping to eventually find a job that better matches their capabilities and compensates them sufficiently so that they can get on with their lives. They see their college classmates who did not go to graduate school earning \$20,000 a year more—many working considerably fewer hours and most receiving better fringe benefits (Stephan 2012b).

The postdoctoral model survives because faculty members can readily get funds to staff their labs with postdoctoral fellows and graduate students. The faculty likes it: Graduate students and postdocs are flexible, they work hard, they are young, and they have new ideas; they are temporary—no long-term commitment here—and they are cheap. Moreover, no one has held faculty members—and the universities

where they work—accountable for having created a supply of trained individuals that is greater than the market can possibly employ as researchers, given the current levels of funding and society's commitment to research. Yet, faculty members and the universities where they work persist in staffing their labs with temporary workers. Why? Much of it has to do with incentives. It is in the interest of faculty members to employ postdocs. The fact that they are cheap is certainly a benefit. If, instead, faculty members were to staff their labs with staff scientists, they would have to pay 50–100 percent more than they pay to a postdoc (Stephan 2012a).

But the low price of postdocs hides the true cost of postdocs to society. Substantial resources, both their own and society's, have been invested in their PhD training and are now being spent employing them in labs. This means that if a postdoc does not get a research job, taxpayers do not get a return on their investment. Neither does the postdoc. Take the case of someone who did not go to graduate school and instead entered the labor force in 2001. By 2008, he or she would have been earning approximately \$58,000 a year (Stephan 2012b). His or her classmate, who went to graduate school and graduated in 2008, was earning about \$38,400 as a postdoc that year (National Postdoctoral Association 2012). Do the math: Taking a 3-year postdoctoral position costs the postdoc close to \$60,000 in forgone earnings, and many will forgo more than that, continuing in a postdoctoral position for 4, 5, or more years. It is not only low pay; working conditions, the absence of job security, and the lack of paid-family-leave policies make it difficult for postdocs to start families while they are in a postdoc position. Yet, many postdocs are in their 30s, the

time when many of their peers who chose other occupations are becoming parents.

Why do postdocs put up with the system? The answer relates to information, aspirations, and alternatives. Information is in low supply. Many students receive minimal information about their career options when they decide to go to graduate school or start their graduate training. Programs rarely post job outcomes on their Web pages, and many doctoral programs offer few seminars or workshops that provide students with information on careers other than those in academia. Moreover, in many doctoral programs, a postdoctoral appointment is seen as the next logical step on the road to a research career. Students graduate and head directly to a postdoc position without thinking about what their career options might be. For those who aspire to be a faculty member, especially in the biomedical sciences, a postdoc is mandatory. For others, who might aspire to go directly to a job in government or industry, the alternatives have shrunk in recent years. Therefore, it is no surprise that the percentage of newly minted PhDs in the life sciences who took a postdoc in 2010 is greater than it was 2 years earlier, when the economy was stronger.

It is not only in the life sciences that this is occurring. The trend is particularly noticeable in engineering, where the percentage who took a postdoctoral position in 2010 was 50 percent greater than it was in 2008, when the economy was still expanding (US National Science Foundation

2012). The lack of alternatives also explains why those who thought a postdoc position would be for but 3 years often stay in the position for 4, 5, or even 6 years. The lack of other job alternatives also reflects the fact that the system has consistently, for many years, and especially in the biomedical sciences, trained more individuals than can possibly get research jobs.

It should not be a surprise that a system that relies on graduate students and postdocs to staff its labs has gotten out of equilibrium, producing more newly trained talent than can possibly find research positions. As early as the mid-1970s, a National Research Council report suggested that there was evidence of an oversupply of newly trained individuals in the biomedical sciences in the United States; the point was reiterated in 1998 by another National Research Council report (National Research Council 1994, 1998). Despite these reports, the system persists.

There are many policy options that might improve the situation, but one that would certainly help is to increase the salaries of postdocs, thereby lowering the incentives for faculty members to employ postdocs as cheap labor and reflecting the expertise and skill they possess. It is not just about being fair. It is about creating incentives that will help a system that has long been out of equilibrium to right itself.

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