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How could universities and funders improve the situation for postdoctoral scientists?

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What the research system needs to be doing to improve the world that postdocs face

By David Bogle

I've already written about how PhDs can prepare for and decide whether or not they should pursue a postdoc. Here, I will discuss what more universities and funding agencies should be doing as stakeholders in training and employing researchers.



Universities must be doing more to ensure the postgraduate experience is a positive one

Employers, both at universities and elsewhere, need a range of sophisticated research skills at their institutions. Early career researchers have already shown themselves to be incredibly talented; and society needs them to drive innovation in the economy. This is all the more important in the context of an ongoing war for talent. Researchers must have the opportunity to develop as 'creative critical autonomous intellectual risk takers' for the sake of society.

However, there are various barriers that make it difficult for postdocs to develop the skills needed to succeed both in and outside of academia.

Postdocs are vital for universities to deliver ambitious research agendas but are too often treated as paper-writing machines rather than as truly independent scientists. For many, writing papers and focusing on the science might be exciting and personally satisfying, but this will have limited benefit in the long term for a future career beyond academia.

Too often, research staff are recruited to deliver a specific project and spat out at the end without thought as to their future beyond having more papers to support an application for another postdoc position.

Since most postdocs are heading for positions outside of academia, the postdoctoral period needs to be a time where scientists develop a deeper and more sophisticated set of skills than the doctorate. Researchers need time to reflect on their development needs, and to spend time developing these skills, all within a working week that still gives time for a decent work/life balance. Right now, a constant pressure to produce more research prevents postdocs from finding time to contemplate personal development or to spend time with friends or family. It's no coincidence that so many postdocs burn out.

So what more do universities and funding agencies need to be doing? First, we need to articulate a clear set of skills that every postdoc should develop during this stage in their careers, and make sure that PIs, postdocs and universities provide the opportunity to develop these skills.

We must also provide access to training and financial resources to support postdocs' personal development. But this is useless if postdocs are too busy elsewhere to take part in training or development curricula. Most of all, the research system needs to provide postdocs with their most valued commodity: time. Funded grants for postdocs must carve out the time for them to reflect, plan, and pursue experience that will help progress their career.

We must also begin to change the research culture. Too many PIs see postdocs as a mechanism for delivering research results. They must also see them as a person they are carefully mentoring and training through research. We must see the role of university research as developing people as much as providing results.

Those taking up a postdoctoral position will all have done a PhD (or have equivalent experience). Most universities in Europe now have transferable skills training for doctoral candidates. All postdoc candidates have experience in tackling a large complex uncertain project which constitutes their PhD. If a postdoc comes from other parts of the world they may not and might need some basic skills training. I find the Researcher Development Framework used in the UK a useful taxonomy for the skill areas that researchers need to develop. PhD candidates will develop some or all of these skills to some degree but many only superficially as they must concentrate on their specific research project.

What deeper skills should universities be developing in their postdocs that make him or her more valuable to the workforce – both inside and outside academia?

As **research leaders** they need to be **looking into society's future needs** to identify new fruitful research areas that will make an impact:

1. Broaden their research perspectives and explore new research areas particularly through crossing disciplines to tackle societal challenges
2. Develop skills for strategic thinking and developing systematic research road-maps
3. Demonstrate the ability to think independently to develop major new research lines that are realistically deliverable and will have impact

Learning to **lead the business of research and innovation** across society:

4. Understanding of financial management, grant getting (from sources internal to an organisation as well as external sources), exploring varied funding sources (from venture capital or crowdsourcing, for example)
5. How to pitch ideas, influence others and negotiate their stance

6. Advanced public engagement skills to interact effectively with society
7. Understand and support intercultural perspectives (in society's research needs and fears and also within research teams)

Learning the business of **research management**

8. How to deliver on multiple projects
9. Legal obligations
10. (Team) Leadership and management skills – including the adoption of a coaching style
11. How recruiting is done and used to build teams and expertise
12. How to mentor others and support career objectives

Communication of ideas and **building working practices** both within academic and outside:

13. Teaching and facilitation skills which are useful in almost all professional occupations for developing others and in complex decision making well beyond the world of research

Universities need to be sure that opportunities to develop these skills are available to all postdocs, both through formal courses and also through on-the-job experience.

Key to this is ensuring that researchers have time within a normal working week to do training courses and to put into practice the four skill areas listed above. We must not put extra burdens on postdocs since there is already evidence of overload and difficulty in maintaining a balanced family life — developmental time must be provided for within their contracted hours.

There is a conflict at the heart of our research process: that the grant holder is put under vast pressure to deliver what they have promised in technical terms, and so not enough priority is given to the development of the people employed on those grants.

Any significant change is going to require a culture change within our universities. This will require more universal leadership training for PIs with a strong focus on the specific aspects of developing research staff and allowing them freedom while delivering project goals. It also requires funders to be explicit about expectations for the personal development of research staff employed on their grants in their terms and conditions and in their peer review processes.

We know that much research in industry is not used and nine out of ten start-ups fail. It stands to reason that these odds should be even longer for fundamental research. Whilst lots of the research might not be going anywhere, the newly trained postdoc will. Every postdoc must eventually move on to a new position and will make a difference there. We need them all to be given skills and confidence to do this for the benefit of us all, whether in business, industry, academia and society in general.

Funders have a responsibility to ensure that funds awarded for great science also ensure full development for the people involved. A measure of success must be the extent to which this has succeeded for the researchers being trained. In particular, there needs to be real scope within grants for researchers to have time to develop their own ideas as well as developing ideas within the funded project.

In this way we will be developing the sharp, independent minds that both the academic world and the world beyond need to drive crucial innovation in our society.

*Most of all, the
research system
needs to provide
postdocs with their
most valued
commodity: **time.***

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