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Dr. No (or Yes?)

By Simon Boxall

It is that time of year when final year students are coming to see me to discuss what should be the next step in their oceanographic careers. Some have plans for, and even jobs lined up in, the marine industry. Some always wanted to become accountants—they will be back in a couple of years, once boredom sets in. Many will be asking, “Should I do a PhD?” Of my five MOcean¹ tutees, four are planning this as their next stage. One could argue that if they have to ask the question, then it is probably not the best pathway for them—but it is actually a very valid query. When I started year one in my bachelor’s at university, I genuinely had no idea that postgraduate degrees were a natural progression—I naively assumed that my degree was the pinnacle of the education system. I quickly learned otherwise and had always wanted to do oceanographic research (blame Cousteau), so I went on to earn a PhD.

We tend to subconsciously stream our students and could be accused of focusing on the research potential of our charges rather than what might best suit them. It has certainly been the case for a number of years now that if you want to progress in research or in the academic environment, then a PhD is the baseline to start from—it shows an ability to develop independent learning and ideas. This has not always been the case. Professor Henry Charnock, FRS, CBE, was head of my department at Southampton when

I joined. In his lifetime, he had been Deputy Vice-Chancellor of the university, President of the Royal Meteorological Society, and Director of the UK’s National Institute of Oceanography; he had published over 70 papers; and he was arguably among the best-known oceanographers worldwide. In Henry’s day, very few people did doctorate degrees. Today—the lack of a doctorate could set a relatively low ceiling for a young scientist wanting to progress at a university or a government research lab in most parts of the world. Indeed, many of my international PhD students have been mature students who studied with me in order to progress back in their own countries.

So—is the answer to that question that my students are asking, “only if you want to go into research?” No, not at all. Many of the big science consultancies around the world like some of their senior partners to have PhDs. I picked this up from working with them on many projects over the years. The prescript “Dr.” scattered sparingly among the author list can give reports a perceived gravitas. There is, rightly or wrongly, a notion that if someone has achieved doctoral status, they must know something about the subject. The fact that their thesis was on the fine-scale deep ocean mixing in the Tyrrhenian Sea has absolutely nothing to do with, let us say, the efficacies of a new tidal barrier in the Hudson. It is not seen as an issue. While it is no substitute for

experience, obtaining a PhD is an experience in its own right. It requires dedication to the task at hand, substantial amounts of work, sometimes in difficult circumstances, and an ability to undertake independent and novel assessment of a particular problem. In the field of oceanography, it usually requires an ability to work constructively as part of a team—particularly when field studies are involved. Unlike the life of a postgraduate student a few decades ago, there are regular interim reports, presentations, and panel meetings, all of which are critical to the student’s progression. With ever decreasing funding, PhD candidates need to budget their research and determine the best ways of getting their findings into both the scientific and the wider public domain. An increasing number of PhD posts in the UK are in partnership with industry, and so have a direct commercial application or relevance as well as the experience of working directly in industry. The notion that PhDs have their heads in the clouds is very far from the truth, and the average modern-day postgraduate is very workplace ready.

Of the many doctoral oceanographers we produce each year from my own faculty, more go into government departments and commerce than into the university system. This is not actually that new. Of the three PhD oceanographers in my year (small numbers in those days), I was the only one who opted for

¹ At the University of Southampton, we run a standard three-year bachelor of science (BSc) degree or a four-year MOcean, which is effectively a bundled BSc and master’s. As with many universities around the globe, we would normally expect a PhD candidate to have the equivalent of a master’s level qualification.

the academic route. One of my contemporaries went onto a government track after a brief postdoctoral position and reached the top of his field, while the other went into industry and similarly went to the top.

One concern of students thinking about studying for a PhD is the fear of three or four more years of paying student fees and having to find their own living costs. Many do not realize that, unlike a master's course, a PhD is relatively well

change topic or stop. The more a disenfranchised postgraduate tries to push forward, the worse it gets—an unloved PhD topic has a very high viscosity coefficient.

The topic must excite you—you are going to be working on it in fine detail longer than any other piece of work previously or in the future. You don't have to be aiming for an academic career; you can do it to satisfy your scientific curiosity—indulgence of this type has the advantage that it is non-fattening. I know of a PhD

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funded in most countries. In the UK, the Natural Environment Council funds a significant number of PhD studentships for UK citizens, and these cover fees as well as a living stipend. While the grant is not as high as someone might earn going straight to a first full job, it is tax-free and carries various benefits, which means that the real gap between starting work as a new graduate or continuing onto a PhD is not that big.

What are the motivations that the student should think about before starting a doctoral pathway? Never choose it to put off deciding what you want to do when you graduate! Life as a postgrad is different from life as an undergraduate. The prospective student needs to appreciate that a PhD is the same as a full-time job—there are no long vacations and a supervisor will be leaning on them to ensure they deliver high-quality work and on time. The days of the seven-year PhD are faint memories. I have seen a number of students do this, and they have often ended up hating their subjects. The sensible ones admit it was a bad choice, based on indecision, discuss the issues with their supervisor or another academic, and either

student in my own family who started off with a dream of an academic career but had a change of mind and went into industry, and another who was intending a commercial postdoctoral career at the outset but got drawn into university research and teaching.

There is also a third candidature for PhD positions—scientists coming to the end of their full-time working lives who want to do the one thing they never got around to doing—a doctorate. Before you write in saying that is not fair—that surely they are taking away opportunities from young budding scientists—be assured that most of these are self-funding. I have supervised a few mature students in this situation, two of whom were very much at the tops of their careers, but like Henry Charnock, they had not really had the chance to study for a PhD. One of them already had a portfolio of over 40 first-authored papers, and as a university our biggest problem was finding an external examiner qualified enough to examine the thesis. My father is another case in point. As a medical laboratory pathologist, he had taken a direct route and at the outset of his career, no one in his field

studied for a first degree in the subject, let alone a postgraduate degree. Toward the end of his career, he was responsible for routine work for a university hospital, a number of research projects, and about 30 staff—all of whom had degrees, including half with PhDs. I remember when he sat the family down (by this stage, both my brother and I had completed our doctoral theses) to announce he was going to start a part-time PhD. Four years later, the Drs. Boxall went out on a celebration dinner after his graduation and his final retirement. He didn't need it to advance his career—he needed it for his own satisfaction and to show to himself that he could.

We need well-trained and motivated scientists working in all aspects of our subject, from blue skies research to contemporary and applied issues. Today, a PhD is an important qualification for progression in the modern university and government laboratory environment, and is not by any means out of place in the commercial world. But never start one as a stop-gap, and choose the subject and supervisor with care—both will influence how successful and enjoyable the experience will be. It is not the panacea for a successful science career, and many do very well both in terms of job satisfaction and even higher salaries without one.

Finally, to the title of this column. Of course, we also need PhDs to create a requisite number of evil scientists. Would Dr. No (James Bond), Dr. Frankenstein (Mary Shelley), and Dr. Evil (Austin Powers) have the same impact as Mr. No, Mr. Frankenstein, and Mr. Evil? I suspect not. 📧

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