

GAVIN BROWN

HOW TO GET
YOUR PHD

*A Handbook
for the Journey*

OXFORD

A nice photo of me and some of my former students



Skills you will have gained

When you imagine the completion of your PhD, I want you to remember one thing: the most important thing to come out of it will *not* be any of your papers, or reports, or results...it will be **you**—the person, with the knowledge, skills, and experience that you have gained. Let me say it once more time...

The most valuable outcome of your PhD process...will be *YOU*.

You will have many *transferable skills*, even if you're not aware of them. These skills will prove useful to you and others in your later life. No matter whether you opt for a job in academia, head to industry, or switch focus to a different area of life entirely, you will retain these skills.

So, now, I want to give you a brief preview of the future—just as I did all the way back at the start of chapter 1—of what you will be able to do *after your PhD*.

You will know *how* to learn from unstructured information

In your undergraduate degree, you will have been given a reading list and a syllabus, which breaks a topic down into bite-size chunks. The material is not overwhelming, but it is challenging. In research, this is not the case—there is no predefined syllabus, and there is no known ‘right’ answer. Here, the average undergraduate student will be overwhelmed. However, people who have a PhD tend to

excel when the volume of material is much larger, and when there is no clear authority. It is a skill to know how to manage time and digest a large body of information, without being overwhelmed by the sheer volume, uncertainty, and unstructured nature of it all. Not everything can be learnt from a textbook.

You will know how to tackle a *really* hard problem

In undergraduate years, you will have solved problems and questions that took anywhere from a few minutes to a few days to solve. But, in your PhD, you will have encountered problems that took **several months, or years**, to properly address. When you tackle **really, genuinely hard problems**, you get new perspectives. You will have learnt how to exercise *systematic thought* to break a problem down, how to be *creative* in addressing it, and, most importantly, *persistence* in the face of obstacles or slow progress. You will have gained an '**intuition**' for what the solution might look like—even if you aren't able to see all the details yet. You will have gained the **confidence** that you're capable of finding a solution, when faced with problems of this scale and challenge. And, after a time, having solved enough previous problems, you



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will have a box of tools and solutions at your disposal, which you can rummage through to find ones that will fit new problems. Very few people ever acquire these skills, since (outside of the intense experience of a PhD) other priorities (e.g. personal or economic) often take precedence over spending that much time on a problem.

You will be a better communicator

As part of the PhD, you will have talked with both experts and non-experts in your field of study. These people will have been from diverse backgrounds, with diverse styles of communication themselves. This experience gave you practice in using logical argument to persuade others of your points, explaining concepts at differing levels of complexity, dealing with ‘difficult’ people, and debating issues in a professional manner... all when there is no truly authoritative answer to rely on. This diversity of training in communication styles is something not many people get the chance to do—but this is *expected* in a PhD programme.

You will be able to write clearly

Good writing skills are an essential component of research, as we’ve discussed in an earlier chapter. You’ll have written short, sharp summaries of your work, which capture the essence without overwhelming the reader with detail. You’ll have written longer technical documents, where you have to pay attention to *every small detail*. You’ll have written very long documents, where you have to keep the reader engaged over many pages,¹ leading them through a complex web of background material towards a

¹ A PhD thesis can be anywhere from 20,000 to 80,000 words long, depending on the subject.

nuanced conclusion. Being able to do this is appreciated and highly valued by industry.

You will have strong presentation and teaching skills

If you work on it, this will be one of the most awesome skills in your toolbox. To repeat what I said in chapter 9, if you learn how to give good presentations, you will be **legendary**. Any employer will value someone who can digest technical material and communicate/teach it to other staff, in a clear and professional manner. Try to recall all the diverse ways of presenting complex material, with which you have experience. In your PhD, you probably did thirty-minute technical presentations, short five-minute summaries, and thirty-second elevator pitches. You learnt how to do these at different technical levels—from deep technical talks for experts (e.g. professors), to tutorial-style introductions for complete beginners (e.g. undergraduates). Work on this skill and it will be one of the most valuable on your CV, I promise!

You will know how to analyse complex data

Almost all PhDs involve some form of data analysis. It might be qualitative, quantitative, or both. You may have learnt the appropriate tools for statistical testing, uncovering correlations and causal relationships hidden in the data generated in your field. Or you may have learnt survey and qualitative research skills, how to elicit rich qualitative data from people and organisations, and analyse it meaningfully while handling ethical processes, and more. From all of this data, you will have generated many figures, tables, graphs, and lists, and had to distil out a coherent narrative—the ‘story’ hidden in the data. Imagine if you were a fresh

undergraduate, being confronted with this challenge. You'd be overwhelmed. But you're not an undergraduate anymore. You're a PhD graduate. You can handle this. The modern world is driven by large volumes of complex data...so, if you know how to manipulate it and extract new knowledge, you will be in demand.



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You will know how to *think critically*, and give feedback

All PhD students acquire critical thinking skills, whether they realise it or not. You have been trained to evaluate results, solutions, and view the arguments of other people in a critical manner, seeing non-obvious links and issues, to come up with your own opinion of their work. Being able to think like that, and give feedback to others, is a very, very valuable skill in all walks of life.

You will know how to *take* critical feedback

When people work on something for a long time, they tend to put a lot of *emotional* energy into it. During a PhD, you will get some *harsh* feedback from your supervisor, from colleagues, or from reviewers when you submit papers. You will learn to respond professionally, and how to take the feedback to improve your work. This is a valuable professional skill, respected by others, so don't underestimate it.

You will know what thinking/working styles are best for you

Everybody works in different ways, and has particular styles which suit them. When you **know** your own styles, you can target your efforts into projects where you will be most effective. As part of the PhD, you will learn these styles. So, do you know, right now, whether you think best in abstract terms, or in detail? Do you think of solutions to **genuinely hard** problems in a top-down manner, or construct solutions bottom-up? Do you work best in a team or as lone wolf? Do you work best late at night, or early in the morning? Are you a project starter, or a finisher? When you know the answers to these questions,² it will help you understand how to approach problems most efficiently, and how to sell yourself.

You will have better time management and self-discipline

Oh yes. And it will serve you well. During the PhD, you will have encountered *deadlines* (probably several at once), either ones set by your supervisor or other external parties, or ones that were *self-imposed*. When these came, you will have organised your workload around them, and hit your targets (ok, you may have missed some, but that's part of the learning experience). You will have resisted the urge to take a longer lunch break, watch another hour of TV, sleep in late, or go out with your friends, when it was *necessary* to meet the goals you wanted to. This *self-discipline* and *self-organisation* are critical skills, once you move to new jobs and roles after you PhD.

² During my PhD, I took part in something called a 'Belbin Test'—a psychometric evaluation to find out what sort of worker I was. I learnt a lot about myself and it helped me understand my own practices at a deeper level.

You will know how to work well with others

Many PhDs involve working effectively with other staff or students. Successful collaboration requires division of labour, trusting others to deliver both in terms of quality and timeliness, managing conflict, and many other aspects that you will learn. Even if you're not a part of a large team, you will have had to learn to work as such *with your supervisor*—working one-to-one on an intellectually high-pressure challenge. The skills you will develop when you do so will be difficult to see at first but, in due course, you will find them *highly* valued by potential employers. See also the chapter by Steve Furber in Part 2 of this book, for his thoughts on how to work well in team environments.

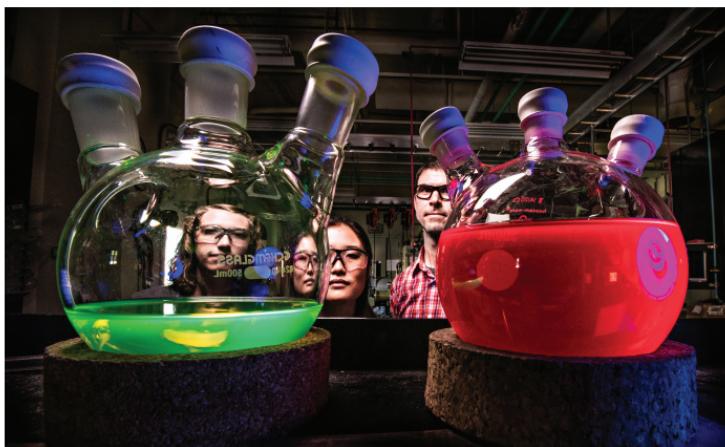


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You will have skills that you're not even aware of

This is very true. I've tried with this chapter to map out the *generic* skills that most PhDs acquire, but there will be skills specific to your discipline, too. And you won't even realise that you're *actually*

quite good at them, relative to others in the workplace, and that *people value those skills*, until you start your post-PhD journey. You can accelerate this—by **networking** with people in and beyond your field, before you complete the PhD. By simply chatting to them about *their* jobs, you’ll start to realise there are elements that *you already know how to do*. So, get out there—networking, connecting, and figuring out what you **really** have to offer.

You will know what makes you happy (and what doesn’t)

What ingredients do you want in your career? Do you want to spend long hours with a challenging technical problem? Or would you prefer to spend those hours in meetings with colleagues, thrashing out a solution to an organisational issue? Or presenting ideas in front of large audiences? Do you like the university environment? Or do you prefer industrial settings? During your PhD, if you’re lucky, and if you make an effort to grab the opportunities when they come, you’ll get some degree of experience in all of these things. Some of these things you will enjoy, and some you won’t. Some will make you intrinsically happy, and some not. Knowing what professional ingredients make you happy will be valuable to **you**.