

What do researchers do?



Career profiles of **doctoral entrepreneurs** 2010

‘The doctorate teaches you to think on your feet and laterally ’

‘In creating gainful employment for scores of other people, I have done something which has had a large impact around the world ’

‘I would recommend that future entrepreneurs look around their universities to identify commercial opportunities and funding ’

Vitae is supported by Research Councils UK (RCUK),
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'What do researchers do? Career profiles of doctoral entrepreneurs' published by the Careers Research and Advisory Centre (CRAC) Limited

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Foreword

It gives me great pleasure to introduce this collection of career stories from doctoral researchers who have gone on to become entrepreneurs.

In order for Britain to move out of recession and into recovery we need to foster a new culture of entrepreneurship in our nation. Certainly this catalogue of brilliant research professionals putting their discoveries to work provides an exceptional illustration of just how much we have to gain from such a culture, and just how much we stand to lose if we fail to create it.

Many of these doctoral entrepreneurs have received strong support from UK universities and other agencies during the development of their enterprises, and this publication makes clear just how much these institutions contribute to nurturing and developing critical entrepreneurial skills within the research workforce.

This publication also illustrates how shortening the time between scientific discovery and practical application is not only profitable, but a necessary step in removing logistical and financial impediments that prevent researchers from working as quickly and efficiently as they are able. This is critical because hunger, disease, lack of clean water, clean energy and clean air are problems that need to be addressed now by our best and brightest minds. Entrepreneurship has armed these professionals with what they need to be successful in the work they do for all of us.

Finally, this publication demonstrates that all entrepreneurs are made, not born. It is a skill set many can master, and one that must be taught. I founded the social enterprise School for Startups in 2008 to pursue this objective, and I work with universities, institutions and enlightened enterprises across the UK to train new entrepreneurs every day.

I believe, as this publication illustrates, the UK is uniquely positioned to become the heart of innovation and entrepreneurship worldwide.

Enjoy!

Doug Richard
CEO and founder of School for Startups



Introduction

‘All people are entrepreneurs, but many don’t have the opportunity to find that out!’

Muhammad Yunus (Nobel prize winning economist and founder of the Grameen Bank)

Over 14,000 people qualify with a doctorate every year. Most will use their unique skill sets in a wide range of roles including academic and commercial research, management, finance, economics, sociology and teaching. However, recent research estimates that 10% of doctoral graduates will follow an enterprising career². The act of undertaking a doctorate is a good training ground for the development of enterprise skills. Research by its nature requires creativity, determination and problem-solving. These skills are likely to be useful wherever a researchers’ career journey takes them, but they clearly have some particular value for those who go on to become self-employed.

This publication contains 30 career stories of doctorally qualified individuals who went on to set up their own business or enterprise. Each has made a contribution to society and the economy that has built on the skills they developed in their doctorate. The businesses that they have established cover a wide range of different sectors, size and type. Each story describes why the individual started their business and sets their decision in the wider context of their career. Many stories highlight how self-employment grew out of or intertwined with academic employment or employment in other sectors.



Key terms³

This study uses a number of terms to describe the particular skills and experience of the researchers who are profiled. The following definitions should help to clarify the use of language:

Enterprise: The term ‘enterprise’ and ‘enterprising’ is used within this study to describe the general skill set that these researchers possess. These skills include creativity, problem-solving and leadership. It is possible to be an enterprising person without ever becoming self-employed.

Entrepreneur: The term ‘entrepreneur’ and ‘entrepreneurship’ is used within this study to describe the application of enterprise skills to the problem of establishing a business or organisation.

Self-employed: The term ‘self-employed’ is used to describe an actual employment situation where an individual does not have an employer. There are a range of different forms of self-employment including sole trader, partnership, limited company, co-operative and franchise.⁴

The stories are organised according to the researcher’s discipline of their doctorate and are presented in their own words as told to the authors of the study. This introductory chapter provides some context and gives a thematic overview to the stories of these doctoral entrepreneurs.

We interviewed 40 doctoral entrepreneurs for the project, and although not all stories are included here, reference is made to them in the introduction. All stories are available via the Vitae Database of Career Stories (DoCS)⁵. We encourage all doctoral entrepreneurs to add their story to this database.

¹ Yunus, M (2003) ‘Banker to the Poor.’ Aurum Press Limited: London

² Auriol, L (2010). ‘Careers of Doctorate Holders: Employment and Mobility Patterns’. France: OECD, p13

³ For a more detailed discussion of these terms see Kobia and Sikalieh (2009) ‘Towards a search for the meaning of entrepreneurship.’

⁴ For further advice on self-employment and the different legal forms that this can take see Citizens Advice Bureau’s ‘Adviceguide - Self-employment: checklist’, http://www.adviceguide.org.uk/index/your_money/employment/self-employment_checklist.htm. Accessed 28 May 2010

⁵ www.vitae.ac.uk/docs

The researcher as entrepreneur

In 'Enterprise: Unlocking the UK's Talent' (2008) the Government set out its aim to create 'a society in which the contribution of entrepreneurs and enterprise is encouraged and valued. Supported by a culture in which everyone with entrepreneurial talent is inspired, and not afraid of taking up the challenge of turning their ideas into wealth.'⁶ Yunus' work with the Grameen Bank in Pakistan⁷ showed that entrepreneurship could emerge from the poorest in society and that, if appropriately supported, it had the power to transform lives and communities. This publication, studying researchers and doctoral graduates, demonstrates that entrepreneurs can also emerge from the most academically qualified members of UK society.

Gareth Roberts (2002) argued that one of the principal selling points of doctoral graduates was their ability to contribute to the endeavour of 'making discoveries and creating new products, services and processes', in other words their ability to innovate and create.⁸

The Wary report (2006)⁹ emphasised this further stressing the need for a focus on knowledge transfer between HEIs and business and for all doctoral researchers to receive enterprise training. However, for some there still remains a question mark over the likelihood of the academic and entrepreneurial skill sets being co-located.

Jim Rohn, the American entrepreneur and author, said 'formal education will make you a living, self-education will make you a fortune'¹⁰. This dichotomy between the ivory tower academic and the street smart entrepreneur is a well worked one and yet as the stories in this publication demonstrate it is far from justified. The 40 doctoral entrepreneurs who were interviewed for this study are drawn from diverse disciplines and sectors. Each of their careers and businesses are different and yet what unites all of them is an ability to create a business, an income and a career for themselves. It is these abilities of creativity and innovation that are prized by governments and policy makers as the engines of the economy.

The doctoral entrepreneurs in this study demonstrate a wide range of different social and economic impacts. Many have created employment for others or created businesses with high financial turnover. Others have seen their achievement in social, environmental or ethical terms such as Neil Jennings (environmental science), who created the Student Switch Off campaign to raise awareness of the environment amongst university students, or Atul Shah (accountancy and finance), who runs Diverse Ethics, a social enterprise which works with companies to help them achieve aims of equality and diversity.

Why start your own business?

The doctoral entrepreneurs in this publication outline a wide range of motivations for their decisions to start their own businesses. To some extent these motivations and the nature of the business are determined by the point in their lives that they decided to become self-employed. While it might be tempting to see entrepreneurship as an innate quality possessed by the few it is worth noting that relatively few of the subjects of this study started a business immediately after their doctorate. More usually their enterprises were established after a considerable period in employment, were frequently combined with other forms of employment and were often built out of employed roles in a fairly logical way.

A minority of the doctoral entrepreneurs set up straight from their doctorate. Some of these managed to support their start-up costs through winning business planning competitions that gave them access to some financial and other support through their university. Others relied on their networking skills to provide them with the support they needed. Blanchflower and Oswald (1998) note that while childhood personality type is a poor predictor of entrepreneurship, access to capital is a very good predictor¹¹. The importance of capital is clearly highlighted in the stories and where universities found ways to support good ideas the entrepreneurs were able to turn them into businesses much more quickly. Those who 'went it alone' often experienced considerable difficulty and delay in the development of their idea. Taken together the doctoral entrepreneurs demonstrate that there are many roads to self-employment.

Most of the doctoral entrepreneurs had extensive CVs before they established their businesses. Some of the roles undertaken by individuals before starting their businesses include teacher, banker, consultant and manager. Still more had extensive careers within higher education before establishing themselves working as administrators, trainers, lecturers and research staff. Some have pursued their entrepreneurial aspirations through their universities and have managed to combine running a spin-out with an academic career. There is also an important sub-set of people who have been involved with the process of commercialisation of research or knowledge transfer as a job and this has served to develop their entrepreneurial skills. These roles include research and development investment adviser, patent agent and incubation manager.

⁶ BERR (2008). 'Enterprise: Unlocking the UK's Talent.' London: HM Treasury, p11

⁷ op cit (Yunus, M 2003)

⁸ Roberts, G (2002) 'SET for Success'. London: HM Treasury, p20

⁹ The Wary Report is formerly known as Research Council Economic Impact Group (2006). 'Increasing the economic impact of Research Councils'. www.berr.gov.uk/files/file32802.pdf, viewed on 3 May 2010

¹⁰ Quote by Jim Rohn, America's Foremost Business Philosopher, reprinted with permission from Jim Rohn International 2010, www.jimrohn.com/index.php?main_page=page&id=550#EDUCATION, viewed 4 May 2010

¹¹ Blanchflower, D and Oswald, A (1998) 'What makes an entrepreneur?', Journal of Labour Economics, 16 (1), p26-60

The entrepreneurial personality

There is considerable debate about the way in which personality impacts on entrepreneurial intentions and performance (eg Carsrud and Johnson, 1989; Scherer, Brodzinski and Weibe, 1991 and Rauch, and Frese, 2007). A recent meta-analysis by Zhao, Seibert and Lumpkin (2010) suggests that personality plays a role in both the emergence and success of entrepreneurs. This study did not attempt to examine its subjects using any kind of personality testing; however it is notable that there are a number of personality traits common to many of the doctoral entrepreneurs.

The most obvious personality trait that manifested across the doctoral entrepreneurs was a strong desire for independence and autonomy. Tim Hart (microbiology) enjoys **'the independence and the control you have'**, Madhuri Warren (molecular biology) also values the independence as it brings with it freedom to **'determine how to grow and resource the business.'** Caron King (biological pharmacology) sought out the opportunity to **'have choices over who I was working with'**. Barrie Hopson (psychology) sums this desire up saying **'autonomy and independence are my main values. The money was never the motivating driver. The motivators were that I could be independent and learn new things.'**

The doctoral entrepreneurs frequently complained that they did not fit very well into conventional organisations and that the hierarchies within academia or other sectors were too constraining. Mark Hughes (organic chemistry) did not want to be **'a small cog in a big machine'**. Krista Scott-Dixon (women's studies) quit a job because of a **'restrictive immediate supervisor'** and an organisation that she describes as **'very old school'**. Dave Filipović-Carter (public international law) says that he still looks at jobs, but has **'never yet found one that appeals enough to take the risk of sticking on a suit and going to work for someone else.'**

Valuing independence and autonomy is a strong theme that runs through all of these stories. However, many of the doctoral entrepreneurs have also found a way to spend much of their careers within organisations, sometimes combining entrepreneurial activity with employment. Mary Chadwick (history) set up a social enterprise alongside a career as a banker and David Goulson (ecology) created the Bumblebee Conservation Trust alongside his work as an academic. Brian Tanner (materials science) and Steven Howdle (chemistry) are amongst those who have managed to combine an academic career with entrepreneurship.

For the doctoral entrepreneurs with substantial employment histories or who have combined entrepreneurial activity with employment the ability to be proactive is as important as the need to be independent. To go back to Gareth Roberts' description of the value of researchers all of the doctoral entrepreneurs profiled here have the ability and personality to make discoveries and create new products, services and processes. This creativity undoubtedly draws on their personality (who they are) but it also feeds on the skills and experiences of their doctorate (what they have learnt) and as many of the stories show there is a complex relationship between the two.

Managing change and the forces of circumstance

Although many of the researchers actively pursued an entrepreneurial career, for others it only became apparent after some time that entrepreneurship was a viable option. For still others self-employment was not something that was sought as an end in itself but rather seized upon as a creative way around a particular challenge, frustration or opportunity. These stories demonstrate that an enterprising personality alone is not enough to create a business. The doctoral entrepreneurs were not just born, but were made through a succession of life experiences. Such experiences included rapid personal development through their doctoral studies.

While there were a few researchers who entered their doctorate with self-employment in mind the overwhelming majority found this career path later on. Sometimes a brilliant idea that seemed to beg for commercialisation started people on the entrepreneurial path. Tim Willis (informatics) describes this by saying, **'it's quite hard to stop once you've got started, because you gather momentum and all of these ideas and prospects come out of the woodwork.'** For others it was not so much about a brilliant idea, but rather about arriving in a place where your skills, networks and the market make it possible to easily set up a business. Madhuri Warren (molecular biology) and David Goulson (ecology) both found that their businesses/consultancies grew out of their employed roles in a fairly logical progression.

Another key element of the environment that enabled people to develop entrepreneurial careers was the role of other people. For some one of the major downsides of becoming self-employed is that it can be a lonely existence. John Okyere (molecular genetics), Emma Heathcote-James (theology) and Mary Chadwick (history) note that as the innovator you are often alone in setting up your business. Yet, many of the doctoral entrepreneurs drew great strength from others. A number of the enterprises were formed out of partnerships between two or more individuals such as the companies set up by Barrie Hopson (psychology) and Steven Howdle (chemistry). Even if people are not formally in business with others they often note the key role that others have played in their success. For example Kenneth Mostern (ethnic studies/literature) drew on family support whilst he was setting up his business, while Emma Heathcote-James (theology) established a support network Women in Rural Enterprise (WIRE) both for her own work and the work of other women.

Some of the doctoral entrepreneurs described how they began to investigate self-employment in response to a feeling that after a number of years a career change was necessary to improve their work/life balance or to increase personal fulfilment. For others the spur to become self-employed came from a realisation that for them opportunities within the conventional academic path might be limited. For example, John Okyere (molecular genetics) felt that the risks associated with setting up his business were fewer than the risks of pursuing an academic career. Jo VanEvery (sociology) found that after a successful academic career she just was not enjoying it any more and felt the need to move on.

For a notable few it was the sense of getting blocked in an academic or other career that led people to consider setting up on their own. Atul Shah (accountancy and finance) felt that his career was being limited by the prejudice of others and ultimately felt that he could only satisfy his 'intellectual appetites and ethical conscience' by setting up his own business. Joanne Whitaker (biomedical sciences) similarly felt disillusioned with academia on realising that 'career progression was more limited for women', and this ultimately led to the establishment of her business. For these individuals blockages and perceived prejudice provided a springboard for their entrepreneurial creativity.

For all story tellers, the chances they had taken and opportunities they seized before, during and after their doctoral studies meant they were well placed to move in to a commercial environment. Often the skills, specific knowledge and networks which had been developed served them well in what was often a well-managed and planned transition. However their experiences and learning also better prepared them to weather the uncertainty of career change.

The role of active career choice

The doctoral entrepreneurs' career paths generally emerged out of the relationship between their personality and the environment in which they worked. Often these developments appeared to be merely happenstance, although they were frequently about the individuals' ability to react to change and unexpected events. David Goulson (ecology) describes himself as 'lucky' but his decision to pursue both an academic career and to set up a trust has enabled him to build synergy between his work and his campaigning. Similarly although Kenneth Mostern (ethnic studies/literature) attributes some of his success to luck he made purposeful decisions to leave academia, build his networks and establish a series of consultancies and businesses.

None of the doctoral entrepreneurs made a definitive choice early in life. For them a career was something which was built rather than something that was chosen. This does not mean that people were not taking an active approach to their career development. Bill Law (educational sociology) says 'I'm a 'what's next?' kind of bloke. This requires some sense of direction, to think that it is more likely to be 'over here' than 'over there' but I've never been able to give an answer to the question 'what do you want to be doing in ten years time?.'

In developing this sense of direction in their careers the doctoral entrepreneurs generally made progressive career decisions building their networks and expanding their skills bases. Once they set up their businesses many drew on courses and support provided by their universities, Business Link and regional development agencies as well as wider networks of support.

Many of the doctoral entrepreneurs describe the challenges of establishing businesses in terms of skills to be acquired. In all cases these were challenges which they were capable of overcoming, but there were often continuing challenges. Dave Goulson (ecology) notes that, 'it was (and remains) hard to get to grips with the financial and legal arrangements'. Joanne Whitaker (biomedical sciences) noted a broad range of skills which were required, 'financial, business, technical, IP, funding, research, development, people management, customer service and many more.' It is important to note that people's learning and development does not stop once they set up their businesses. Many of the doctoral entrepreneurs describe their experience of setting up their own business as a learning experience. Their ability to continue to engage with learning and make positive career and business choices was as important as their doctoral studies to their role as doctoral entrepreneurs. The debt of gratitude which many story tellers felt they owed to supportive higher education institutions, development agencies, incubators and higher education training organisations in general was noted by many.

In some ways being an entrepreneur builds on the key career management skills that are in evidence throughout the rest of their careers. The ability to respond to change, engage with opportunity and to sell and utilise your skills is necessary in all careers. However, in an entrepreneurial career these skills are likely to be tested more regularly. Dave Filipović-Carter (public international law) notes that he has to be proactive and willing to adapt at all times, saying 'whenever people asked me to do something I would almost always say 'yes'. I agreed to do lots of things that I hadn't done before.' Joanne Whitaker (biomedical sciences) felt that, 'learning is never a waste of time – you never know when it might come in handy!'

The value of the doctorate to entrepreneurship

The doctoral experience played a very important role in many of the doctoral entrepreneurs' careers. The specific knowledge and expertise gained was often especially important where the business was closely related to the area of doctoral study. However there were commonalities around other skills that the doctoral entrepreneurs had developed during their doctorate and then found useful in other contexts.

An unusual but instructive case is Trudi Deakin (health sciences) who used her doctorate as an opportunity to get funding to undertake her proof of concept work. More commonly the doctoral entrepreneurs developed their business idea out of either the subject of their doctorate (eg Nick Gostick and John Okyere) or their experience of academia (Filipović-Carter, Jenny Koenig and Alexander Griekspoor).

Another group have gone on to work in areas that are allied to their doctorates but which do not directly build out of them. Steve Jones (physical chemistry) built on his experience of research and now runs an intellectual property and patent company, Neil Jennings (environmental science) built on his research interest in the environment to establish the Student Switch Off Campaign and Barrie Hopson (psychology) built on his background in occupational psychology to move into the related worlds of management training, consultancy and personal development.

There are also many doctoral entrepreneurs who have set up businesses that have less clear relationships with the subject of their doctoral study. Joanne Whitaker moved from biomedical sciences to design and manufacture bras, Caron King moved from biological pharmacology to change management and Emma Heathcote-James moved from theology to setting up a soap making business and PR company. For these doctoral entrepreneurs, as well as for others, the doctorate was much more useful as a place where intellectual, technical and analytical skills were forged.

Regardless of what type of business they established the doctoral entrepreneurs drew on their doctoral skills.

Mary Chadwick (history) says **'my doctorate taught analytical skills – I can read a legal document quite easily now!'**

Nathan Ryder (mathematics) emphasised the development of project management skills, highly applicable to a business environment. Others talk about how the doctorate supported their ability to present to a range of audiences, clarify their thinking and personal branding and how it contributed to their confidence.

Summary

This publication demonstrates the impact that doctoral study has made to the careers of 30 doctoral entrepreneurs. They are exceptional people who have forged unique careers, and whose contributions have had benefits for the economy and the wider society. Many of the doctoral entrepreneurs describe how their skills and personal qualities were developed through the experience of doctoral study and how this later proved essential to their success in their business ventures. The doctoral entrepreneurs cite confidence, resilience, resourcefulness and creativity amongst other skills and attributes that they felt had served them well. Importantly for many, their ability to innovate and create was sharpened during their doctoral research. Some moved rapidly to establish their own business while others pursued a career in employment before becoming self-employed. In each case a combination of their personal qualities, training, environment and career decisions has led them to undertake this career path.

The doctoral entrepreneurs have drawn on their skills and knowledge to develop innovative and creative business ideas. Many of these have been developed with strong support from universities and other agencies and it is important that UK higher education continues to find ways to nurture and develop the talent that exists within the research workforce.

To complement this publication Vitae has also created a set of films showcasing the career paths of doctoral entrepreneurs which can be found on Vitae's Database of Career Stories (DoCS), www.vitae.ac.uk/docs

Arts and humanities

‘ You do need to have a certain work ethic to drive through the completion of a doctorate, and I think this has served me well in my working life too.’

Emma Heathcote-James (theology)

This chapter focuses on the career stories of doctoral graduates in the arts and humanities. Arts and humanities doctoral graduates made up over 13% of all UK-domiciled doctoral graduates between 2003–2007. The discipline of arts and humanities is broad and covers the following subjects:

- history
- English
- modern languages
- theology
- linguistics and classical and ancient languages
- American studies
- archaeology
- art and design
- cinematics
- communication studies
- comparative literature
- design studies
- drama
- fine art
- journalism
- media studies
- music
- philosophy.

This chapter presents the career stories of three arts and humanities doctoral entrepreneurs and covers history, theology and linguistics.

Mary Chadwick runs Prime Timers, a recruitment consultancy for the third sector



‘ My key message to other doctoral graduates would be that having the idea is not enough. It is not what you want to sell that is important it is what people want to buy. I’ve learnt this over life, it’s not about you it’s about the customer!’

I have always loved history, and did an undergraduate degree in the subject at University College London. I had an interest in British political history, and although I was a bit disillusioned with always having to assimilate other people’s opinions from books I told myself that if I got a first in my degree, I would be good enough to go on and do a doctorate! I came from a family of teachers anyway, so this seemed quite a natural step up from them.

On finishing my doctorate, I made the decision that I didn’t want to stay in academia. A lot of it felt as if it was quite divorced from ‘real life’ and a lot of academics I met didn’t inspire me. So I joined the banking sector and I was a successful banker for a number of years becoming Executive Director of a small firm of bankers focusing on marketing products to high net-worth individuals. I loved the lifestyle, regularly jet-setted around the world and enjoyed that it was mentally challenging.

I’ve always been something of a maverick, getting involved in all sorts of things outside of work, and I got to the point, after we were taken over, where I realised I wanted to do something to wake me up and inspire me. I liked the idea of setting up and running a business and was invited to join a career transfer agency I had signed up to.

The social enterprise is called Prime Timers, providing business and recruitment solutions to third sector organisations. We do this through a talent pool – those from the private sector who want to put something back while applying their skills and knowledge. We also help third sector organisations with governance issues and reviews.

We started out with the help of Community Action Network who incubated us. They paid my salary for a long time, and we were very grateful. It is a very lonely business setting things up and they made us feel we weren’t alone. The biggest challenge was

realising that it takes a long time. There is no overnight success. Another challenge is that you never know which of your efforts is going to pay off in terms of marketing and restraining yourself from doing things which are clearly not going to lead you anywhere!

Some of the projects I have been involved in – such as receipt of grant funding for a feasibility study for a university of civil society – have enabled me to marry perfectly my previous interests at doctoral level such as doing things in depth, while also marketing the organisation. My doctorate taught analytical skills – I can read a legal document quite easily now! You’ve got to manage large amounts of information, and be able to write it up.

My key message to other doctoral graduates would be that having the idea is not enough. It is not what you want to sell that is important it is what people want to buy. I’ve learnt this over life, it’s not about you it’s about the customer!

Emma Heathcote-James runs Spotty Dog Productions and The Little Soap Company



“ I love the fact that while others are terrified of the insecurity of losing their jobs, I feel more secure than most even though I'm working for myself. ”

My doctorate focused on those who have had religious visions and experiences of angels in the UK, since this was the first academic study of the phenomena, various publishing houses offered advances to rewrite the thesis into a mass market publication, which was called 'Seeing Angels'. When the release date for the book was brought forward to being before that of the close of my doctorate, this unfortunately went against the University regulations, which stressed that the doctorate needed to be my 'original work.' Despite my protests, this meant I had to take the difficult decision to stop the doctoral study and publish. Thankfully the book subsequently has done very well and I have written three more off the back of it!

While working on my doctorate BBC Everyman got in touch asking me to make a documentary on my research, which I helped to make and presented. Television has proven to be a highly rewarding and enjoyable aspect of my work. Really getting the bug for working in the area, I ended up working on other religious documentaries and then branched out into kids' TV, short films, local radio and feature films. One production arose which needed the creation of a company to secure funding,

and Spotty Dog Productions was born. This was eight years ago and is now my PR agency – we work on contracts mainly for development agencies – looking after media and design talent in the South West of England.

As well as having the PR work going on, I felt a need for a diversion. I created The Little Soap Company in November 2008, in the garden at the back of my cottage. I make luxury soaps and soaks in the workshop; we are now stocked in eight local Waitrose stores and have several other good contracts as well as supplying farm shops in the local vicinity. I also make bespoke soaps for the Evesham Asparagus Festival and the huge Pershore Plum Festival (asparagus and plums are huge in this neck of the woods!) and we support various charities and source all staff and services locally. Having my own company enables me to be creative and still work for myself!

Because I have no retail or marketing experience at all, I have had to learn so much along the way. This includes marketing, brand work, packaging, sales and the like. You do need to have a certain work ethic to drive through the completion of a doctorate, and I think this has served

me well in my working life too. Solitary working on doctoral studies and indeed writing and publishing books prepares you well for setting up your own business, although it doesn't prepare you for working with other people! That said one challenge is the loneliness of setting up and running a business. I run a new local network group called Women in Rural Enterprise (WIRE). We all run our own businesses ourselves, and we get together every month to network and support one another, and discuss issues relevant to running a business, so we've learnt a lot from each other. Another useful person throughout my doctorate and subsequent decision to set up a business was my supervisor. He realised, like me, that I wasn't necessarily suited to academia, and encouraged me to take on alternative challenges. I love the fact that while others are terrified of the insecurity of losing their jobs, I feel more secure than most even though I'm working for myself.

Tim Willis runs a business developing accessibility software



“ I do remember a big tug of war between people who thought I should work exclusively on my doctorate and those who thought I should heavily pursue the business idea. I think it’s quite hard to stop once you’ve got started, because you gather momentum and all of these ideas and prospects come out of the woodwork. ”

‘I wasn’t too sure what to do after my first degree, but I have always been interested in linguistics and disability, and three research assistant posts building databases of analysed text were useful experience. These tracked the frequencies and meanings of words, and how they clustered, and can be used in the design of disability communication aids that accurately reflect real interaction.

Not really knowing what to do following my Masters at the University of Edinburgh led to me pursuing a doctorate in informatics, specialising in computational linguistics. I secured an adequate grant for three years, though it ended up taking a lot longer! During this I developed a ‘flexible text expansion’ algorithm, providing a more powerful, flexible word prediction system to assist disabled people’s communication,

which would also be useful on mobile devices. My doctorate enabled me to hone the skills I needed to become more employable within linguistics and, although my programming is barely adequate, I know what can be done, which is enough to instruct ‘proper’ programmers.

Edinburgh University offered grant money for the ‘proof of concept’ process, and the NESTA competition provided help establishing my business plan, plus product development money. Edinburgh also ran the Edinburgh Pre-Incubator Scheme (EPIS) which provided guidance and a loan. My place was conditional on me spending the first three months (of 12) going out and meeting companies, avoiding doing any actual product development. I managed to get into Nokia (meetings in Finland and Boston, MA),

Google (meeting in Mountain View, CA) and several others, and got encouraging feedback that they thought it would be useful. This persuaded EPIS to give me the remaining nine months (and £7,500 loan).

I do remember a big tug of war between people who thought I should work exclusively on my doctorate and those who thought I should heavily pursue the business idea. I think it’s quite hard to stop once you’ve got started, because you gather momentum and all of these ideas and prospects come out of the woodwork. Start-ups might have a great product which only a few people want to buy, great if you can sell to really rich people! I wouldn’t want to discourage prospective doctoral entrepreneurs, but I don’t want to paint too rosy a picture – many businesses fail!

Additional stories

- Rebecca Steinitz also began her career by undertaking a doctorate in the discipline of British literature.

This and the three stories above are available on the Vitae Database of Career Stories: www.vitae.ac.uk/docs

Biological sciences

‘ I have really enjoyed the excitement of creating something from nothing, of creating commercial value. There is so much diversity on the job. I enjoy the independence and the control you have’

Tim Hart (environmental microbiology)

This chapter focuses on the career stories of doctoral graduates in the biological sciences. Biological sciences doctoral graduates made up 14% of all UK-domiciled doctoral graduates between 2003–2007. The discipline of biological sciences is broad and covers the following subjects:

- biology
- biochemistry, molecular biology and biophysics
- microbiology
- agriculture
- animal science
- botany
- food and beverage studies
- forestry
- genetics
- sports science
- veterinary medicine
- dentistry and science
- zoology.

This chapter presents the career stories of six biological sciences doctoral entrepreneurs. Their subject areas cover biochemistry, molecular biology, environmental biology and ecology.

Andy Sutton runs Compandia, a bio-informatics company



‘ Having been involved in a few business start ups, it is not something you ever lose the appetite for! You stand and fall by the decisions you make, it’s great not having to do everything by committee.’

I have always loved science and I am a technophile at heart, so it was an easy decision to pursue a doctorate. I completed my doctorate in protein biochemistry at Aberdeen, and I didn’t really know whether I wanted to pursue academic research long term or move into a company. I eventually realised that the academic route was long and uncertain.

Recently I worked for UK Trade and Investment as a research and development investment adviser. The objective was to work with large overseas drug companies and try to understand what kinds of research and licensing opportunities they were making, basically trying to encourage them to invest in the UK.

I am now Chief Executive of a small start-up company called Compandia. Compandia is a bio-informatics company, and in particular we use advanced algorithms for data mining of complex datasets. The rest of my time I am an investment adviser for Invest Northern Ireland; dealing with innovation and commercialisation.

My doctorate was excellent at ensuring I developed the skills of independent thought, to design my own experiments and dictate the way my research went. I would say that I haven’t drawn directly on the science, but I appreciate the ways in which science can meander and am good at seeing early opportunities – I have a

track history of filing for patents very early for example. Over time these have moved on to become significant intellectual property protecting valuable products in the market.

Having been involved in a few business start ups, it is not something you ever lose the appetite for! You stand and fall by the decisions you make, it’s great not having to do everything by committee. Once you do it one time it’s a bit of a drug, and you’re inclined to do it over and over again!

Madhuri Warren runs Pathology Diagnostics



‘ I love the independence it has brought me and the fact that I can determine how to grow and resource the business. In terms of applying the skills picked up during my doctorate, I suppose I use the scientific skills all the time, especially those associated with experimental design and scientific strategy.’

From my school days I have been interested in the science behind, rather than the vocational practice of medicine. I completed my undergraduate training in medicine at Cambridge University and then obtained a clinical training fellowship with the CRUK to undertake a PhD in molecular biology at the Institute of Cancer Research, London. I was keen to be exposed to a wide variety of research techniques during this time, and to develop scientific rigour in the formulation of scientific hypotheses, intellectual analyses of experiments and publishing data in peer-reviewed scientific journals.

My post doctoral studies were completed at the Wellcome Trust Sanger Institute where I was eventually asked to set up a pathology research lab. However, following

redundancy after academic restructuring in Cambridge, I chose to move into industry because this allowed me to utilise all my scientific and clinical skills. Around this time there was a lot of interest in devising smarter ways to develop new drugs and diagnostic tests for patients with cancer and this required people with clinical and scientific experience. I had already gained experience in starting a new lab and running a team from my previous career, and so I founded Pathology Diagnostics Ltd in 2008. I now have a team of six in Cambridge and we are in our third year.

Learning how to be an entrepreneur has been a big challenge. One has to be born with the right traits to run a business: self belief, a willingness to take risks and above all determination. I love the independence it

has brought me and the fact that I can determine how to grow and resource the business. In terms of applying the skills picked up during my doctorate, I suppose I use the scientific skills all the time, especially those associated with experimental design and scientific strategy. Other skills have been important, such as business planning and networking. Cambridge importantly has a lot of agencies available to help new businesses, including at the St Johns Innovation Centre, where we are based. ERBI (the Eastern Region Biotechnology Initiative) and the East of England Development Agency were also extremely important in helping us get established, sponsoring the ERBI award for the best start-up company, which we won in 2009.

David Goulson runs the Bumblebee Conservation Trust



‘ The doctorate also enabled me to develop skills in writing and presenting information. These latter skills have been particularly useful in the Trust, as it is about communicating with people – giving talks and presentations, and being able to adapt scientific language to talk to non scientists.’

I was interested in wildlife and in particular in insects from a very young age, and after my degree in biology I felt it a natural progression to take a doctorate in butterfly ecology. I continued to work in universities and now am Head of School of Biological & Environmental Sciences at Stirling University. I also have a large research group focused on bumblebee ecology. I am a founder, Director and Chair of the Board of Trustees of the Bumblebee Conservation Trust.

My doctorate prepared me in several ways for the establishment and management of the Trust. Besides the subject specific knowledge, it taught me to develop scientific questions and ways to answer them. The doctorate also enabled me to develop skills in writing and presenting

information. These latter skills have been particularly useful in the Trust, as it is about communicating with people – giving talks and presentations, and being able to adapt scientific language to talk to non scientists.

I established the Trust because there was a need for an organisation able to take information from academic work published in journals about bee conservation and communicate it to the wider public. The Trust started with nothing, no employees and no members. Three and a half years later it has six employees and 6,500 members.

I found there were many challenges in the setting up and growth of the Trust. It was (and remains) hard to get to grips with the financial and legal arrangements required

when setting up and running a company and a charity. We had to set up working systems and databases and we have also needed to develop policies – sometimes on the hoof.

I really enjoy the complete freedom the Trust gives us to make decisions quickly without the decisions having to proceed through numerous committees. It has also been really rewarding to watch it grow in size and develop tangible on-the-ground conservation projects with visible benefits to biodiversity. Combining academic research with practical outreach provides enormous synergies and is also both fun and rewarding.

Tim Hart runs Zyoxel, a university spin-out which is commercialising micro bioreactor technology



‘ I love the excitement and risk associated with running a business.’

My doctorate was in environmental microbiology, and I was specifically investigating the movement of ions and water in and out of plant roots. After I finished my doctorate in 1997, I went off to pursue postdoctoral research for a few years.

After this I became more interested in commercialising technology, especially around detecting certain properties of soil. The decision to commercialise followed years of being interested in the prospect of science commercialisation. I had always

liked the thought of the greater excitement, more varied opportunities and greater earning potential by doing this instead of academia. I am now heading up my second university spin-out, which is commercialising micro bioreactor technology. We work on the early identification of drugs that are likely to fail, thus potentially saving drug companies a lot of money. Zyoxel was born in 2009, and employs four full-timers and four part-timers.

I have really enjoyed the excitement of creating something from nothing, of creating commercial value. There is so much

diversity on the job. I enjoy the independence and the control you have – if you screw it up it's your own fault! Difficulties often include dealing with the unexpected. Stuff hits you from where you least expect it, so it's extremely important to react and adapt, but I love the excitement and risk associated with running a business.

Nick Gostick ran Scientific Solutions, a wastewater treatment consultancy



‘ I enjoyed and valued being responsible for my own success and my own career.’

I completed my doctorate in environmental biotechnology at the Cranfield Institute of Technology. I thoroughly enjoyed my research, but was sure that I didn't want to pursue a research career as it doesn't pay enough and can be very insecure.

I got plenty of job offers after my doctorate and joined a small business as Technical Manager before leaving in 1993 to set up Scientific Solutions Ltd, an environmental biotechnology company. Scientific Solutions was a small start up, commercialising the knowledge that I gained as part of my doctorate. Although we grew very quickly for three years, this reached a plateau, and I realised that things weren't going much further.

Scientific Solutions was eventually sold to another company and I joined the University of Sheffield. I found I got very interested in the technology transfer side of things here, and helped to set up a number of companies. This was all very useful and relevant experience for my current position as Incubation Manager at Nottingham BioCity. At BioCity I now work with bioscience and life science companies at the very early stages of set up. Often these are spin-outs for which I run a number of schemes and assist with finding connections in business amongst other things.

What I didn't like about working in a larger company was that other people made

important decisions about you and for you. At Scientific Solutions I enjoyed and valued being responsible for my own success and my own career. Having spent a significant part of my doctoral research on an industrial site this gave me excellent experience of commercial applications. I did draw a lot directly on the research and technical aspects of my doctorate.

John Okyere runs Crossgen which makes tools for gene expression



‘ Explaining a new idea to someone in the commercial sector can be difficult. Often they say ‘no’ because they don’t understand it. This can be helped with effective communication. ’

I have always been interested in cloning and genetics. The topic of my doctorate was molecular genetics, and I studied at Nottingham University following on from my Masters. I focused on tomato genes, and the creation of ‘genetic maps.’

From then I went on to do a post doctorate in a different area of genetics. This project gave me the idea for CrossGen which started trading in 2008. Essentially we create tools for gene expression studies in uncharacterised species. We mostly work with medical and veterinary companies interested in using this technology in their

drug treatment programmes. We have five employees including scientists, management and accountants.

As a postdoctoral researcher, you have a number of options, one is to stay in academia but this route didn’t look favourable at the time. Because there was confidence in the business application of the work we had done, it seemed like the most viable career option. If I was a fully established academic at the time I think I would have found it difficult to leave. In my experience it is virtually impossible to leave your academic career and go into industry.

There is a lot of stability which is difficult to leave behind and it can seem too risky for most to go for an entrepreneurial career.

There have been a lot of challenges in that it is a very lonely pursuit. Explaining a new idea to someone in the commercial sector can be difficult. Often they say ‘no’ because they don’t understand it. This can be helped with effective communication. Enjoyable aspects include being your own boss and the kudos in taking something that started in academia and seeing the results of it for clients.

Biomedical sciences

‘ I found that my doctoral study really taught me to think logically and carry out effective research and development – some very transferable skills. ’

Joanne Whitaker (biomedical sciences)

This chapter focuses on the career stories of doctoral graduates in the biomedical sciences. Biomedical sciences doctoral graduates made up over 26% of all UK-domiciled doctoral graduates between 2003–2007. The discipline of biomedical sciences covers the following subjects:

- clinical medicine and pre-clinical medicine
- psychology
- pharmacology, toxicology and pharmacy
- anatomy, physiology and pathology
- nursing
- clinical dentistry
- complementary medicine
- nutrition
- ophthalmics
- aural and oral sciences
- medical technology.

This chapter presents the career stories of five biomedical sciences doctoral entrepreneurs. The subject areas of their doctorates cover pharmacy, molecular neurobiology, cell biology and dietetics.

Joanne Whitaker runs Favio, a company that manufactures an innovative backless bra



‘ At doctoral study level I liked that you were in control of your own destiny and your own learning. You could choose your path and you would get out what you put in. ’

The area of my doctorate was biomedical sciences – specifically looking at antigens that could be important in developing cancer treatment vaccines. Much of your first degree was learning to pass tests, but at doctoral study level I liked that you were in control of your own destiny and your own learning. You could choose your path and you would get out what you put in.

I had become a bit disillusioned with academia on noticing that career progression was more limited for women – female heads of department within science disciplines were rare although postgraduates made up more than 50% of the intake. I decided I didn’t want to fight that battle, instead deciding to combine my science and business knowledge.

Whilst my career involved working with inventors to bring new products to market, I had myself invented a new product in my spare time – a gravity defying bra! It took me about three years to raise investment, recruit staff and start selling the finished product (D+ Perk Ups). You have to get the product to a certain stage, and spend quite a bit on IP costs before it is ready to sell.

I found that my doctoral study really taught me to think logically and carry out effective research and development – some very transferable skills. There were quite a few challenges along the way but my experience in technology transfer for universities and the NHS was the perfect background I needed as it taught the basics of doing business in this way.

Inventing and launching a new product requires a broad range of skills: financial, business, technical, IP, funding, research, development, people management, customer service and many more. All my little jobs during college, my degrees and full time work prepared me for the experience of running a company. My advice is to say that learning is never a waste of time – you never know when it might come in handy!

Caron King runs Kingswood, a change and performance improvement consultancy



‘ I would say to others, focus on the skills that your research has given you, and not just the knowledge. There are many parallels between consulting and the process of being a doctoral researcher. ’

I undertook my doctorate and postdoctoral work in a pharmacy department.

It was while I was doing my postdoctoral study however that I realised I loved the subject and skills I had, but I didn't love the mechanics and discipline of being a researcher.

Following my studies, I was offered a job in technical support in the pharmaceutical industry which I took. I went from technical support to factory management, to big project and change management. There was no science directly involved in my

work, but skills such as analytical and critical thinking which I developed during my doctoral study subsequently stood me in very good stead.

I am now the Chief Operations Officer at Kingswood Plus, a change and performance improvement consultancy. There are three people employed by the company but I have a lot of associate consultants too – not directly employing people enables me to be as flexible as I need to be. I decided to set up on my own for a number of reasons. I realised that I

could do a lot of what I was already doing on my own without working for other people, and I also wanted to have choices over who I was working with. I really love the constant new challenges too.

It has been the hardest thing I have ever done but very rewarding. I would say to others, focus on the skills that your research has given you, and not just the knowledge. There are many parallels between consulting and the process of being a doctoral researcher.

Jenny Koenig is a science education consultant



‘ It is useful to know that there are other women doing similar things to me, particularly in the area of science. Just having other people there and knowing that they are going through the same thing was a tremendous source of strength. ’

My doctorate focused on molecular neurobiology. After this I worked as a researcher for 12 years, initially on short term contracts and then as a five year senior research associate running my own lab. I got to the point where I had done everything I wanted to do. I had published in international journals and supervised doctoral researchers. When I had children I changed to part-time arrangements but when I reached the end of my contract I quickly realised that as soon as you want to find a new part time position at a senior level there is nothing there. To a certain extent I didn't have a choice – if I was going to stay in pharmacology and science education I was going to have to create my own work.

I originally gave myself two years, and I am still going five years later having built up my consultancy by word of mouth. When I set up I knew what I wanted to do, I was interested in science communication and education, and I've done a lot of work

teaching maths to biologists, putting calculations into words rather than in equations. I am an education consultant at the moment, my business is called Science Education, Training and Communication and for five years I have been delivering teaching sessions to chiropractors, osteopaths and pharmacists. I've developed materials on maths skills, but also general pharmacology such as how drugs work and medicines.

In my first year I was very lucky, being in the right place at the right time, and won a bid developing online maths materials. My second year was really hard, because I'd been so busy in the first year I hadn't been looking for any other work. It picked up in the third year and now this year I've been really busy. It is tough to find that balance between marketing yourself and doing the work that is there. I did find it hard to promote myself and sell myself at first. I did a couple of very good training courses around developing consultancy

skills which were funded by the East of England Development Agency. From being an academic I just had to get into a whole new way of thinking. If recommending to anyone else today I'd say go to your nearest Business Link or to places like Enterprising Women, because as an academic how you conduct yourself is very different and such courses can get you into a commercial mind set.

The Cambridge Association for Women in Science and Engineering (AWISE) has also really helped. It is useful to know that there are other women doing similar things to me, particularly in the area of science. Just having other people there and knowing that they are going through the same thing was a tremendous source of strength. I actually had the chance to refund and be Chair of Cambridge AWISE as well, and this is a great example of voluntary work which also allows you to get out of the academic mindset.

Alexander Griekspoor runs Mekentosj, a scientific software company



‘ I have drawn quite significantly on my experiences as a doctoral researcher – applying the software to scientists from my field of study, but also skills such as presentation, communication and writing skills have doubtlessly been built on from my doctoral research days. My years as a doctoral researcher taught me to think critically and academically – highly useful for those embarking on their own business.’

While studying for my doctorate in cell biology, I took up a new hobby of computer programming. In my final year I had an idea for a business programme targeted at research scientists.

The hiatus between my doctorate and post doctoral research presented an opportunity to put my business idea into practice. Besides two other ventures – in partnership with partners in America and Cambridge – my main start up is called Mekentosj. I employ four people including me, so I have to get used to making the tea as well as running the business! The software is basically a kind of iTunes for scientists’ research papers.

I decided to set up this business after initially trialling it during my final year as a doctoral researcher. It was essentially a decision between carrying on with postdoctoral research in a new scientific area or starting my own business. I had come across numerous examples of what was needed or gaps while studying for my doctorate, and the development of the programme was informed by this. I started selling the product soon after the start of my postdoc, and continued more seriously when I realised I could be doing it full time. Many friends of mine are scientists who often helped with testing the software, while my father (an ex- accountant) assisted with book keeping.

I have found running my own business quite challenging, but in a fun way – there have been many long weeks and nights! The satisfaction of running my own business makes this worthwhile though, especially the satisfaction you get from thousands of people using your software worldwide, and giving positive feedback. I have drawn quite significantly on my experiences as a doctoral researcher – applying the software to scientists from my field of study, but also skills such as presentation, communication and writing skills have doubtlessly been built on from my doctoral research days. My years as a doctoral researcher taught me to think critically and academically – highly useful for those embarking on their own business.

Trudi Deakin runs X-PERT Health CIC, a health sector training company



‘ The skills and knowledge developed throughout the doctorate are used on a daily basis. However there has been a steep learning curve to develop business skills such as sales, marketing and managing cash flow.’

I took my doctorate between 2000 and 2003. My undergraduate degree was in nutrition and dietetics as I had a strong interest in health promotion and the prevention of ill health and disease. I qualified as a dietitian and eventually became a diabetes specialist for children and adults. However I got more and more frustrated with the traditional medical model. The patient was viewed as a recipient of regimens that were to be accepted and obeyed. Diabetes education was delivered on a one-to-one basis in an unstructured fashion with infrequent follow-up due to increased prevalence and limited resources. Recognising that services needed to be redesigned to offer more patient-centred education, I took my PGCE in adult education. This led to experimentation

with communicating and educating people with diabetes in a different way. The X-PERT Programme is a six week diabetes self-management programme to enable people to take charge and make informed decisions about their condition.

I began looking into securing funds to test the effectiveness of the X-PERT Programme by carrying out a randomised controlled trial (RCT). The results of the RCT were outstanding in the fact that the X-PERT Programme brought significant health and wellbeing benefits to people with diabetes both in the short and longer term.

After national recognition through the receipt of several national awards, many NHS organisations started contacting me saying that they wanted to implement the X-PERT Programme. There are now 970

X-PERT Educators from several disciplines who deliver the course. The programme is implemented nationally in the UK and in the Republic of Ireland through a not-for-profit social enterprise X-PERT Health CIC.

During my doctorate I investigated the epidemiology of diabetes, the evidence base for the treatment and management of diabetes, the theories for health behaviour change and a systematic review of diabetes self-management programmes in addition to the randomised controlled trial to evaluate the X-PERT Programme. The skills and knowledge developed throughout the doctorate are used on a daily basis. However there has been a steep learning curve to develop business skills such as sales, marketing and managing cash flow.

Physical sciences and engineering

‘ My background of doctoral completion provided me with skills and experience in writing technically demanding concepts clearly and succinctly. This part of doctoral study is so important, because it is about selling your ideas and convincing people that there is a gap for your research. ’

Max Robinson (electronics/3D imagining)

This chapter focuses on the career stories of doctoral graduates in physical sciences and engineering. Physical sciences and engineering (PS&E) doctoral graduates make up the largest discipline, representing 32% of all UK-domiciled doctoral graduates between 2003–2007. The discipline of physical sciences and engineering is broad and covers the following subjects:

- chemistry
- physics
- computer science
- mathematics
- physical and terrestrial geographical and environmental sciences
- geology
- electrical and electronic engineering
- mechanical engineering
- civil engineering
- materials science
- metallurgy
- minerals technology
- statistics
- town and country planning
- aeronautical, general, chemical, maritime and production engineering
- architecture, building and maritime technology.

This chapter presents the career stories of 11 physical sciences and engineering doctoral entrepreneurs. Subjects covered include; chemistry, physics, computer science, mathematics, materials science and electrical engineering.

Steve Howdle runs Critical Pharmaceuticals



‘ Developing contacts has been extremely important in developing the business, pitching successfully to a wide range of people is vital. The doctorate teaches you to think on your feet and laterally. ’

My doctorate was in chemistry and I've been working in the area of supercritical fluids ever since. Eight years ago a colleague, a research student and I won the UK Research Council business plan competition, winning about £25k which was used to start up with some virtual space at BioCity and it went from there. We brought in our first tranche of venture capital funding in 2004. I was then the front man, responsible for going to pitches and presentations. We now have around 11 people working at the BioCity plant.

The company Critical Pharmaceuticals was spun-out from the School of Chemistry at Nottingham, focusing on this area of supercritical fluids. Developing contacts has been extremely important in developing the business, pitching successfully to a wide range of people is vital. The doctorate teaches you to think on your feet and laterally.

Challenging aspects have included the raising of finance and keeping it sustainable. There aren't any easy wins.

Before starting we had to develop the technology to the point where people really agreed with us that the product was fantastic. Having said that I have enjoyed the challenge, and although life in a small company never appears to be a stable situation there is a lot of interest in what we are doing and things are looking good.

Mark Hughes runs mch consulting: a consultancy for the not for profit sector.



“ A key challenge is that I am responsible for all aspects of the company and am constantly having to watch my own back. Again though, the experience of my doctorate helps in this regard.”

I studied chemistry at undergraduate level and then organic chemistry as my doctorate. I started with a view to continuing in chemistry but half way through my doctorate I started to rethink this plan. Although I enjoyed working in academia, I did not think my enthusiasm for teaching would last the length of my career.

I found my doctorate useful in terms of buying me time to think about what I wanted to do long term and on completion of my PhD I had narrowed my career down to working in the not for profit sector or for government (particularly the diplomatic service). I was lucky enough to gain a scholarship to study for a Masters degree in diplomacy and trade in Australia.

This degree gave me an insight into the workings of Government and led me to feel that not for profit organisations – although they lacked the scale – were more nimble and had the potential to address key issues more effectively.

Having decided upon a career within the not for profit world, I felt I needed to gain some business/management experience to be of value within it. After a couple of years at the international management consultancy firm, McKinsey, I felt I had the experience to be of use in the not for profit sector and was fortunate to be offered a chief executive position for Rumbalara, an aboriginal sporting and community organisation. I worked there for a couple

of years but ended up leaving because my British girlfriend (now wife!) was homesick and wanted to return to the UK.

In order to conduct consultancy work, I had to form a legal entity and thus mch consulting was founded. The company still works exclusively with not for profit organisations and helps in areas such as staff training, business planning, project evaluations and funding proposals. A key challenge is that I am responsible for all aspects of the company and am constantly having to watch my own back. Again though, the experience of my doctorate helps in this regard.

Steve Jones runs Adamson Jones: an intellectual property and patent company



“ There have been many challenges in starting up on my own. I was fortunate enough to acquire plenty of business, and that resulted in greater challenges like employing people, and finding the time to work on the business rather than in the business.”

My doctorate was in physical chemistry, specifically nuclear magnetic resonance spectroscopy and X-ray diffraction studies of lyotropic crystals. Practical applications of these lyotropic liquid crystals – concentrated soap solutions – included looking at the way other molecules dissolved in them.

I had been using some sophisticated equipment, and an opportunity came up to go and work for the manufacturer in Germany, which was looking for an English speaker to develop some applications. I heard about it and subsequently got the job.

The bigger career switch for me came later on moving back to the UK. I saw an advertisement for a trainee patent agent, which seemed to match my skillset, and involved knowledge of German. I applied

for and got the job, moved to the East Midlands and qualified as a patent attorney. I then joined a private firm in Leicester and worked for that firm for the best part of ten years. During that time I set up a Nottingham branch office for the firm and eventually spent most of my time there. I got a bit fed up because I felt I had all the disadvantages of being a sole trader but none of the benefits. I did a deal with the firm, taking over the Nottingham practice as the starting point for my own business, Adamson Jones.

There have been many challenges in starting up on my own. I was fortunate enough to acquire plenty of business, and that resulted in greater challenges like employing people, and finding the time to work on the business rather than in the business. As well as managing the

business, I still spend much of my time on technical work. There have been many enjoyable aspects though, mainly that you get to do things the way you think they should be done. It can be stressful, but I wouldn't change anything. My experience of research while doing my doctorate, my spell working as a chemist in industry, and the experience I gained in a corporate patent department have all been useful.

Arnab Basu is the CEO of Kromek, which provides digital colour x-ray imaging technology



‘The technical side of my doctorate is of less importance than other skills I learnt during that period: the discipline to finish things, the need to create your own plan, to drive your own plan, and to be focused but creative. I think it is important to learn from mistakes, and it is important to learn your own limitations, ‘learning to fly while flying’. Taking risks is a key element of what I do. Unless you take risks it is difficult to make big gains.’

I finished my first degree, a BSc, in Calcutta. After that I worked in India in a family business. I then had the opportunity to study and work in the UK in engineering and electronics for five years and from that had a good offer of studying a doctorate in physics at the University of Durham. The doctorate gave me the opportunity to train as an independent researcher and this experience increased my self-motivation. Above all the doctorate gave me discipline.

I am currently the CEO of Kromek. This company initially manufactured semi-conductor materials but has since changed its product specialisation and now produces semiconductor materials and detectors, colour X-ray detection and

imaging for a range of markets including liquid explosive detection. It is an IP rich company with over 60 patents to date.

Kromek’s products have global applications and the company is highly visible in the press, employing 50 people in the UK and USA, including 11 with doctorates. It has raised considerable private equity funding and has a wide range of shareholders. My current role is to lead the business – to identify opportunities, raise money and manage the business.

I particularly enjoy the challenge of creating and growing this business, building something from a sheet of paper to a business that positively affects people’s

lives. It is all exciting. To some extent my doctoral experience has supported my current role. The technical side of my doctorate is of less importance than other skills I learnt during that period: the discipline to finish things, the need to create your own plan, to drive your own plan, and to be focused but creative.

I think it is important to learn from mistakes, and it is important to learn your own limitations, ‘learning to fly while flying’. Taking risks is a key element of what I do. Unless you take risks it is difficult to make big gains.

Kate Ho runs Interface 3: a consultancy specialising in the development of multi touch interfaces



‘I went on a course entitled the ‘Enterprisers programme’ which was run for a week for doctoral students. This covered aspects such as marketing, sales skills etc. I would recommend that future entrepreneurs look around their universities to identify commercial opportunities and funding’

Having completed my BSc in computer science I decided I wanted to continue to pursue the academic route with a Masters in technology and innovation management at Manchester University. After completing the Masters, I wanted to pursue topics and interests from the degree further, and began thinking about a doctorate at Edinburgh. I contacted several potential supervisors and secured a scholarship for my studies.

My doctorate was entitled ‘Understanding requirements work in e-science projects.’ The thesis was concerned with looking at computer science techniques to other disciplines, for example ‘data mining’ used in the field of computer science could be equally applicable to the work of biologists.

Because my research was based on interviews, and qualitative ethnographic research, I did nearly a year of ethnographic work. My observational skills improved vastly as a result. Writing was a really important and useful skill to develop, where every word counts and concise detail is important. This has fed through to writing bids and business proposals.

Things really kicked off with a competition that was run at Edinburgh University in partnership with two industry partners. It was a great platform and opportunity to create my first software application and gain awareness and visibility.

Several other things happened which were really valuable to me in developing my business in the early days. I went

on a course entitled the ‘Enterprisers programme’ which was run for a week for doctoral students. This covered aspects such as marketing, sales skills etc.

I would recommend that future entrepreneurs look around their universities to identify commercial opportunities and funding and there are lots of national projects too. I would definitely recommend networking as well.

Nathan Ryder is a training consultant



‘Being freelance you have to make sure you keep networking, it’s really important to build your reputation and get yourself known.’

I studied for a doctorate at the University of Liverpool, in an area of pure mathematics called knot theory. As well as developing my technical skills and specialist knowledge about the area, I think my doctorate was extremely useful in developing my project management skills. When I first started my doctorate, I would lose myself in one task. Towards the end of my study I felt much more able to take a step back and see what I was neglecting, and hence much more able to plan my work better.

At the end of my PhD I decided to do some travelling, and in the time before that I decided to take a chance on being a freelance skills trainer. I spoke to Richard Hinchcliffe from the Graduate School Skills Team. He gave me my first break, and the Skills Team continued to invite me back to facilitate on skills workshops and create resources. Another trainer asked me to manage a Career Skills Workshop that they were directing, which was a fantastic opportunity that I feel very lucky to have

been given. Since coming back from a road trip in the USA I have taken more charge of my career, providing facilitation for other institutions and on Vitae’s Effective researcher course.

Being freelance you have to make sure you keep networking, it’s really important to build your reputation and get yourself known.

Neil Jennings runs the Student Switch Off Campaign



‘During the time of my doctorate I was considering options for my future career. Climate change was getting a lot of coverage in the media and I decided that this was my primary motivation, namely a need to raise awareness of the issue.’

My doctorate was in environmental science focusing on the potential for a collapse of the Gulf Stream and how this emerged as a risk issue in the UK. This necessitated an investigation of the physical science behind the Gulf Stream and also required an analysis of representations of the issue in the media and interviews with scientists, politicians and journalists. Thus, skills developed while undertaking the doctorate included numeric abilities to deal with complex scientific calculations. It also required me to interact with politicians, journalists and the general public and this required an ability to communicate complex ideas in a concise manner.

During the time of my doctorate I was considering options for my future career. Climate change was getting a lot of

coverage in the media and I decided that this was my primary motivation, namely a need to raise awareness of the issue. I decided to set up the Student Switch Off campaign as a pilot study. The campaign aimed to promote environmental awareness among students by getting university halls of residence to compete against each other to save energy and providing students with prize incentives to do so.

Now I run the campaign as a business. The cost for each student to take part is £1.50, but universities have managed to save an average of £7 per student in their electricity expenditure. By 2007/08 seven universities were involved in the campaign, and currently 33 universities are taking part.

Coming from a non business related background, I found setting up the business quite challenging. I had to do a lot of reading up around running a business. I received specific help from Ben and Jerry’s through their Climate Change College project that provided mentoring for individuals starting their own climate change campaigns. I have also benefited from the Carbon Leapfrog initiative in which law and accountancy firms provide pro bono expertise to green start-ups.

Max Robinson runs a company which provides high tech consultancy to the ceramics industry



‘ My doctorate provided me with skills and experience in writing technically demanding concepts clearly and succinctly. This part of doctoral study is so important, because it is about selling your ideas and convincing people that there is a gap for your research. ’

Following my Masters, I decided to take a year out in industry. However I didn't really like the corporate feel and so took a job as a sixth form college lecturer. Shortly after this, I decided that my real calling was to carry out research by pursuing a doctorate focusing on ceramics, funded by Ferranti.

Eventually Ferranti found some of the processes I discovered to be very interesting and they took out a patent which at the time was very unusual for a PhD programme. It was from there that the real interest in what I was doing started. There were so many companies approaching me asking me for information about where to

buy the technology I was working on that I set up my first business – a spin-out called In Depth Systems. This was at a time when universities were not really being encouraged to sell their wares, and my university unfortunately didn't share my enthusiasm for commercialising what I was working on, so I eventually set up my own business.

My background of doctoral completion provided me with skills and experience in writing technically demanding concepts clearly and succinctly. This part of doctoral study is so important, because it is about selling your ideas and convincing people

that there is a gap for your research. To say I was naïve about commercial issues however, would be putting it mildly.

One of the main challenges for me has been in raising the funds to get started. I feel like the search for funding is a business in itself and again, this was somewhere the doctoral study came in handy for making presentations and being very clear about your product.

I think one of the most enjoyable things has been the buzz I get from not really knowing what's around the corner. We never know when a new opportunity will appear.

Robin Henderson runs My Consultants, a training and consultancy company



‘ I now work full time as a consultant delivering a range of projects where I enjoy the freedom of managing myself. ’

My undergraduate degree was in materials engineering at Newcastle University where I stayed on to do a PhD exploring the behaviour of ceramics composites when they are heated rapidly. As a result of my PhD supervisor getting a professorship I moved to Aberdeen University and completed my thesis there. During my PhD I wrote some funding applications with my supervisor and I spent two years working as a post-doc on one of the projects which got funded.

Wanting to progress my career I was appointed as a lecturer at Aberdeen. However quite early into my time as a lecturer I realised that this was not a long term career for me so I started exploring career options. To give me some flexibility I undertook a part-time MBA as my interests had started to move more along the lines of management, teaching and training.

After four years as a lecturer I made a decision to leave and resigned without a job to go to. I landed on my feet with a part-time role in staff development which allowed me the time to set up a training consultancy business. I now work full time as a consultant delivering a range of projects where I enjoy the freedom of managing myself.

Brian Tanner is Dean of Technology Transfer at Durham University and the founder of a number of spin-out companies



‘ I have personally enjoyed the challenge of starting technology businesses. In creating gainful employment for scores of other people, I have done something which has had a large impact around the world.’

My doctorate was in the area of materials science, which sits between the disciplines of physics and engineering. The skills developed during my doctorate were extensive. Besides the technical skills associated with doing science, the Oxford college experience taught me not to be afraid of anyone. It was also an experience of being thrown in at the deep end, and having to do things for which I did not feel qualified.

Following two years as a junior research fellow, I came to Durham University as a lecturer. Here I have stayed, now being a professor. The X-ray techniques that I was using early in my research were novel in the context of the compound semiconductor industry and there was no instrument available on the market. We founded Bede Scientific Instruments in 1978 to fill this gap. The company grew, floated on the London Stock Exchange in 2000, and turned over £10 million a year at its height. Sadly, it was an early victim of the credit crunch, being

purchased by Jordan Valley Semiconductors in 2008. In 2003, I co-founded another spin-out company called Durham Scientific Crystals, now trading as Kromek. Its business is based on a novel process for growth of semiconductors for X-ray detectors. The directors, of which I am one, decided that we needed to make our own detection systems as well as just the material, and we spotted an opportunity in the detection of liquid explosives. Kromek now has an airport security screening system on the market. Still a private company, Kromek has raised over £15 million in investment, is worth £52 million and in 2009 won the Global Security Challenge prize of \$400,000 for the best global security SME.

Running a technology start-up company is a huge challenge. A common trap is being too focused on the technology and not enough on the commercial viability. The key motivation for me is that I really want to see my work exploited and applied. It is clear

that there are industry needs and I knew we could respond to them.

Universities do not want to lose their best researchers to commerce, and as Dean of Knowledge Transfer, making them into business people is certainly not my goal. Thus, I try to promote partnerships whereby people who are immersed in the business world can become part of a team to lead commercial development. I have personally enjoyed the challenge of starting technology businesses. In creating gainful employment for scores of other people, I have done something which has had a large impact around the world. The feeling associated with winning orders is difficult to describe; there is a triumphant sense of achievement after putting in huge effort.

It is possible to bridge the worlds of academia and commerce but it requires effort and a thorough understanding of both cultures.

Barrie Hayes-Gill is the Research Director at Monica Healthcare, a university spin-out applying wireless technology to healthcare



‘My doctoral studies were very useful to me in fostering independence, and an aptitude to seek out answers to questions on my own. Doctoral study and my subsequent experience at supervising new doctoral researchers greatly developed my capacity for critical analysis.’

I completed my doctorate in electronic engineering and then spent a period of time in industry and I am now lecturing at Nottingham University. In parallel with this I am the Research Director at Monica Healthcare Ltd, a spin-out company which brought a foetal monitor using wireless technology to market from my university research. Monica Healthcare currently markets and supplies its product throughout the world via 23 distributors.

Several factors combined with my original doctoral studies to enhance my commercial appetite and consequently led to the setting up of the business.

I undertook a Medici Fellowship which allows doctoral researchers to develop their commercial awareness. As well as my role as a lecturer, I've also worked for several years in industry prior to commencing employment at the University. This undoubtedly provided an excellent foundation to the development of my commercial awareness and involved me in production testing and the commercialisation of innovative designs.

In the mid 1990s questions were being asked about the value of university research to the UK Gross Domestic Product (GDP). The requirements for

universities to create commercial opportunities were becoming clearer and hence we effectively had to dance to this new and highly understandable tune.

My doctoral studies were very useful to me in fostering independence, and an aptitude to seek out answers to questions on my own. The doctoral study and my subsequent experience at supervising new doctoral researchers greatly developed my capacity for critical analysis. Also useful was the ability to communicate with fellow researchers – a highly important preparation for communicating our ideas to potential investors.

Additional stories

There are a number of other stories about doctoral entrepreneurs who began their career by undertaking a doctorate in the discipline of physical science and engineering. These include:

- Andy Phillipps who has started numerous companies including Active Hotels
- David Simmons, a lecturer who runs an engineering consultancy

All of these stories are available on the Vitae Database of Career Stories:
www.vitae.ac.uk/docs

Social sciences

‘ I felt that I could only really satisfy my intellectual appetites and ethical conscience by moving out on my own. ’

Atul Shah (accountancy and finance)

This chapter focuses on the career stories of doctoral graduates in the social sciences. Social science doctoral graduates made up 10% of all UK-domiciled doctoral graduates between 2003–2007. The discipline of social sciences is broad and covers the following subjects:

- business and management
- sociology
- politics
- human and social geography
- law
- economics
- catering and institutional management
- land and property management
- marketing and market research
- psychology (without a significant element of biological science)
- transport
- other business and administrative studies.

This chapter presents the career stories of five social science doctoral entrepreneurs. The subjects studied at doctoral level include accountancy and finance, sociology, political science, psychology and law.

Atul Shah run Diverse Ethics, a social enterprise focusing on cultural diversity



‘ When you are brought up in a very structured textbook oriented method of learning, the doctorate frees you because you are able to develop an independent voice and different method of thinking. ’

I originally took a doctorate in accountancy and finance at the London School of Economics. After my doctorate I took up several lectureship positions in various universities around the UK and America for about ten years. Towards the end of this time I started an international magazine on issues of diversity and ethics, which led up to the creation of my social enterprise.

I came to realise how tricky the UK academic career ladder could be for people with an independent identity. Despite the fact that I was breaking new ground, and wrote several innovative research papers I was unable to secure a chair. I felt that I could only really satisfy my intellectual appetites and ethical conscience by moving out on my own.

I have first-hand experience of life and work in the UK as a thinker and in a cultural minority. It is this background, together with my experience which has fed into the setting up of a social enterprise called Diverse Ethics. We provide expert information, research, training and consultancy services for public and private organisations on diversity issues, especially focusing on culture change and leadership.

Diverse Ethics has been around for four years. Depending on who the client organisation is, we will hold their hand to make necessary changes and transformations. We have an advisory board of three people and five associates, so depending on the project we can pull in all sorts of different skill sets. Challenging

aspects have been selling what we do, this is tough because researchers tend to focus on complexity but selling requires a focus on sound bites and practical aspects. Attending Business Link courses has been useful, but there has been a lot of self-teaching as well. I love the independence but it is also lonely and I miss talking to people.

My doctorate helped me to understand the barriers to learning. When you are brought up in a very structured textbook oriented method of learning, the doctorate frees you because you are able to develop an independent voice and different method of thinking. This started me on a journey to revisit the culture I came from where I discovered huge scientific wisdom.

Alex Linley runs the Centre of Applied Positive Psychology



“Creating something that enables other people to grow and develop has been really enjoyable. Having the autonomy to decide what I want to do every day has been excellent too.”

My doctoral studies were around the area of positive psychology, and specifically a study of those who have overcome traumatic events.

Two years into my doctorate I got a job at Leicester as a lecturer, which I continued after my doctorate for three years. I enjoyed the research and teaching but deplored the admin, and the system which told people what they had to do.

Centre of Applied Positive Psychology (CAPP) started out as a not for profit company, the aim being to combine academic values with commercial rigour and focus. We do a lot of consultancy for organisations, helping them to get the best out of their employees while maintaining an

active research side. We have a charitable arm which offers discounted rates for charities. Each member of the team has community days on their contract which involves going out and working for charities.

I developed a lot of extremely useful skills which serve me to this day, but on seeing research results and having the idea for my enterprise I realised that there was no place for it in an academic setting. With my idea and my academic qualifications and business background I decided to make a go of it.

I drew a lot of inspiration from the ‘Jigsaw Man’ by Paul Britton. He was in his mid twenties, he already had a child with another on the way. He worked nights

and went to universities during the day – I thought if he can do it so can I! Creating something that enables other people to grow and develop has been really enjoyable. Having the autonomy to decide what I want to do every day has been excellent too. There is a lot more pressure to accompany this though and I would urge those thinking of embarking on setting up their own business to bear this in mind. If you are the kind of person who doesn't thrive on pressure then you might want to consider whether you will thrive in the business world. My doctorate gave me the ability to ask pertinent questions, to write well, which I practiced and honed, and of course the work I did has a lot of applications to what CAPP does now.

Alexandra Samuel is the CEO of Social Signal, a social media strategy company



“Skills which have served me well from my doctorate include the fact that my interview subjects are the kind of people I now work with. I really learned how they think and how to talk with them. Also my analytical skills are much stronger; I know how to break a problem down and think about it differently and how to organise my thoughts more.”

I received my doctorate in political science from Harvard University. My dissertation examined the phenomenon of ‘hacktivism’ – politically motivated computer hacking.

For a long time I have been trying to share my enthusiasm for the internet's potential as a tool for community-building. So, why did I move from academia into starting a business? Basically, I had only the briefest flirtation with the idea of taking an academic job. I applied to three and was the preferred candidate for one but the Dean at that university refused to hire a junior person for a mid-level position.

As well as not being prepared to move to another city for a job, my focus on digital media meant I'd have to create each course more or less from scratch, which

would make the teaching load much heavier. The academic/tenure clock also conflicted with my biological clock somewhat. I was 33 with one child, and unlike consulting work academic pay wouldn't allow enough household help to make that intense pace of work feasible.

From 2005 to the present I have been the founder and CEO of Social Signal, a social media strategy company. The company devises social networking solutions partly based on my research carried out during my doctoral study. Through the years of my doctorate and running Social Signal with my business partner, we have developed unique expertise in this area; building up an evidence base for exactly how online conversation can help business and ways to encourage participation.

Skills which have served me well from my doctorate include the fact that my interview subjects are the kind of people I now work with. I really learned how they think and how to talk with them. Also my analytical skills are much stronger; I know how to break a problem down and think about it differently and how to organise my thoughts more.

Recently I have returned to a quasi-academic role that combines my industry and academic experience. As the head of an applied research centre I act as a bridge between academic researchers and industry partners, leading projects that have both an academic research and business outcome.

Bill Law is a freelance researcher, developer and trainer



‘ I realised that I’d been living a freelance life even while I was working, people didn’t call the Polytechnic, they called me at home. The momentum was pretty much uninterrupted. I wasn’t trying to set up a business, but the transition from employment to self-employment was practically seamless.’

Having begun my career in the insurance business at 16 I completed national service and then attended a theological college. After college I changed field to become first a teacher and then a lecturer at the University of Reading. Whilst working at the University of Reading I could work on my research while I was teaching. One of the other lecturers gave me a lot of help on issues like sampling, hypothesis building and the principles of research methodology and this support equipped me to do original research.

I’ve never seen myself primarily as a researcher. I spent more time on development than I did on research. Obviously research is important, but it is there to provide a framework within which we can say ‘this is what needs to be done’. Research is so you know what to do, but development is doing something.

Before I finished my research I was asked to apply for a job as a senior lecturer at the National Institute for Careers Education and Counselling (NICEC) based at Hatfield Polytechnic where I was for 18 years. I was paying my way in the polytechnic by running courses, developing networks, setting up frameworks, producing materials, getting sub-contracts and so on.

I took early retirement and set up my own business. I realised that I’d been living a freelance life as even while I was working, people didn’t call the Polytechnic, they called me at home. The momentum was pretty much uninterrupted. I wasn’t trying to set up a business, but the transition from employment to self-employment was practically seamless. I haven’t found the administrative side of running a business at all problematic. I like working out how things work, I keep on fidgeting at things

until they work and I’ve approached running a business like that.

I see myself as somebody who does things in a very distinctive way. One of the reasons that I’m still working is that I’m sure I’m not getting in anyone’s way. If I wasn’t doing this I don’t know who else would be doing it. I don’t think I’m a person who has massive visions about where I should be but I want my life to have some meaning and to make a dent. This requires some sense of direction, to think that it is more likely to be ‘over here’ than ‘over there’ but I’ve never been able to give an answer to the question ‘what do you want to be doing in ten years time’.

Dave Filipović-Carter is a training consultant



‘The doctorate gave me a huge amount of confidence and the process of finishing something so challenging, navigating supervisors, managing myself and my time taught me a lot about how I now manage my work.’

I undertook a doctorate in public international law and quickly learnt that I hated doing research. However, although the research didn't work out, the rest of my doctoral experience was great; I was teaching, which I loved, working as a sub-warden and running training courses. I then took the opportunity to become Head Warden. In this role I was Head of 35 sub-wardens, responsible for over 1,800 students, and I realised about this time that I could never just get on and do something without wanting to run it.

The doctorate gave me a huge amount of confidence and the process of finishing something so challenging, navigating supervisors, managing myself and my time taught me a lot about how I now manage my work.

I then found a job teaching at a university in Bulgaria. This led to a promotion co-ordinating projects for the educational

charity that I worked for. Around this time I also went back to the UK to tutor on a couple of GRADschools (experiential training courses for researchers). Following this I shaped my job into running training courses for academics in universities in Eastern Europe. During this time I had a lot of freedom to do a lot of the things that I wanted to do but I still found the organisation too constraining.

I resigned and ended up unemployed in Macedonia and did all sorts of things including increasing the amount of training I did in the UK. A month after moving to Serbia, I did more voluntary for local NGOs, taught English and did more training in the UK.

I would have liked to work full-time in Serbia but this didn't work out. At this time I met some people in the UK who were working as freelance trainers and I realised that I could make a living in this way so I moved

back to the UK. I didn't have a clear plan to get the company going but I did get in early on a new course that was launching and I used this to make more contacts and get exposure in lots of universities. Whenever people asked me to do something I would almost always say 'yes'. I agreed to do lots of things that I hadn't done before, but knew I could deliver.

I routinely read the jobs page of the Times Higher and ponder. In my experience freelancers never stop looking for a 'job'. I've just never yet found one that appeals enough to take the risk of sticking on a suit and going to work for someone else. I've never really had a proper job and I seem to be doing alright. If I can carry on playing that game until I retire then so much the better.

Additional stories

There are a number of other stories about doctoral entrepreneurs who began their career by undertaking a doctorate in the discipline of social science. These include:

- Barrie Hopson who ran Life Skills Ltd, a training and publishing company
- Kenneth Mostern whose company TrueBallot runs elections for trade unions
- Jo VanEvery, a career coach specialising in academic career development.

All of these stories are available on the Vitae Database of Career Stories:
www.vitae.ac.uk/docs

Resources

This section includes links and short descriptions of resources which the doctoral entrepreneurs found useful alongside other resources and sources of support designed to help entrepreneurs.

Ben and Jerry's Climate Change College was established to inspire grass-roots practical action on climate change. Doctoral entrepreneurs with an environmental focus found the programme very helpful. While the programme has now finished a number of resources are still available. www.climatechangecollege.org

Business Link is a free business advice and support service, available online and through local advisers. www.businesslink.gov.uk

Bytestart is the fastest growing, and one of the most popular small business sites in the UK. It provides news and advice for start-ups and SMEs. www.bytestart.co.uk

Cambridge Association for Women in Science and Engineering (AWiSE) is a regional network for women in science, engineering and technology (SET) in both industry and academia and for women who wish to return to a SET career after a break. www.camawise.org.uk

Carbon Leapfrog provides pro bono professional advice directly to communities and projects that are trying to tackle climate change. <http://carbonleapfrog.org>

Citizen's Advice is a source of information on benefits, housing and employment, and on debt, consumer and legal issues. The self-employment checklist is a useful starting point for dealing with legal, tax and employment issues relating to self-employment. www.adviceguide.org.uk/index/your_money/employment/self-employment_checklist.htm

Enterprising Women exists to provide a wide range of business support to help women in a range of businesses. www.enterprising-women.org

The Enterprise Trust is an exciting new initiative focused totally on encouraging the next generation of entrepreneurs through providing advice, support and ideas to help them plan and run their own business ventures. www.theenterprisetrust.org

Entrepedia is a website aimed at both students and entrepreneurs. Entrepedia provides information on starting a venture (including writing a business plan, pitching an idea and securing funding); growing a venture; and learning for entrepreneurs. It includes a number of case studies (which are technology focused). www.entrepedia.org

Entrepreneurial exchange is a website which supports entrepreneurial networking. www.entrepreneurial-exchange.co.uk

Lloyds TSB Business Guides This website offers useful guides to starting your own business including help with managing, financing and marketing your business. There is also a legal help guide. www.lloydstsbbusiness.com/support/businessguide.asp

MBAs were cited as an important learning opportunity by some of the doctoral entrepreneurs. The Association of MBAs provides a useful starting point for exploring these degrees. www.mbaworld.com

The Medici Programme is offered by a number of universities and seeks to fund fellowships which support knowledge transfer and the commercialisation of research.

National Endowment for Science, Technology and the Arts (NESTA) is an organisation dedicated to transforming the UK's capacity for innovation. They have endowed funds of over £300 million, which they use to provide innovators with access to early stage capital, through enterprise development programmes such as Starter for 6. www.nesta.org.uk

The National Council for Graduate Entrepreneurship (NCGE) was formed in 2004 with the aim of raising the profile of entrepreneurship and the option of starting your own business as a career choice amongst students and graduates. www.ncge.com

Princes Trust seeks to assist young people, aged 18-30, by the provision of mentoring support, financial grants of up to £1,500 and loans of up to £4,500. www.princes-trust.org

Regional Development Agencies provided help, advice and support for a number of the doctoral entrepreneurs. www.englandrdsdas.com

RCUK Business Plan Competition provides researchers who have ideas with commercial potential the skills, knowledge and support needed to develop a first-rate business plan. This is provided through expert trainers, coaches and mentors. www.rcuk.ac.uk/innovation/fundingkt/bpc/default.htm

Shell LiveWIRE is an online community for young entrepreneurs (aged 16-30) who are starting or running their own business. www.shell-livewire.org

smallbusiness.co.uk provides useful resources, products and services for small business owners and start-ups. www.smallbusiness.co.uk

Startups is an extensive website for those thinking about starting their own business. www.startups.co.uk

Train 2000 is an agency that has been specifically set up to help female entrepreneurs. www.train2000.org.uk

University business planning competitions also provided an important stimulus for a number of doctoral entrepreneurs.

Women in Rural Enterprise (WiRE) supports women in rural business by offering members a package of business services including WiRE Local Network Groups. www.wireuk.org

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Vitae

Vitae is supported by Research Councils UK,(RCUK), managed by CRAC: The Career Development Organisation and delivered in partnership with regional Hub host universities.

Vitae works with UK higher education institutions (HEIs) to embed professional and career development in the research environment. Vitae plays a major role in innovating, sharing practice and enhancing the capability of the higher education sector to provide professional development and training for researchers.

Our vision is for the UK to be world-class in supporting the personal, professional and career development of researchers.

Our aims:

- building human capital by influencing the development and implementation of effective policy relating to researcher development
- enhancing higher education provision to train and develop researchers
- empowering researchers to make an impact in their careers
- evidencing the impact of professional and career development support for researchers.

For further information about the range of Vitae activities go to www.vitae.ac.uk or contact website@vitae.ac.uk

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