

Having been told he wasn't good enough to study triple science at GCSE, Ryan Parker went on to achieve a PhD in quantum technologies!

WHAT WAS IT THAT ATTRACTED YOU TO QUANTUM SCIENCE?

I've got quite a weird background as I didn't do physics at A Level. I didn't even do triple science... because I was told that I wasn't good enough by my physics teacher! I did chemistry A Level because my parents encouraged me to (although I wanted to do drama at uni instead!). However, I did find that I really liked chemistry - it was my best subject at A Level - so I went to university to do that. As part of my course, I worked for a year in industry (in pharmaceuticals) and after that, I realised I didn't enjoy being in the lab. I also wasn't sure what I wanted to do for my dissertation. I contacted the quantum lecturer at my university and asked if I could work with him. In chemistry, you study a small amount of quantum, which made this possible and was able to do my dissertation in quantum optics. I realised then, that I really liked it and decided to do a PhD in it. I didn't know anything about quantum communications before I did my PhD, so I learnt loads!



CAN YOU TELL US A LITTLE MORE ABOUT HOW YOU FOUND STUDYING FOR A PHD QUANTUM COMMUNICATIONS TECHNOLOGY?

My PhD was in entanglement swapping, it's theoretical and will eventually be applied to future quantum communications. There were also elements of Quantum Key Distribution (QKD).

It was really hard because I didn't even really know the maths beforehand, so I literally did learn everything, and I did it in exactly three years.

Although it was really hard work, I did still enjoy it and I learned so much. I had some really good lectures by guest speakers at the University of York, who I now see through work.

YOU ARE CURRENTLY A TEAM LEADER AT VODAFONE – PLEASE CAN YOU TELL US A LITTLE MORE ABOUT YOUR WORK?

I am currently the Quantum Team Lead within Vodafone Group R&D, where I help shape the company's strategy and innovation activities around quantum technologies.

My role spans quantum-safe security, quantum networking, quantum timing and quantum computing, working with industry partners, vendors, universities and government organisations to explore how these technologies can be applied to future telecom networks. Alongside leading and contributing to collaborative R&D projects, I help evaluate new technologies, influence industry standards, secure external innovation funding and translate complex technical concepts into practical business outcomes for Vodafone and the wider telecommunications sector.

HOW EASY WAS IT TO GET A JOB IN INDUSTRY AND WHAT ARE THE ADVANTAGES OF WORKING IN INDUSTRY COMPARED TO IN ACADEMIA?

I was interested in working in academia, but often positions are short-term and I wanted to have a full-time, stable job where I don't have to worry about job security in a couple of years' time.

I was lucky in that my PhD supervisor was contacted by my first boss who had a job vacancy. This didn't mean that I automatically got the job, which I still had to interview for, but working under a well-known and renowned supervisor was helpful to me.

I would encourage people to consider working in industry although there are many more vacancies in academia. I have so much respect for people who have lectured in the field for years. If you know exactly what it is you want to do in academia, you can focus in on that but in industry you do learn a really broad set of skills, and you might surprise yourself where you end up in a few years.

WHAT TRANSFERABLE SKILLS DO YOU THINK YOU'VE GAINED THROUGHOUT YOUR JOURNEY?

I've got very good presentation skills. I've become really skilled at presenting quantum technologies to people who know nothing whatsoever about them and by the end they understand it. I think that's the skill I've developed most, getting people interested and excited, which is a really useful skill in industry.

IS THERE A CERTAIN APPLICATION OF QUANTUM TECHNOLOGIES THAT YOU ARE PARTICULARLY EXCITED TO SEE THE DEVELOPMENT OF IN YEARS TO COME?

Anything entanglement based I love - anything involving entanglement will be incredibly exciting to see. We're starting to see the industry move towards entanglement-based networking, which has been a big shift I've enjoyed being a part of since graduating from my PhD 8 years ago. It's a long road ahead, but the idea of seeing the quantum internet existing in the next 5-10+ years is very exciting!

WHAT ADVICE WOULD YOU GIVE TO YOUNG PEOPLE WHO HOPE TO PURSUE A CAREER IN SCIENCE, PARTICULARLY QUANTUM PHYSICS OR ENGINEERING IN INDUSTRY?

For school students – it may sound cheesy, and everyone hears stories of when teachers tell children they are not good enough, but this genuinely happened to me. If it wasn't for my parents encouraging me to stick to Chemistry at A Level, then I probably wouldn't be where I am now.

When you're so young, different people shine better at school than others, I did OK at school, not amazing, and now I've got a PhD. If you're interested, just go for it! I was always interested in physics and science, even as a little kid, but I never assumed I was good enough to go and do it at university, but you always are clever enough and you will pick it up really quickly!

For PhD students – just keep going! You can have the worst times, but you also have the best. I was told on my first day that you go through peaks and troughs for your PhD. I didn't think that was useful information then, but it really is. For example, the week before I submitted my thesis, my supervisor realised I had a mistake in my calculations that ran right through my thesis (I had to literally rerun everything...), but I did it. I look back and it's quite funny, but it wasn't at the time. Stick with it - you will always finish!