CAREER EDUCATION – WRITTEN Q&A: Elisa Barber

1. **What is your job role and organisation?**

Electronics Engineering Consultant, The Technology Partnership (TTP)

2. **What do you do in this job?**

Being a consultancy, clients come to TTP with a new technology, a product to improve or a new market opportunity. Then we help and work with our clients to develop their concepts and ideas through all stages in the product design development cycle. We can help from feasibility studies, through concept designs and prototypes, to a final product and manufacturing capabilities. Working within the Imaging and Intervention team of the Health Tech group, I focus mostly on medical and surgical devices.

As an electronics engineer, I design, assemble and build PCBs, panels and circuits, program, test, research, mechanically design and create new or improved surgical and medical devices for clients within many small project teams. Every day is different, and the work that I do depends on the stage and type of project I'm working on.

3. **Why did you choose this career?**

For as long as I can remember, I've wanted to be an inventor. I used to love to create and redesign things around me to make them better or to add functionality to them. My greatest joy was making things to help others. I also liked to take things apart to see how they work, and then the challenge of getting them back together again. However, everyone said that I couldn't be an inventor as it was not a 'real' career. Then, in year 9, I was introduced to engineering by my science teacher who recommended a general engineering experience. So, I attended the course and I loved it. Being an engineer is about designing, creating things for others to help make life easier or even just to make others smile. Everything around us needs to be designed or improved. Engineering could even involve taking a new technology or idea and creating something new or better; it was inventing. From there I went on every course I could to find out more about the different areas of engineering: from chemical, civil, mechanical and electronics, to more specific engineering types. I was drawn to electronics because I didn't understand it, and when I asked others how it works, they all said that it was 'magic'. This intrigued me, so I went on to study it at university. There are so many aspects to electronics and electrical engineering: from large scale power grids and renewable technologies, to thousands of micro switches on a tiny computing chip inside your phone. The degree I studied also had modules on new and exciting electronic materials, bioengineering, image processing and programming. I found it all so incredibly interesting and I have always strived to learn more. This was the main reason I went into a consultancy. Everyday you learn something, there's always a new technology to explore and new challenges to solve, and you never know what will be next.

4. **What background education or training do you have?**

I studied Maths with Mechanics, Physics, Chemistry and DT Product Design at A-level, then went onto study Electronics and Electrical Engineering at Bath University (MEng with a placement year at 3P Innovation in Warwick).

5. **What has your career path been?**

After attending many different Smallpeice and Headstart engineering courses before university, I completed a summer placement at Investx in Stratford in their engineering team after first year, then completed a year in industry at 3P Innovation ltd. in Warwick (a consultancy based in medical, pharmaceutical and consumer-based industries) as an electrical engineer, then a summer placement at TTP near Cambridge before my final year. After graduating, I went back to TTP full time as an electronics consultant.

6. **What does a typical day involve?**

As we have quite small project teams, and so many projects, you can get involved in almost anything! Therefore, no day is the same for me: I could be designing circuits, PCBs and parts for devices, brainstorming, assembling, programming, researching, analysing data, running tests in the labs, creating specifications, selling and talking to clients and suppliers. I work alongside some fantastic and incredibly talented people, and I thoroughly enjoy everything I do.

7. **What is your work environment like?**

Everyone is incredibly welcoming and friendly, and all have such enthusiasm and excitement for the work they are doing. TTP have many spin-off companies which are all onsite as part of the TTP Group. Our campus has lakes and green spaces where you can go for a walk or sit to work or spend lunch. During lunch we have many clubs and activities (I like Zumba and Rock Band), which are run by employees, and we have lots of activities and parties throughout the year. We have fantastic facilities including well equipped labs, machinery, laser labs, anechoic chambers and lots of interesting things across campus.

TTP has so many very interesting projects and so much freedom and flexibility to work on the projects you would like to work on. However, you can become so passionate about a project that work does feel like a hobby, so I sometimes find it hard to want to stop when close to finding a solution. We work with many different clients and suppliers across the world.

8. **What aspects of your job are most challenging?**

As every project is different, there are many new technologies to learn and new problems to solve. The projects are often only a few months long, so there is quite a steep learning curve. This can be very challenging, but I find it incredibly interesting and enjoy being stretched to learn new skills and technologies.

9. **Can you give an example of a project or piece of work that you have been most proud of?**

One project I am currently working on senses material types during surgery, to give the surgeon more information about what they are in contact with. This reduces likelihood of damage to veins or healthy tissue. The system could even be developed further to sense exact tissue types. This was a project I was involved with during my summer internship, looking at the feasibility of the device. Now we are in the final stages of development and have designed and produced a fully operational prototype device.

10. How do you hope your career will progress?

I hope to keep getting involved in more projects, learning new skills and technologies. I also hope to continue outreach and volunteering where possible. I would like to progress to leading projects and continue to contribute to possibly life saving devices.