

## Dstl careers: Phillipa, senior principal statistician

I always wanted to be scientist. I was aware of great mathematicians such as Alan Turing and of Margaret Hamilton, who did all the coding for the Apollo space program – it was groundbreaking and inspiring. Dr Hamilton was a woman and she was leading the way in her own right. I remember seeing that unusual picture of her among all these men. Just like the conference picture of Marie Curie among the likes of Einstein and Heisenberg.

### **Working patents**

I have three patents – which is really unusual for a mathematician! One is for work on the pre-treatment of sepsis – which is for the artificial neural network. It's a complex signature; the human body and its immune system is complicated. It's not as simple to predict as just one marker will go up and one will down. We needed to map the markers. I work on a number of projects across the lab. My meta-analysis on viral vs bacterial discrimination led to decisions on when it's a good idea to give out antibiotics or not. We need that for the war-fighter for a more targeted treatment. I'm particularly proud of that as it was a consortium of industry, academia and Dstl. No blood work, it's a purely maths project.

I am a technical lead in a project called Vulnerabilities, which looks to harden and defend autonomous military systems for deployment. The range of work a statistician and mathematician can do within an S&T organisation is wide and varied. Every piece of work having impact and contributing to UK Defence, it's what keeps me at Dstl. It's what motivates me.

Speaking from a maths conference in San Diego, Phillipa added:

I really enjoy my position as a senior mathematician. The benefit of being a senior mathematician is that you help provide and identify opportunities for others and inspire them. I've had to fight for some of my opportunities. Putting yourself forward – it's kind of a philosophy of 'don't ask, don't get'. I still think: What if I've been too pushy? As women, it's ingrained from a young age. We have a lot of anxiety about being at the front of the stage. As a girl in this world, you have to be confident in yourself and do not let anxiety cripple you; easier said than done.

I'm the lead for the gender equality network so I care very much about promoting equality for men and women in science and in our organisation in general. As a female mathematician, I'm still often the only girl in the room. I didn't always notice it when I was younger. Often I am pushed into the background but I think that's because maths is seen as something that everyone should be able to do, rather than a discipline in its own right. I'm now in the Cyber Defence Group – the group are an amazing support and I'm comfortable in that environment. In an organisation like Dstl, everyone brings something to the party, everyone has something to offer.

## Maths as a career

First and foremost, remember that maths takes you everywhere. There isn't an area of maths and society that maths doesn't touch. It's a key to many doors. From GCSE, get your A-level maths under your belt. There are lots of routes into it. Find a degree that works for you – whether that's applied maths or pure maths. I would always recommend people doing a masters, as it gives you an element of freedom and research in maths.

Mathematicians are very much in demand in data, computer science, the financial sector, the world is open to you. I've been to Florida to see the F-35 jets, I've been to the Pentagon. The things I've seen because I chose a career in statistics are amazing and I feel very privileged and very lucky.

## Recognition for Phillippa

Since this article was first published, Phillippa has been [recognised with an OBE](#) in the 2021 New Year Honours. She also won [Woman of the Year](#) at the 2019 Women in Defence awards.