I Am a Systems Engineer and I Do...

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Why did you choose to be a Systems Engineer ?

It was more a case that Systems Engineering chose me. I started my career as a graduate research scientist working within defence. As part of that programme I was given the opportunity to extend my training to undertake an MSc with the option of Systems Engineering being promoted as the right way to go. I was initially unconvinced as it did not seem to align with my path up to that point, but how wrong I was. My primary areas of interest have always been complex problem solving, conceptual thinking and anything associated with people and their performance. Becoming a Systems Engineer finally gave me the foundations to bring together seemingly disparate knowledge and experience and channel it into something more than the sum of the parts. Having completed my MSc I continued in defence research and onto my PhD before transitioning to academia.

Since making the transition to Cranfield my passion for Systems Engineering has continued to grow. In the early stages it was as a lecturer specialising in human systems, but as time has progressed it has lead me to driving innovation in educational practice as the first educational partner for the Systems Engineering Masters apprenticeship programme. Alongside my work in education I have also continued to support a number of research and consultancy projects working with overseas government and defence forces in particular.

What education/qualifications do you have for Systems Engineering?

My path to Systems Engineering has been an interesting and diverse one via an HND in Business and Finance, a BSc (Hons) in Sports Science and Biomechanics, then an MSc in Systems Engineering for Defence, and PhD in Systems Engineering for Defence followed by a Post Graduate Certificate in Teaching, Learning and Assessment for Higher Education and finally a BSc in Osteopathy.

What this says to me is that the beauty of Systems Engineering are the diverse backgrounds from which you can originate and how this brings strength to the discipline in the multitude of perspectives and ways of thinking that are therefore inherent.

I have seen some exceptional students who have studied on our courses that do not come from an engineering background, but from across STEM disciplines and even more broadly into the social sciences. As noted in Sam Williams' piece on her journey as a systems engineer in Preview Winter 2018, 'there are lots of ways to add value across the spectrum'. There is no one mould for a systems engineer and that is what I love about the discipline. I see SE as a perfect mid career shift from a multitude of different beginnings. That is not to say that an SE pipeline should not exist from undergraduate level, but it recognises that richness of knowledge, experience and perspective are very valuable too and that it is never too late!

What is it about Systems Engineering that you find so compelling?

Being a Systems Engineering educator you are constantly learning from those engaged on the courses you deliver as well as driving the evolution of the discipline through research and consultancy, feeding back into what is being taught. But more than that the way in which you think as a systems engineer pulses through everything that you do. Being a practitioner and applying systems engineering is where it gets really exciting. Seeing real benefits to organisations and outcomes whether products, processes or broader capabilities will never get boring.

As I have taken on management roles my knowledge and experience as a systems engineer has also given me the tools to approach and tackle the tasks I find myself engaged with, which are usually complex, messy and have people involved. I very much feel that my experience as a systems engineer has made me a better manager as I naturally look at lots of different perspectives.

For me, it is also very much about the people you get to work with and the passion that they have for the discipline. In particular my work with INCOSE internationally on the Systems Engineering Body of Knowledge and the 2035 INCOSE vision has been really engaging, but more importantly fun. That is all a consequence of the team involved. I do think that systems engineers need to be better at selling themselves though, something to work on for the future!

What advice would you give a Systems Engineer just starting out in their career?

Be inquisitive, take opportunities when they present themselves and never be closed to ideas or alternative views of things.

It is never about a perfect solution it is about a defensible and valid solution. Take the time to understand the problem, define where the boundaries are and also where the influence and power resides with the multitude of stakeholders you are likely to be dealing with. Systems Engineering is very much about people and you need to be the facilitator (and translator) between the multiple different perspectives brought to bear on the same problem space.

Some of the most significant advances in my career have been as a consequence of chance conversations or meetings. Talk to people, actively listen and engage. Getting involved in INCOSE UK and the working groups (as an example) is a great way of getting to know people, discussing something that interests you and building relationships and a network.

More than anything give yourself the time and space to explore as many different approaches, projects, interests, conversations both inside and outside of the discipline as you can. Your working life is a long one but for me the discipline of Systems Engineering means it can be a highly enjoyable one.