Beverly Clarke

Interviewed by

Ian Symonds

15th January 2020

At the

BCS London Office,
25 Copthall Avenue, London, EC2
Kindly provided by BCS – The Chartered Institute for IT

Welcome to the Archives of Information Technology. It's the 15th of January 2020, and we're in the new offices of the British Computer Society near Moorgate in London. I'm Ian Symonds, and I've been working in information technology and management consultancy since 1976, a period of enormous change in the industry.
[00:22]
Today I'm talking to Beverly Clarke. Beverly is responsible for the local community of practice programme for the Computing at School initiative, sponsored by the BCS Chartered Institute for IT and the National Centre for Computing Education. She is passionate about computing education and the role of computing at school. We'll be talking about Beverly's background, influences, and some key events that shaped her career to date.

Mhm.

[00:52]
So Beverly, when and where were you born?

Hi Ian. I was born in Guyana, Georgetown Guyana, in South America.

And, when did you come to this country?

I left Guyana when I was age twelve, and we, the family, my parents were teachers, moved to the Bahamas. So my parents went to teach for the Bahamian government. So, we stayed there for three years, living the lives of expatriates in the Bahamas. And I came to England in, in December, which was back, in the fourth year, so the pre-GCSE year, because things have changed these days in terms of how classes are referred to. So, I turned up in the December. And it was very very cold [laughter], in comparison to the tropics and the Caribbean and South America.

And did your parents come to this country because they were, well because they were teachers and they were working, going to work here?

Yes, they… Yes.

[01:59]
OK. And the education system I guess must be similar, is it?

Very similar. So, it's a British education system in Guyana. It did change slightly after Guyanese independence, but, everything was British through and through. So…

OK.

I mean, there were a few things to adapt to, such as speaking a bit slower, pronouncing some words differently, which I still do [laughs] up to today. So, just… Humour. Just, a few things to adjust to, but…

Mm. But no major cultural changes as far as education was concerned?

Oh no, no. Religion, oh, I'm a Catholic, so, you know, it's a Christian society, so that was similar. So, all, all good, all in line, all the, you know, main days of celebration were, you know, the same.

[02:47]
And what were your, what was your family life like?

Good, very good family life. Mum and Dad were both teachers, and, just encouraged us to explore the world. One of my earliest memories is my dad cycling me around Georgetown every Saturday morning, going to the local library, and giving me a history of Georgetown. You know, just, you know, nice family holidays every summer to, around the Bahamas, the Caribbean, or to America. A pleasant family life, yes, with supportive parents. Yeah.

And, fairly well off by the sound of it, certainly if you can afford to, travel widely.

I think they made the most of what they had. Definitely not born with a silver spoon in our mouths [laughs], so, not the most fantastic sort of monetary background, but, definitely, you know, planned well, and gave us, myself and my siblings, the best opportunities.

[03:49]

Mm. Great. And what, apart from your parents, were there any other important influences on you in your early life?

At school… So, well, I can go back to my grandparents. They were positive influences, so, I had the fortune of knowing both maternal and paternal grandmothers. Didn't really know my grandfathers, they unfortunately had passed on before I got to the stage of being able to ask lots of questions. But thinking back to school days, one of the main people that influenced me was when I came to England, my computing teacher. So, I had never seen a computer before I was twelve. I had read lots of science fiction, so roughly in the same sort of category, being interested in things like robots, that sort of information had filtered down to me in South America. But not engage with computers. So I do remember the first time I had seen a computer was around the age of twelve, going to America, and then when I came to live in London, it was an option to study it at school, so it was a toss-up between things like history or computing, and, computing, you know, I was, I was more interested in that. And the computing teacher made it very interesting, exciting, and, I'm glad I took it, mm.

And was it your best subject at school, computing?

Ooh yes, by far.

What else did you study, alongside it?

I studied… I studied geography also. So those are my two best GCSEs. That was the first year of doing GCSEs, back in 1988. So… And I still have a lot of geographical interest today, in exploring places, and, you know, always interested in the world. So, computing and geography most definitely. English came a close second, although I did bunk quite a lot of classes back then [laughs], English classes. I also enjoyed biology. So I'd say those were the standout subjects.

[06:00]

Mm. OK. And so, you moved to the, you moved from the Bahamas to the UK at, just before GCSE level?

Just before GCSE. Yes.

Was that… I mean… So, how… Was that a bit of a culture shock for you?

Not really, not that I can remember. Because GCSEs had just been introduced, so, I had missed a term, so I got caught up on coursework and things like that very quickly. So… My background is, if you are getting access to a free education, take it. [laughs] So, I did. It never occurred to me to think, this was too much work, or anything like that. So… In fact, it just passed, and I really haven't ever thought about it.

Mm.

So.

And as the, the education systems are similar, are they, to what you had in the Bahamas and Guyana?

Yes. Absolutely. And with two parents as teachers, then…

Yes. So you knew what to expect.

Yes.

[07:01]
But what about personally, I mean was it a bit of a jolt, having to make new friends, when you got to Britain?

Yes, making new friends, I guess at some level I found it easy, but there is always the issue of continually adapting. So, I guess I, it… Looking back, it's given me a certain level of resilience. I've never not been without friends, so, [laughs] obviously

I'm fairly good at it, adapting to new situations. But, yeah, it's always a consideration.

And what was your relationship like with your teachers and tutors?

Excellent. I'd say it was… I probably didn't come into my own until I got to university, but, you know, I just got my head down, did my work, polite, respectful, and that goes a long way, being polite, respectful. Because, if you do need any help, or you've got questions, people are willing to spend their time with you, and to invest in you. So, very good, excellent, yes.

And your computing teacher was Mr McNulty, I understand.

Mr McNulty, yes.

Just to give him, we'll give him a name check shall we, just to…

John McNulty.

John McNulty.

[laughs] Yes.

Is he still around, do you know?

I don't know. It frequently crosses my mind. You know, sometimes you think in terms of giving back, or letting someone know the impact that they had upon your life. I have this standout lesson in my head where, he was explaining number systems, you know, hexadecimal and octal, and I just remembered sitting there thinking, wow, this is so fascinating. [laughs] Might sound a bit geeky, but, I just remember just sitting there, just the teacher, his manner was very very nice. And, he spent the time, it was a small, by the time we got to A Levels, a small class, ironically of only five girls, five or six girls, and, he was really nice with us, so, I, I enjoyed it immensely.

I was going to ask you actually what you thought the, what were his, you know, which of his attributes, you know, inspired you really, or made, made you inspired by IT.

[laughs] I think…

Was it just the fact that he took the time to explain it to you, and…?

He took the time. He was personable. So, I've got this memory of going to, you know, being the first day of school, and, a teacher who said, 'Oh not another new student.' And, obviously that person was maybe feeling a bit overwhelmed. But, you know, Mr McNulty just said, 'Ah, right, OK. Have you studied computers before?' I was able to honestly say, 'No I haven't, but I am interested.' 'OK, right, let's get you into class,' you know.

OK.

So, from that moment I sat in the front of the class, [laughs] just eagerly absorbing everything that was said to me. So…

So, he kind of, he got you engaged straight away.

Absolutely, yes.

Yeah. And this was the first… Well as I understand it, I think, you said it was the first cohort, wasn't it, at your school, to do computing GCSE? Is that right?

It must have been, because, 1988 was the first year that GCSEs were rolled out across the country. So, yes. Because prior to that it would be a GCE and CSE. So, yes, the first cohort, yes.

[10:38]
Oh I see, so… Yes. OK. So tell us a little bit about your IT education there. What did it cover?

It… Lots of ICT. So… I do remember being introduced to programming and not liking it. So, languages like Pascal back in the day, and using an RM Nimbus, just grey lines across a black screen. Number systems. That just does stand out in my mind. But those are the two standout things. Starting to gain an awareness of what computers could do for us, and what the field was about. Very very early understanding.

Mm. Mm.

Because there wasn't that much you could do with a computer back then. So things like email didn't exist. So it was quite, quite a niche sort of solitary subject which just, happened just in a computer in front of you.

And these computers were, sorry, RM…?

RM Nimbus.

Oh OK. So what was that like as a, as a machine?

I don't have any strong memories either way of it. For me, it was just, right, this is a computer, this is what it can do, and this is the potential. [laughs] I didn't think anything in terms of, the spec of the machine, those thoughts didn't occur to me at all.

But it had a… Right, so, but it had a little small window type screen, did it, or something?

Yes, just a… The traditional sort of, sort of, the TV cases with a large back. We've got the more, thinner cases now.

Yes. Yes.

You know, VDU these days. So, it was quite a large visual display unit, and monitors, and keyboard, and just… Multimedia is what was the big difference, was lacking back then. So it was just really text on screen.

[12:33]
OK. OK. So, you went on and did A Level as well, in computing.

I did, yes. Mm.

Did you… And you got, you got your A Level, and you went to South Bank University.

I did, yes. So, once… GCSEs led to A Levels, because those were my best GCSEs, and I enjoyed it. And, then, I got my A Levels, and went to university. And that's where things really started changing. Because, times were changing, so, you know, the, computers were becoming more networked, so you could speak to other universities. Email, it's still fairly embryonic but that was coming on board. So too was, you know, bits of multimedia started seeping in. University gave me a, a wider understanding of computing, so, there was quite a lot of mathematical and programming content which, [laughs]I worked out many years prior, was not my strong point. But it taught me to stick with things, and to get through that. I also did my third year as a placement, and that really opened doors for me. So, I worked for the Metropolitan Police. We were in charge of finding our own placements, so I sent out, back then there was a mini-recession, I sent out 200 letters of application. I basically spammed the tech industry. I got two interviews from that. I went to both, and I got one job. [laughs] So, I was really, really happy, because I knew gaining experience would open up many more doors for me. So I really did try. So, back to that resilient thing. And, the department, I was the only girl in the department, only female rather, definitely a girl back then. And they took me under their wing.
[14:34]
And I remember my line manager, a chap called Tony, he said, 'Right, let me show you networking, you'll definitely get a job out of this.' So that's where I first learnt about Novell networks, and started seeing, you know, where this could lead me. And I had, I had a fantastic placement year. I got sent up to the diplomatic services, I think I'm allowed to say this, and back then, they recorded details of diplomats on index

cards. And it was in the very early stages of being computerised. So I helped the public servants to learn, to, move that information from index cards to a computerised system. So it was things like, taking photos of the diplomats, scanning them in, learning about image formats, putting the information to go with that diplomat alongside the diplomat. It was good for me to build relationships with customers, they were my clients for that year. And just, it was that transition period again in our history of going from a manual system to a computerised system.

Mm.

I'm sure it's, it's surpassed by now. You know, you're talking in the days where we could hold lots of information, data rather, on a floppy disk, or a couple of floppy disks, and, you know, you can load your software up from floppy disks. This is quite a turn back. So… But it was really, really exciting, you know, I got to visit lots of exciting places, the police, the territorial operations, specialist operation branches, to find out what work they did. So, I can't go into much more about the other parts of the work they did, but, it was nice.

[16:18]
Did you… Do you enjoy the people side of it then, getting, talking to others about, about IT?

Yeah, I… It just… It was just nice. You know, I mean, it taught me to relate to people of different ages, different experiences, to simplify what you are saying. You know, if you've got, you know, a couple of older civil servants, you know, back then I was about 20, say someone who was 55, they have definitely never encountered this. And, you know, we're going from index cards to a computerised system, so there's the hardware, the software. There's quite a lot going on. You've got to break down how to use the system.

Mm.

So, I learnt that. And I have been able to do that successfully throughout my career.

You didn't have any contact with things like the Police National Computer, which I think, existed even back then I think…

I was aware of it.

…in a sort of rudimentary way.

Yes. [laughs] I was aware of it, and they talked to me about how they use things, which was supervised when… You know, it…

Well…

was closed, you know, their system.

In terms of access to it. Well, no, absolutely, yes,

Absolutely, yes. Yes.

One hopes it would be.

Yes. [laughs] Absolutely, yeah. There was no breaches there whatsoever. [laughing] Yeah, I visited New Scotland Yard a few times. For me, as a young lady, it was, wow, this is great.

Sounds like they were trying to sell the, sell the police to you as a potential career.

There was a lot going on.

You didn't take the bait.

No I did not. You know, I think that really set me up for where I am today, that industrial placement, because I came out thinking, I know what I can realistically apply for. Computing isn't all programming. You've got a customer side, you know, and you've got all the different software packages that started emerging by then, not

as many as we have now. So… There's the networking. And that took networking through, quite a lot into my, quite a way into my career. Because it was quite logical. It's all about connectivity, so that's just a logical process. And, by the time I went back for my final year at uni, university, it was like, right, let's just do these final months. And it was then that I had my first brushings with artificial intelligence. So it was, obviously just building my experiences as I went along.
[18:47]
And, also, I would say, running alongside this was the, sort of, the networking I was doing, and the relationships I was building with others on my course. So, my second and final year I think it was, I was a student rep. So that gives you a whole new set of different experiences, of, you know, sort of, feeding forward the, needs, concerns, opinions of your, you know, your classmates for want of a better word, up to the university. Also, speaking to the programme managers at university, attending functions, I attended a few of those, and, you know, spoke on behalf of our year group. So, so quite a lot of exciting and rich experiences. Yeah.

[19:34]
Just as a matter of interest, I mean, this period when you were at South Bank University, 1990 to 1994, this is when people first became aware of the Internet, wasn't it. It was starting to emerge from the shadows. Because it had been around for quite a long time as a sort of military network before, back in the Eighties, but it was during this period when it first started to move across to, you know, into the more public domain. Did you have any exposure to it at university?

OK. So, the first time I heard the word Internet, [laughs] I was in the third year, on my industrial placement, with the Met Police. So, it was the JANET network, the Joint Academic Network. So I remember that, and using the VAX machines, and being able to communicate that way. But not, nowhere near what we have got today, but just, it was embryonic again back then. But just realising, oh, you can make communications, oh you can print to a printer across a room, and, it, it was there, and, there was great potential. We still had dot matrix printers back then, [laughs] so, it was, things have moved on an awful lot.

[20:48]

So when you, when you left South Bank and you, presumably you wanted to look for a job, was there any question that it would not be in IT, or was it like, you didn't consider anything else? [both laugh]

Well, I think I mentioned previously liking geography, and, you know, just the whole thing about the world. I briefly considered a career in the diplomatic services, and actually went along and did the entrance exams. I wasn't successful. So, the computing path, I stepped onto it, and, I had a job within, say, four months of leaving university, or four months of applying I was employed, in networking and customer support. And that was fairly easy.

[21:43]
So this, this first part of your career, up to about 2001, was in this sort of area, wasn't it, of work.

Yes.

Just tell us a little bit about who you worked for and what you did.

OK, right. So, my first job was with Surrey County Council. And that was very very varied. So, it was going out to clients of the County Council all across Surrey. I do remember having to learn to drive, because I needed to be mobile, so, that was a challenge, but I did it on the fourth attempt. [laughs] It was, again, being able to speak to people, being respectful, understanding needs, and listening. Just really honing your people skills. You know, dealing with people who might be upset because their computer isn't working. And being able to problem solve a really key skill. And communicating clearly, you know, what you think you've heard and what they expect and setting expectations. So I travelled all around Surrey. There wasn't really any part of Surrey I didn't go to. [laughs] So… And Surrey subsequently became my home for the next 20 years after that. So it was, I went everywhere in Surrey.

And did you get, when you first, this was your first job, did you get any vocational training?

There were training courses, and there was lots of in-house training also. So, I furthered my skills with networking, looking at, I think I may have… I don't think I sat the exams. I'm fairly certain I didn't. But I definitely did all the reading for the certified Novell networks. So, because I had moved to Surrey, I didn't know anyone, I spent a lot of the weekends just reading and studying. [laughs] So, I was proficient with the skills, without having the certificate. So, yeah.

[23:47]
And what about your first managers and so on, were they, were they supportive and…? What role did they play in your career development?

They were excellent. So my first manager was female, and, she was a, a little woman called Jane. I'll anonymise it, I won't say her surname. And, she was just, great, you know, she managed a team of men, and then I joined, and her senior network engineer was a man, and, they were welcoming. The County Council was a really nice place to work, more so than many other places I've worked, I just found that people were really nice. Yeah, I think that's the only way I could sum the County Council up, really nice, friendly people, some of whom are still, I wouldn't say good friends today, but we're still acquaintance terms at least, 20-plus years later, so, enjoyable.

[24:42]
OK. And you moved on after a couple of years.

Yes. Unfortunately…

To, outside of the public sector I think, wasn't it?

Economics took charge. I wanted to buy my first flat. [laughs] And the only way to do that was to, earn more. So, that was the main driver behind that move, and, and gaining an understanding of the private sector. I mean that first role was quite challenging, I probably had bitten off slightly more than I could chew, but, I did do it, and I moved on quickly, so… [laughs]

To Capgemini.

I did. Now Capgemini was good. I was actually introduced to Capgemini from a friend that, we were on the same degree course, and, he was working at Capgemini and recommended me. We're still friends to today. And Capgemini allowed me to experience many different industries, so, back then we rotated, roughly every six months, to a different client. So, I went to Esso and Exxon, down in Leatherhead in Surrey. So, I was gaining knowledge of the oil industry, and understanding the customers that they had. I still do remember actually looking at different vials of, you know, sort of, crude oil pumped out of the ground, all the way to jet fuel, which is very clear, and understanding a little bit how they worked and what they needed computers for. And again, customer services came into it, because I was doing first and second line support, and assisting the third line support. So, it was, you know, doing things like, walking the floors, checking that everyone was OK. So, we'd have different rotas. So we wouldn't wait to find out, for someone to ring to say that there was a problem; we'd say, 'Right, let's go out.' 'Hi, how are you today?' So it's just going and saying hello to people. Some of them may have something as simple as, a paper jam, which they may have been struggling with, not wanting to ring up. And you could just fix that and move on quite quickly. So it's about keeping your customers, your clients, satisfied and the business moving, and seeing where you fit into the whole organisation. And I do remember Esso and Exxon being, almost every morning, maybe a slight exaggeration, but frequently, there was always a present on your desk. So they treated their staff and, well, being from Capgemini, their external contractors, treated very nicely, there were always little items on our desks. So, you know, not sweets, but things like notepads or pens: things to appreciate us. And, it was lovely, I still have some in the back of my car [laughs], so, reflector lights and things in case I break down. So, [laughs] it was great. Because Esso ran quite a few safety campaigns back then.

[27:40]

So, I mean, and, during this time you took a professional certificate in management, didn't you, at OU. What was the thinking behind that?

OK. I think that came slightly later. I just wanted to further my career. And I felt I wanted to get into management. So… And that opportunity wasn't being paid for by the company I was working for, so I decided to do it on my own. [laughs] And it, it was good you know, I learnt things like, a marketing mix still stand out in my head. And you start… So I was gaining the theoretical, and some elements of the management from work, but, I needed to match the two up. Having previously done things like, doing all the reading for the Novell certification but never doing the certificate, actually having the piece of paper does make a difference. You know, I mean, going back to being with Capgemini, I also got experience of the medical pharmaceutical industry, there was a short placement of, it was called, I can't remember these in the correct order but I think it was Innovex, which then became Quintiles, I'm certain that's the correct order. So, but that's a whole pharmaceutical industry. So you start by going to a company which did outsourcing, it was a brilliant experience at finding out about different clients, and I did lots of work in-house, that's when I got my first proper management responsibility as a problem manager. I didn't fully enjoy it though. [laughs] But again, it was just managing a help desk. So, there was lots with help desk management, and again, the whole customer service angle came through strongly. Enjoyable.

Was it a very technical sort of role, or were you, was it sort of first-line support? So, if it was very technical stuff you handed it over to a techie somewhere to, to deal with.

I would say I ended up more a second line support. So people would answer, you know, other colleagues would answer the phone for the first line, and I would be more second line support. And on occasion I would go for third, but I realised that I wasn't that techie again, so, I could assist and have an understanding, and understanding is key if you need to relay back a tricky issue to a customer. So, that's where I think I was able to bridge the two, with definitely a firm understanding of the second line support level.

[30:13]
So what happened next in your career after, after this time at Capgemini?

I… Well, I became a mother in the time being there. Which, life changes when you become a mother. So, one of my proudest moments. [laughs] I have two daughters. So, that changed. I then became redundant, and, I had always thought about teaching. So, my parents were teachers, and, I had always thought, I didn't want to teach children, but I'd teach adults. And I had been noticing in the local paper adverts to teach at Brooklands College. And I just thought, well, you've been made redundant, give this a go. And, I went for it, and the rest is literally history, because…

So do you think that sort of... I did wonder, when I was looking at your CV for this interview, you know, that perhaps you felt during this, this early period, that you hadn't quite found your vocation.

Yes, that…

Was it there bubbling away underneath?

I think it is. Sometimes when I reflect on different things that have happened throughout life, I think, well that was actually always there. Because, I was able to impart knowledge to others, all throughout, able to break things down clearly. I can get on with others. And that lends itself naturally to teaching. So, you know, getting into teaching, I, I just, I literally went along, and my interview was very quick, and they said, 'Right, you are hired.' And I thought, right, lesson plans, how do we do this? And, at the same time, running alongside that, I undertook a City and Guilds teaching, it wasn't a diploma, not a certificate, just a short course in teaching introduction. So that really helped me with the theoretical side of teaching, and, teaching theory. And I was gaining experience with adults. And Brooklands College was good for me. I'd also say, you know, by then I had two children, two girls. One of the things that helped me to remain in teaching and employment was a National Lottery grant. So, there was a nursery onsite with subsidised childcare for staff. That made a massive difference, and, you know, as a woman in tech, and a woman just, in the world of work, or a parent rather in the world of work, having subsidised childcare makes a massive difference, otherwise, I wouldn't have been able to go to work. And, I am very grateful that that scheme was there, so I could drop the girls off, go to work, pick them up on the way out. So, and it was all onsite. So, I'm keen…

So were you working full-time?

I worked part-time. I gradually increased it up to four days a week over the time that I was there. So, there is always more work in teaching. [laughs]

[33:15]
So just coming back to the postgraduate certificate of education that you took, was that… You said it was a short course. I mean show short was it?

Oh, no no no. So…

Oh sorry.

First of all I did a City and Guilds.

Oh OK, sorry.

And then I went on to do the PGC, so…

Oh OK. Sorry, I got confused. So the City and Guilds was…

The first thing.

Yeah. So how long was that, that…?

I can't remember it lasting more than a term or two terms. It was very short.

And that enabled you to get sort of, become qualified as a, as a teacher, did it?

As a, could teach the evening classes, which I was taking at the time. So I had something to show that I actually knew what I was doing. And then to start teaching A Level students, I needed the PGC. So I trained as, on the job for that.

[34:03]
OK. And what, what subjects did you teach?

OK, so I taught different modules on big tech, and, also, I had a, University Foundation student. So, groups of students would come across from Asia to do a University Foundation programme in England before applying to British universities. So that was key skills in IT level 1 and 2. So, I had got them through their key stills in IT. Again, so we've got students who, English might be their fourth language in many cases, and some have never been away from home. So, they have gone up to the, some, you know, may have been up to age 25, but mostly they were eighteen-, nineteen-year-olds, so young people, on that UFP programme. And, so again, breaking, chunking, making yourself clear, getting them though, you know, a computerised, you know, English exam. And, I'm very pleased, they always passed, bar one or two, they always passed, and then went on to, whatever they were doing. So that was a major chunk of my work.

What sort of things did, at this time, in the early 2000s, what sort of things were being taught in a, a key stage 1 and 2 at, in computing?

OK. So, mainly the Microsoft Office products. So, the key skills in IT level 1 and 2 covered, you know, Word, Excel, PowerPoint, databases and email. So those were the main things, proficiency in the Microsoft Office suite, is what it boiled down to.

Very practical sort of stuff for…

Yeah.

…getting, getting any sort of job really.

Absolutely. And doing some coursework. So, the coursework was, you know, sort of, goes along with the multiple choice tech that they did.

Yes.

Yes.

OK.

So that was the main bit. So that was with my foreign students. And with the home students, I did a database unit, and one of the, I cannot remember, it must have been networking, I think it was networking actually [laughs], back to playing to my strengths. So, those were the two modules I would teach on, and other lecturers with their strengths in programming would then take the programming modules.

[36:26]
Yes. OK. And then, you moved on after a while.

Yeah.

Well quite a long while.

I enjoyed my time at Brooklands College, you know, I made many friends who I'm still in touch with today. It was great experience for me. And then, again, due to economic and financial reasons, I, I had a few changes in my personal life, and I just needed to earn some more money. And I decided to start getting some qualifications to move into teaching in a secondary school. By then I had gotten over my anxieties teaching anyone younger. [laughs] So, I sort of gradually taught younger age groups as I've gone along. So I did have a very challenging year, sort of working, looking after two young children on my own, and, retraining to gain qualified teacher status, which is what you need to teach in state schools. So I was literally going between two jobs, and for that, to gain the experience with state school, I volunteered. I said, 'You need computing teachers. I am here, I'll volunteer.' So it was my local Catholic secondary school. So they took me on. They didn't have to pay me. I just needed experienced to get qualification. So, there were lots of…

And they snapped you up, did they?

They did, because computing is a short-haul subject, and always has been. And I had lots of people around me who were supportive, because I was going through, as I mentioned a challenging personal time, and said, 'Right, we will help you.' So… And again, I think that boils down to personality, saying, 'Right, OK, you are here, you want to work, you want to achieve. We are here for you.' So… You know, it's just sounding boards, should, can I see an example of a lesson plan, as practical as that. They were very helpful. And I ended up sending my children to the same school I had trained at. I didn't work there, but even so I [laughs], sent them there later on.

Oh OK. OK, so, this is… I understand. So you were… You… This was while you were doing your training for qualified teacher status, that you were at this school.

Yes.

[38:40]
OK, I understand. And then you, then you actually got a job with a, with a school.

I did, yes.

Tell us about that.

So, once I had qualified, and, because of economic reasons, I went to work at Sunbury Manor School in Sunbury in Surrey. And, it was an interesting transition to teaching at this place. [laughing] I do remember thinking, this will either make you or break you. But, [laughs] I'm here today, so it did make me. [laughs] What I found challenging, which I never dealt with at that point, was behaviour management. And I don't think anything can truly prepare you for managing behaviour until you are actually immersed in it. And… But, I did have extremely supportive colleagues. So, there are good structures in place at the school, and very supportive colleagues. And, after about two terms I, you know, sort of, bedded down, gave the respect to the students, and basically was consistent, firm, fair, stuck to my guns, and made it work. [laughs] So, you know, that is…

You were teaching all age groups?

Yeah, I was teaching eleven to sixteen. So, GCSE classes, so Key Stage 4 and Key Stage 3. Yeah. And, continually having to provide new schemes of work, I'd say that's one of the challenges of teachers, changing schemes of work. I had a very, very supportive and, who's still a friend today. So I've made very good friendships as I've gone through my working life. Head of department. We worked really well together. And when you find the, when you are in an environment with the right people, and you can just bounce off each other, it's fantastic. So, we had excellent results year on year, so, you know, GCSE, ICT, and some of the vocational courses also, we got the students through those courses. We chose the best courses for the ability of our students. Because we did have a lot of weaker ability students. So one of the things that teaching did for me was, learning to differentiate, so, again, it's ensuring the material is taught to different abilities of students, and getting them to understand it. Working across departments with colleagues in the same department. And also appreciating all the wider issues that affect students in a classroom. It isn't just what you are doing, there's lots of external matters that can affect students. And, at that time I then also started seeing the wider computing industry. Because I had that experience also, so I was just never focused just in the classroom; it was also looking into wider computing. I think I, I found myself really after that.

So what do you mean by that exactly? Sorry, I don't understand how you saw… What do you mean by seeing the wider computer industry at this stage?

So, it wasn't just that I had come from university and gone into teaching. I understood the corporate world of IT also, and what was available for students. So, one of the things I noticed was, there were more skills were being required out in industry, and students were still only doing Microsoft Office. That things were changing in industry, and the two were not matched up. And, that's one of the reasons which led me to start, starting to look out of the classroom and say, OK, what else is going on? So I started coming across Computing at School, and other organisations who were championing, you know, computing curriculum. It was because I had had the previous experiences and looking at what was in the education system, I kept looking what were, I termed, looking outside of the classroom.

[42:37]

Mm. You got involved with the Department for Education at some point, didn't you, in, doing some, was it on Key Stage 3 and 4, and the…?

Yes. So, as I mentioned, I was sort of looking outside of just the classroom, and, got involved with Computing at School, CAS. So, which I would explain is a network for teachers. And I… There was a, you know, we knew it was coming, that there was going to be a change in the curriculum from ICT to computing. So this is back around, 2014. And, I thought, right, I can see the need for this. I want to be involved in this. It's beneficial for the students, it's beneficial for the teachers, and just for the economy. I could see where we were heading. So, I got involved with CAS as a volunteer member. I set up a Computing at School community, so, these are after school communities that meet once per term, and, basically advertise out to your local community, 'Hi, I'm a computing teacher. I would like to network with other computing teachers and share our experiences, and see how we can further the subject.' And, I literally just sent out emails to my local schools, and set up the CAS Sunbury Community. And, it grew from there, there were all those who were interested. And I had a chance meeting with Mark Dorling, who was the, I think his title was CAS Coordinator back then, he happened to come along to one of my community meetings, and, then asked me to do a video for the DfE, talking about the computing curriculum, and CAS communities, and, you know, how, how beneficial they were for teachers, and the impact they would have on students, from teachers attending those meetings. So, that's where it all, again, started mixing and combining, you know, the classroom, and teaching in the classroom with what's going on outside in industry. It was just a chance meeting.

Mm. Sorry, he… This…

Mark Dorling?

Yes. Was he from DfE?

He was from CAS, Computing at School, which is part of the BCS. And he also worked quite closely with DfE.

[45:03]
OK. And, you also, you took CAS Master Teacher training.

[laughs]

Sounds… What's, what's that all about?

It's a very grand title. So… CAS is, you know, this grassroots community of teachers, which has a statement, 'There is no them, only us!', and a strapline of, you know, educate, engage. There's another e missing there. And, they had a programme to upskill ICT teachers to computing teachers. So they were looking for outstanding educators. So it wasn't always teachers, it could be a university lecturer, hence I use the word educator. Because CAS is teachers mainly but we do have university lecturers, people from industry, parents with a vested interest in computing education. Just people committed to a common cause of computing education. So, there was a CAS Master Teacher training programme, which gave you the backbone what you would need to teach the new curriculum.

You kind of, made a distinction just now which I didn't fully get between ICT and computing.

Oh, right. OK.

So, just explain that.

OK.

Because to me they sound like the same thing.

Ooh they, they are different. OK. So, ICT and computing. So, ICT, information and communication technology. So, we think of that mainly as your Microsoft Office products, and, digital literacy, and, you know, e-safety generally. And then we have got computer science. If you think of that as your programming and your

computational thinking and things. And then you've got digital literacy. So I think of it as a, three slices of pie in a circle with the umbrella heading of computing. So we've got, ICT, digital literacy, and computer science. So one of the main things that has changed is programming which sits within computer science, and then there's introduction of computational thinking, things like algorithms, abstraction, decomposition, that would sit there. Although those skills are used in every subject across the board. So, before, prior to 2014, it was just ICT, so these other areas weren't taught.

OK. Yeah, it's interesting. I think, I think probably in the education world, those terms have different connotations to outside.

Ah.

But… Because ICT is often used just as, well, generic for, everything that happens in the computer world isn't it.

It still is. It's…

Yeah.

I mean IT, it's just, IT.

[47:57]
Anyway. I interrupted you, you were talking about your CAS Master Teacher training there.

Oh, OK.

So this was, this was, what, giving you capabilities in teaching computing…

Computing.

…rather than ICT.

Yes.

OK. So go on.

So, to be a CAS Master Teacher got you a nice shiny badge. You know, better standing amongst your colleagues. My headteacher was very supportive. A school could also apply for CAS Lead School status, which back then simply meant that it was a school who was taking an active interest in computing. And I really enjoyed that. I had already pulled together the local teachers who came once a term, voluntarily again, to discuss computing, to learn more about computing. I started networking with other CAS Master Teachers, because computing is a big field. So, we would look at our strengths. So, attending a CAS community meeting, so it's a two-hour meeting, you may have three different parts to the meeting. There'd be networking, just, what's going on at your school, what's your cohort like, you know. And then you get some subject knowledge, so things that you could take away and implement immediately, OK. So, I remember one session I did, I think it's shown in the DfE video I did on packet switching, so, you know, how are we sending messages across a network. We also had someone come in and do a bit of visual programming, Scratch. I also did a session on enrichment, how do we enrich a computing curriculum. So, lots of information.

Some of these videos are available, they're online aren't they I think.

Yes.

So that we can, we can put a link up on the…

Absolutely.

…on the website, so, so people can see you in action.

You can, yes. [laughs] So, the DfE video is are still out there. Yeah. You will see the packet switching in action there and…

[50:00]
So, so just, just one other question actually. I'm sorry, you know, for not being somebody who has ever been an educationalist.

Mm.

This transition from teaching ICT to teaching computing, was this happening at all age levels, from Key Stage 1 to 4? Was it a change in the curriculum, a major change…

It was a change.

…to bring in that sort of, computing type stuff?

Absolutely. So…

OK. But it wasn't just that the senior levels were doing it, and…?

Oh no no no.

No. OK.

No, this was, this was recognised, that, in order for England to compete globally, we needed to upskill. And this is part of a long-term strategy of upskilling our young people. So it was going on from Key Stage 1 to Key Stage 5, all the way through.

Mm. OK.

Yup. Major programme still going on now. We are gradually getting there, you know, but we are a long way away from where we need to be.

Where's it going now? What are some of the key milestones if you like on that, that change?

OK. So, CAS made lots of, we're making lots of noise and lobbying, with, you know, lots of people are being committed to the cause. And there was, the DfE gave funding for the Network of Excellence, so the NoE. And this was, involved a network of universities and CAS Master Teachers and, you know, lots of other educators, who put on lots of training courses for teachers to get upskilled. And that went on until, roughly 2016. And there was, you know, lots of bidding, there were reports like the Royal Society report, 'Shut down or restart?' and 'After the reboot', they are two major reports, which, you know, recognise the need for, you know, upskilling and investment in computing education. So, back in 2017 there was the launch of the National Centre for Computing Education, the NCCE, which has seen an investment of 84 million into England for the NCCE programme aimed at upskilling teachers. So this is how far we have come from a small group of people starting CAS and lobbying for a change in computing education to this, which was described as a once in a generation, once in a lifetime investment into our teachers and our young people. So, the NCCE is a consortium of the Raspberry Pi Foundation, BCS, the Chartered Institute of IT, of which, CAS is a part of BCS, and also STEM Learning. So teachers are able to gain certification going through programmes to study. And each of those three organisations has a part to play, this, forming the consortium that is the NCCE. So the NCCE doesn't have an office, it's a virtual organisation in that regard.

Mm. Mm.

So… So for example, Raspberry Pi looks after the online training. STEM Learning, you know, it's a mixture of the face-to-face training element of courses, and BCS is all about standards, certification, and teaching networking in the CAS community.

[53:28]
Right. So the, so the teaching quali- It's, it's kind of, a sort of process of professionalising IT teaching, another way of putting it?

Absolutely. Yes.

And, so, the BCS qualification, sorry about, sorry to be ignorant, but…

Oh no no, ask away.

What's it called, and, and, how does someone achieve it?

OK. So I'll give you an example. So, for a teacher to, at GCSE level, to show that they have got this subject knowledge, they will undertake what's called the CSA, Computer Science Accelerator Programme. And that's a programme of 40 hours of CPD. And that's two face-to-face courses, and prior to that they would have done a diagnostic test to work out their areas of improvement. So, if they identify through the diagnostics that there are areas for improvement with, say, programming, and cyber security, those should be the two face-to-face courses that they undertake. And then they would also identify the online courses that they need to improve upon. So, together that would make their 40 hours of CPD. Then they will take an online multiple choice test. And then they will gain… And they would have to give you this information, the correct naming afterwards, but it's an NCC certificate in secondary subject knowledge, basically, I'm not certain of the correct title of it. And that is transferable to other schools also. So they would gain that. And, that's the first part of subject knowledge, you know, I know what this is. And then to further enhance their practice, they are then invited, once they have passed that part, to gain some knowledge around pedagogy. So, what does this subject look like now with the teaching idiom? And that, that requires them to get involved with the CAS community, and other organisations, but CAS plays a key part in there. The certificate the teachers gain carries, because BCS are involved with standards, Royal Academy of Engineering accreditation. So that's an example of one qualification that the NCCE offers.

Mm.

There is also the equivalent for primary teachers, again getting involved with CAS community of practice, it's all about what's going on in the classroom, teaching networking, you know, what does our subject look like when you've got to differentiate it for 30 students of different ability, and how do we know, keep up to date with what's going on in the industry.

[56:16]
OK. OK. So people who become qualified through this route, use the path if you like, yeah, use the CAS network as a way of taking that out and spreading the word…

Oh yes. I mean…

…throughout the country to, to lots of schools, yes.

Yes. So, you don't have to, to go through the route only to use the CAS network. Anyone can join CAS.

Yes, sure. But they're coming in with that specialised knowledge to, to disseminate.

Yes. So, that's where CAS, the DfE who fund it, the NCCE, recognise that teacher networking is an integral part of, you know, professional development. So, that's why we as CAS, and I, you know, head up the CAS communities across England, so I'm the National Community Manager for the CAS communities, recognise how important it is that teachers network and deepen their professional practice.

[57:17]
Mm. So as the National Manager, what does, what does your job involve? Setting up new networks where they don't exist, and that sort of thing?

Absolutely. So, National Manager role is varied. Every day is different. I am supported by a team of outreach managers, so roughly each region, say, the South West or the North West or North East, Midlands, is covered by an outreach manager, and the main job there is to invigorate CAS communities, support… Each CAS community is run by a community leader, so, this is working with our volunteer community. So, nurturing our volunteer community, ensuring they have what they need to run their three CAS community meetings each academic year, and outreach managers networking. So, I will find contacts, they will find contacts. It's about sharing and spreading the word of what CAS is all about, and how it fits into the NCCE journey.

Mm.

You know, we are basically the subject association for computing and computer science. I think that might be the best way of summing it all up.

[58:27]
And just so we know… We missed out a bit of your career didn't we.

Mm.

Because you started off doing, as an outreach manager in the South West, didn't you, so you, you, you kind of, got your hands dirty doing that before you started managing the, the thing overall.

Oh yes. Indeed, yes. So, when I was teaching, back at Sunbury Manor, lots of great experiences, a very supportive headteacher who supported me over the course of six months to become a CAS Master Teacher. I also did my senior leadership qualification. So, a very supportive school who had lots of succession planning in place to grow and develop their staff. So, I came to a change in life, I had met someone, I met a partner, and that facilitated a move to Wiltshire. So I moved from Surrey to Wiltshire, and thought, oh, let's see what else life has to offer. By this point I had been teaching fourteen years, and I also had the previous career in corporate IT. And, because I had been involved with CAS and BCS on what I would call ad hoc basis before, so, for example, some of the things I have done, I've been introduced via CAS to the BBC, and I had done, been a scriptwriter for a series of computational thinking videos, which are up on the BBC website. And again, I had no experience of scriptwriting, but I had the subject knowledge, and I spoke to the chap who could do videos and translate words into videos, and we worked really well together. So, that was a great experience for me. So, I've been doing things like that. And also interviewing teachers on behalf of BCS for the BCS scholarship programme, you know, to identify suitable candidates to become future teachers. So I, at the start I had been doing all of this alongside teaching. I was, had my hand in lots of different pies. So, moving to the South West, I literally just went along and said, 'Right, I'm

available. How can we work together?' And, the opportunity came up to cover the CAS South West region. So basically, invigorating all of the CAS communities, going along to community meetings, talking to teachers, helping them with what they needed. One of the things I did was, cybersecurity was introduced into the GCSE curriculum in 2016, so I recognised there was a need for more cybersecurity resources to support teachers with teaching. So, I worked with the South West Police Cyber Crime Unit, and did a mini roadshow around the South West, pulling teachers and students together, so both teachers were getting CPD, and students were getting an understanding of cybersecurity, say, for example, job roles and what it is, or, was because this has happened, a major impact on where we are today as a society.
[1:01:37
So, those are some of the examples of things that I did. And just highlighting what's here with computing education, pulling conferences together, speaking at conferences. Doing lots of writing, so writing newsletter articles, and, and producing the newsletter for the CAS South West. I should mention I was also writing for a CAS magazine, which was called *Switched On*, quite some time back. So, I contributed articles from my own practice, to share with the community, because CAS is all about sharing, and, you know, being, being an inspiration for others, and, you know, letting others grow from your experiences. So that's very very important. So, doing that with CAS South West, and doing other sort of ad hoc projects.
[1:02:26]
And then an opportunity arose to write a book. And, I do remember thinking, ooh, that would be nice, to write a book. And I said yes, getting home and thinking, I can't do 30,000 words, and I've said yes. [laughing] And having a major moment of self-doubt. And I rang my mother, and I said, 'I've got something very weird to say to you. I don't know why I said yes.'

About what, what was the book?

The book? It was, the title of it, properly the title, *Computer Science Teacher: Insight into the Computing Classroom.* Because, it recognised the computing classroom is slightly different to the traditional classroom, even in terms of layout, plus it's a new subject. So its aim is getting new, new entrants, and anyone who's interested in what

is computing education like, you know, what is this new subject? Where are we with it? Just, practical, it's through my eyes as a teacher.

OK. So have you… You've finished the book?

Oh absolutely. I spent, [laughs] every day working on it. It was… I thought, I'm going to do this, this is a once in a lifetime opportunity. And, I just sat there and typed, every single day, basically.

Yeah yeah.

And I do remember my standout moment was, because I had got this thing at the back of my head, you can't do 30,000 words. That's bigger than a master's or example. How can you do that? I don't have a master's. And I remember the night, about 1 a.m. when it went over 30,000, and, say, one word. And I thought, oh my God, you've done it. And you still have a lot to write. And everything changed after that. I was just, typing away [laughs], happily just pouring it out.

So that's now published. And who published it?

Published by BCS. It was published in, 2017, August 2017. I remember coming back from holiday, and them ringing to say, 'Your book's been published.' And I thought it was at least a month hence. And, 'Shall we post it out to you?' I said, 'No, I'll drive over and get it.' And… I, I'm going to come off a plane, I was just in my jeans and hoodie, but for me, that was the proud time of it all. [laughs] Almost celebrated with tears, it was like, oh wow, it's just seeing it in print.

[1:04:40]
Yeah. Yeah. Well I guess now in fact, I mean, that must mean, potentially, you know, the ideas that Computing at School talks about, could spread further around the world, potentially, couldn't it?

Absolutely.

Because I guess… Has it happened yet? Have you had any interest from other countries?

Yup. There's always been a small CAS community around the world. So, you know, a handful. I'm speaking at Bett, which attracts a large international audience, so, British Educational, Technology, I need to get the next T there, show, which takes place every January in London, and it's one of the biggest educational shows. And, you know, I'm promoting, for example, I'm running a session called 'Empowering Teachers Through Networking with Computing at School'. So this is an opportunity to speak to local and global audiences about CAS, and I most certainly do promote the whole ethos of teaching networking in everything I do really. It helped me, and I think it does help others.

[1:05:52]
Great. OK. So… So, I mean, just, just to, you know, pick your brains a little bit about this area. What do you think are the biggest challenges in teaching computing in schools, the biggest ones? I'm sure there are…

[laughs] Many. OK. So, I suppose the first one is ensuring we have enough staff to deliver. So, enough people interested in teaching computing, and understanding the education sector. So there's a whole piece of work going on to recruit teachers, and, recruit and retention, that's, that's the main thing. And then to upskill those who are currently in the profession with the right skills. I think those are the major issues at the moment. And, we are also a fast-changing subject. So it's finding ways of ensuring that, we stay up to date with those skills. Because they, you know, we've got a few other, in my opinion a few misalignments between examination papers, specifications. You know, there's a few things not, and what's going on in the industry. Because, you know, industry's moving much faster, and we're always playing catchup with teachers.

Yes.

So, I think those are the biggest challenges being faced in terms of subject.

[1:07:20]

So… You mentioned a little while ago that, CAS was, was or is, was part of or is part of a long-term programme to improve the capability of students, in terms of their computer knowledge, education. Is, is CAS focused just on the teachers then, and the, the capabilities of the teachers, or are there other aspects of the programme which are being played out in other parts of, I don't know, in other, in other organisations perhaps?

Yes. So, CAS may…

I don't know, I mean, like, for example, the technology that kids use in schools for example, or, I don't know, the qualification, the design of the qualifications and assessment process.

OK. So, CAS is focused on the teacher, but the NCCE programme also has many different parts of it. So for example, one of those parts is the Gender Balance in Computing programme, which is a research programme, which is also being funded. And that is looking at reasons, for example, reasons why we don't have enough females taking up the subject. Parental attitudes. There's a 360 focus on gender in computing, because there's a research project, we are going to find out the results eventually, and see if there are any findings, any lessons we can learn. So that's one aspect of what's going on in computing education. We have also got CAS Working Groups running alongside. So, say, for example, working groups and assessments, so, looking at how our subject's assessed, you know, what are the best ways to assess computing? For example, computing, computer science pedagogy, you know, it's still emerging. It isn't, it isn't a solid thing where we've got hundreds of years of experience and we can say, we can definitely call it this, and it works. So the CAS Assessment Groups at primary and secondary levels. It's an ongoing discussion.

OK. I understand.

Yeah.

Sorry, I just wanted to get that, put this stuff… You mentioned about, you know, you mentioned about the biggest challenge being, getting the staff, and making sure they were, had the right experience, and, so on.

Mm.

But I did want to sort of put that in the broader context, just to make… But I didn't know whether there was a broader context, and… But you, but you've explained, you explained it very…

Good question. [laughs]

[1:10:05]
So coming back to the staff. I mean what, what makes a good ICT teacher, in your experience? And…

Computing teacher?

Computing teacher.

Computing. [laughs]

Ah, computing teacher.

OK. So, pull some of this out of my book. I'd say a good teacher, first and foremost needs to, be professional, organised. Be able to disseminate information to students of all abilities and colleagues of all abilities. To look beyond the classroom, be able to relate to what's going on in industry. And make things relatable. That's one of our big challenges, is to make what's going on out there relatable to students. Frequently our subject is considered, and I'll put this in quotations, 'dry'. [laughs] You know, lacking any, any excitement. It's because it's not made relatable.

So relatable both to the student's own experience, but also to what's going on in the business and industrial world where it's used.

Exactly. Yes. So marrying the two up.

Yes. Yes.

Because, you know, every student, it doesn't matter what ability they are, they're using mobile phones, they're using iPads, they're interacting with the digital world, you know, they're doing online banking by the time they get to, say, anywhere beyond twelve to sixteen. So they need to understand the importance of computing in what they are doing. So, it's no longer OK to say, 'I won't need a computer in my job.' It affects everyone. And every day I'm greeted with another example of where computing, digital and tech, has changed something we've taken for granted. You know, I mean…

Mm. So do the teachers need, therefore, do they need… Well first of all, do they, is it best if they have academic qualifications in a technical subject, in a STEM subject, themselves, in order to teach it, teach computing?

No. I don't feel. Because with the training available from the National Centre, the Computing Education, it's upskilling and also bringing new entrants into the profession. So, anyone with an interest, a vague interest, is welcome to our subject. [laughs] Because everyone is going to bring different attributes, and, if we can see computing as a facilitating subject, and look at it as a, you know, take things with a cross-curricular angle, I think that will benefit the subject so it isn't just, oh you are programming, you are good at teaching IT, or, you know, that's, I think that would be the worst idea we could possibly have. You know, I think, teaching needs a rounded person.

Yes. Right. So you're saying it's not just about teaching computing; it's about, making every other subject computing-aware, sort of thing.

Absolutely.

And where, and how it fits into, to that. Yes.

I mean one of the roles I had at Sunbury, along my journey, was, cross-curricular IT coordinator, and it involved looking at all the subjects and identifying where computing language was used. It was an eye-opener for me, because I didn't realise that things like LogicGate were also taught in physics. I hadn't got a clue, just… So… And, physics teachers wouldn't have realised that that was taking place in computing, and it was also taking place in DT. And it's having that awareness, you can say to your students, 'Right, and in DT, you have just done this, and this is where it's, how it's used in computing,' and then, bringing the physics angle. And so then the students are getting a 360 approach to teaching, as opposed to compartmentalising every single subject area.

Mm.

The students are very good at sometimes. [laughs] But, just having a slight awareness. I mean I don't need to understand physics; I just need to have an awareness of what's going on.

Mm.

And the students, because they are getting a fuller and rounded understanding, they will bring all that stuff, pulling it together.

[1:14:25]
Mm. OK. I mean, and, coming back to the teachers again. Is it important, essential, that they have some experience of industry? Or does it count for something? Do you get better computer teachers if they have got some experience of industry?

[laughs]

I'm just wondering how you sort of, keep schools focused on what is really really happening out in the world.

Yeah. OK, so, I think that an understanding of industry is essential. It doesn't mean you need to have been in industry before going into teaching, but what I think is important is to have opportunities while teaching to perhaps interact with industry, perhaps even go on a two-week placement in industry. Or, to get people from industry to come in and speak to the students and the teachers about what's taking place. So, OK, we welcome everyone into computing, [laughs] I think it's very important. So, yeah, there's many different ways of addressing that.

So, so part of your role, is it about engaging, engaging industry?

Yes. So…

To do that sort of thing.

Yes. We, we have lots of talks going on with industry and how they can support, you know, perhaps it could be something like, in industry, they identify skills needed and get their employees to go out and speak to schools. Because schools always need to hear from what's, from, from the real and the relatable. So if it's parents going into schools, the careers evenings, and saying, 'My job is X, this is how I use computing'; 'My job is X'. Computing facilities it in this way. So, there is a wide number of ways that industry can get involved with computing education, you know, sponsoring competitions for example. I mean, this is slightly an aside. A competition I ran, I mean as I mentioned back at university, my final year I had a very brief introduction to AI, and as a child I was interested in sci-fi slightly. So these things are just there in me. And recently I have become more involved with, looking at artificial intelligence, because, it's here, it's now, it's, you know, it's being used in our lives. And, I was doing some work with the All-Party Parliamentary Group on Artificial Intelligence, and, we just ran a competition with, we had, you know, a few schools took part in it, envisaging their world with AI and, you know, industry partners, at one of the dinners at PwC and a few other places. But we're just, you know, judging and, judging the competition entries, and just talking to them about what's going on in school. Because, AI for example is not currently in the school curriculum, but it should be, [laughs] you know. So, going along to a CAS community meeting could be an example of something that teachers get to help them to future proof their

curriculum. But that, you know, it's down to the community leaders' interests, the outreach manager. But, those opportunities and types of things should be taking place at CAS community meetings, but there's so much and it's a fast-paced industry.

Mm. Mm. And that kind of needs to feed in to the teacher training as well doesn't it?

It does.

About… You need to be teaching what, presumably, things which are going to be useful for the future, not that were useful for the past. [both laugh]

Exactly. So that's one of the big challenges of a fast-changing industry.

Yeah.

And, you know, …

Is industry doing enough, do you think? Could it do more?

Personal opinion, I think more could be done. We can get involved with… You know, the National Centre is doing a core set of programmes, and they're going to do more, but industry could definitely be, you know, sponsoring more competitions, getting more short programmes written. I mean I set up AI in Schools. So, I've got a friend that worked for Nvidia, and we got talking about how they could help. So, Nvidia supports their employees in Nvidia Foundation, in finding local projects to sponsor. So, that's when, we just collaborated, and said, how can we bring AI, you know, to, to masses, for want of a better word? And that's how I got involved with the House of Lords and ran the competition, and, shared the AI in Schools programme. And then, that has grown. And I was approached by the Nvidia Foundation for the United States to write a programme for artificial intelligence. So, we found an organisation called Exploring Computer Science, so, and wrote a 20-week scheme of work, which is distributed all across America on, around artificial intelligence. And there's lots of practical things in it, you know, looking at bias in AI algorithms, morals and ethics, you know, if we are identifying images, do we have

enough data being fed in? And, you know, if, what mistakes can be made, the ramifications of these mistakes, you know, what's good, what's bad? Because, we are all using AI, we're all consumers, it's affecting us whether we are conscious or not conscious about it. So… One of my favourite statements is, we can't say, 'Oh, the robots are coming,' and return fire. We just need to embrace what's going on right now. So, even down to all the recommendation feeds, those things have all got an AI element behind it. So it's happening right now, and we need to be more aware and question things.

Mm.

[1:20:20]
That's… So that's where I get involved in other things. I took the decision not to work as the National Manager on a full-time basis, but I keep a couple of days a week to myself, to get involved in other projects, such as that one. Because I think it's so important, so that when it is eventually embedded into the national curriculum, that material is there. I, in my lifetime I've seen, you know, growing up in South America, back, you know, from when I was a child, born in 1971, things have changed dramatically, and I find that fascinating, you know, what you take for granted. As I said, every single day there's something like, wow, you know. My life is changing around me. And, I think what my grandparents, you know, I had the fortune of knowing at least two of them, their lives and mine are totally different. Every time one of my daughters visits, it's a case of, 'Oh Mum, have you tried this?' And I say, 'Oh my God, the younger generation are teaching me some things.' [laughs] And I'm just like, wow, this is, crikey, it's moving so fast. So, we need to take an interest. So I'm all for promoting taking an interest in what's going on.

1:21:33]
You're obviously somebody who, who learns a lot from other people, listens to other people.

Yeah.

Even from children, about, what they need. Do you have anyone, do you have people you would sort of, identify as being mentors for you?

I don't… Well a mentor is something I have always thought I would, could benefit from greatly, but, I always think everyone has got something to teach you, OK. So, you know, every conversation I have with someone, there is something you can take from that. And I don't believe that, for example, we cross paths with people for, this is just maybe my spiritual side, just by chance. I think, you know, it's… There is a pathway, and it's a matter of thinking, why have I come into contact with this person? There is a reason, essentially, is what I happen to believe. So, there is something you can take from that.

Mm.

So for example, the, the chap, I can only describe it as, I met him in cyberspace, and we had a conversation about AI. That translated to a meeting in a pub, and it translated to AI in Schools being set up, and translated to a House of Lords, giving evidence to the House of Lords. And then it translated into an AI curriculum for America. What are the chances of that? [both laugh] You know, so it's just, chance meetings. He moved on to something else; I moved on to another role. But, chance meetings.

Mm.

So.

Well, well done.

Thank you. [laughs]

[1:23:07]
I mean what role do colleagues and friends play in your career, would you say?

Support. So, when you have little voices going, 'You can't do it,' or, 'Are you sure?' Because, I always have to say, 'Believe in yourself.' So for example, [laughs] I have a weekly call with my parents, and it's just nice to hear, and I can hear my dad going, 'We are really proud of you,' or my mum would send card, 'We're really proud of you. Really well done.'

Are they still here in the UK, or have they gone back to Guyana?

Yeah, they're still living in Essex.

OK.

Yeah, all my family is here. You know, you know, you know, Mum incidentally became a headteacher when she came here, so she, you know, worked really hard at that. So they say, no, 'Really well done,' I invited them to see me give evidence – evidence, give a talk at the Bett Arena a few years ago on AI. I thought it would be really good for them to see me in my field. And my partner, my husband-to-be, is very supportive. So, I go home and I'll witter on, and, [laughs] have all the self-doubt, and he'll go, 'Just believe you can do it.' So…

OK, that's great. Yes.

Yeah, it's that, you know, support.

Very much, mm.

Yeah.

[1:24:23]
Network. And, I hope you don't mind me asking this, but I mean, as a woman of colour, has that presented you with any particular difficulties, either as a woman or as a woman of colour, in your career?

[laughs] I'd say being a woman would be the first thing that perhaps has… You are aware that people sometimes overlook you when you speak. It's an awareness thing. It's… And that does happen. And sometimes you've got to say what you are saying twice, to be heard. As, as a black woman? Whether that's there or not in the computing industry, I can't say for certain. But, it hasn't affected me. I've had positive experiences, you know, through university, through my industrial placement in an all-male department. Teaching is different, because you do get, you do get a lot of male computing teachers, but I have worked in all-female departments also, so teaching is slightly different. And where I am now, at BCS and CAS, again, there is, there are quite a few women around. So… I'd say sometimes you do get spoken over, that does happen, or, just ignored [laughs], as a female. I haven't had any experiences that I can say are directly prejudicial against me being a woman of colour. But, in all honesty, I think I will rise above that. I've got a good track record, and, as I used to say when I was younger, you can't keep a good woman down. [laughs] So, I just…

Well that's good news, and encouraging.

Yeah.

[1:26:07]
What would you say was your proudest achievement so far in your career?

Career-wise. OK. Having two daughters. [laughs] Two, you know, functioning, fully-functioning, intelligent young ladies. That's proud. In my career? Writing a book. Publishing the artificial intelligence curriculum for Americas[?]. Being a Bett ambassador, or, being on the Bett Advisory Board rather. Being a spokesperson for computing education. So my work with BCS and CAS. And, generally inspiring others. Because what I've come to realise now as I meet people, when I go to conferences, and it has happened on more than one occasion, they've come up to me and said, 'I read your book,' or, 'I heard you speak, and that made a difference to me. I just wanted to tell you that.' They wanted nothing else from me but to say that. And, up until this year I honestly didn't realise that I had actually ever affected anyone in that way. And I'm still reflecting on that. And it's nice. So, if you get a

platform to inspire others, to enthuse them, and to make a difference, take it and do well with it. [laughs] That's what I say.

[1:27:24]
Have you thought about where you wold like to take your career in the future?

Oh yeah. [laughs] So. I'd like to be involved more in philanthropy work. And I'm going to leave it as that open heading, and see what comes out of that. Just get involved with benefiting, helping others, you know, to realise their personal ambitions. It all comes under philanthropy headings. It could be, you know, people from disadvantaged backgrounds, it could be women, it just be, it could be anybody, equal opportunity for all. Just to ensure that people can develop themselves the best. So, I've always had my eye on doing that. [laughs]

[1:28:12]
OK. What advice would you give someone who wants to enter the IT industry today, or the computing industry perhaps I should say?

Industry, or teaching?

Well, I think, the industry. I mean, one would hope that some of your students…

OK, right, OK, not the classroom.

Would want to join in and become, join the industry. So, what would you say is the, what advice would you give them?

Well, getting the right qualifications is important. Networking, highly, highly important. So go along to events, exchange your business cards and contact details. Keep up to date with what's going on. You know, take advantage of opportunities. Don't sort of get stuck in one thing. And just be open to emerging opportunities. You know, for example, don't say, 'I want to do X and X only.' You know, that's admirable, to have a goal, but just be open to opportunities. Go along and hear inspirational speakers speak. I… Last year, no, maybe the year before, I went along

and heard Anne-Marie Imafidon speak. She was the youngest person to do a GCSE, A Level, and gain a master's degree. Get the correct spelling of her name. She was inspirational, you know, a young lady in her twenties. And, I learnt quite a lot from her you know, her presentation was so fantastic, I had a presentation to give the following week, and I went home and edited mine, I thought, now that was a presentation. It had an impact upon me. So, in terms, you asked earlier about mentors. Well I don't have any mentors that I necessarily speak to. I think, you can learn ways about speaking, crafting your sentences, engaging with people. So those are the things that I would draw. And she does stand out as someone who, was, had an excellent delivery. So things like that, you know. Look to inspiring people, and, think about things that benefit, are good. That's what I say to them.

[1:30:30]
And what about your own daughters, are they interested in computing and, are you advising them to start a career in it?

[laughing] No. Neither is interested in computing. So I've let them develop as their own people.

OK.

So, my eldest daughter, Charlotte, is doing a degree in psychology. But of course psychology can come to play in the tech industry.

Well certainly in teaching I should think.

Yup. I keep saying this to her; she doesn't quite believe me as yet. And my youngest daughter probably is closest. Currently she hoping to do digital media.

Ah, OK.

And that was an eye-opener for me, because that sort of degree didn't exist when I was that age.

Mm.

So when she said, 'Mum, I want to do digital media…' And so I do understand how parents say, computing, what's that? That's not digital media. What do you do on that? So, I've kept an open mind, because the world is changing. So, in… Sure, yes, there's lots of scope in both of their fields for tech and computing. [laughs]

Yes. Beverly, it's been fascinating hearing about your life and your views on teaching computing in schools. On behalf of Archives of IT, thank you very much for taking the time to talk to us.

Thank you very much for the opportunity.

Thank you.

[End of Interview]