



Dame Stephanie Shirley

Interviewed by

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Welcome to the Archives of Information Technology. It's the 20th of February 2017, and I'm in Henley, because I am in the home of Dame Stephanie Shirley. I'm Richard Sharpe, a long-time journalist covering IT and computing. Now Dame Stephanie Shirley, OBE, is a pioneer of many things in the UK IT sector. And her first job in what we would now call IT was in the Post Office Research Centre in Dollis Hill in London in 1951. What were you doing there?

Well at the age of eighteen I was classed as a scientific assistant, which meant I did a lot of mathematical calculations using one of the big calculating machines, with other people guiding me as to what the formulae were, or whether it was to be graphed, or, or what had to be done with it. Looking back, I realise that was a very very good training, because, I had a boss who was a model to me of what sort of a boss I did not want to be. But one thing he was very good at is that he was meticulous about accuracy, and he would have me write and rewrite a paragraph, or, he would demand of me things that were physically so difficult, like drawing graphs on ordinary paper, not graph, you know. He, he inculcated in me and others the need to provide excellent work. And although it was very simple work, I did learn quite a lot from it, and was eventually... I studied at evening classes as well. So, I was eventually promoted to the next grade, which was Assistant Experimental Officer, and, I was paid a little bit more, and, that's important, because, I started work at the grand salary of £215 a year, and, there were grades that went by age. Try again. Salaries went by grades and age, and gender, because there was one grade for men and another grade for women, much lower. And, this is the beginning of saying, well why not? I mean I'm just as good as the guy sitting opposite me pounding his desk calculator. And I became somewhat assertive I suppose. I am basically a shy person. I have learnt to disguise that. But certainly at eighteen I was very quiet and very shy, and I was just soaking it all in. And...

You worked on transatlantic cables I understand.

Yes. Again, the formulae were given to me by other people, and there were lots of cables, and for each one I did a whole mass of calculations and graphs and stuff like that. Again, I came against this sexism, because, my job really required me to go on the cable laying ship called *Monarch*, and, they don't have women on ships and so on,

you know. And, you know, I kept coming across this sort of problem, and eventually became quite aggressive about it. When handsome young men used to offer to carry my equipment for me, I used to reply aggressively, 'I believe in equal pay, and will carry my own things!' It's an argument I put to women today actually, if you want... You know, you've actually got to pay the price of success. But, I mean nowadays of course I sort of say, if somebody offers to carry something for me, 'Oh how kind, thank you very much.' [laughs]

[04:07]

You worked on ERNIE.

Yes.

Calculating the Premium Bonds.

That was an interesting role. I was the junior of a team of two who were responsible for the checking of the randomness of ERNIE. And of course, this was a project that for two years previously had been worked on with various experiments and so on. And, each month, after the monthly running, we had to check the run, and then report formally, to Parliament it used to be, that all was well. And, randomness is one of those peculiar things, you can never really prove something's random, it's a sort of, weaselly word; there's nothing to say that it isn't random. Typical statistics. But there we go. And I learnt a great deal on that, and for the first time started using computers to actually manipulate a vast amount data. And what we did was pretty simple. We counted the number ones, and we counted the number twos, and we checked that all the digits were appearing, equiprobabilit. And, then we checked that the combination of digits were, you know, nought nought nought one, or two nought three, all those were appearing with equiprobability. And then they, they got a bit more sophisticated. We took groups of four digits, and did what was called a poker test, which was, I don't play poker so forgive me if I get it wrong, are all four different? Have we got one pair and then two different? Have we got two pairs? Have we got three the same and one different? Or, you know, this sort of thing. So we then calculated against the probabilities there. And, the last one was called a gap test, which was looking at this long stream of digits, and observing the gap between a

particular digit's first occurrence and then its next occurrence, and then its next occurrence. And of course, that should follow certain statistical things and... So that was the sort of tests we did every week. It was interesting for me, because, it was the first time I had really had that sort of responsibility, reporting to Parliament. When it was launched I went to listen to the Postmaster General, Ernest Marples, announcing it. And the, a lot of the work was done at Lytham St Annes. And, ERNIE there was on display quite a lot, and, as the only woman on the team I was very much to the fore, trying to explain what it was. Most public visitors were more interested in a sort of round device. I mean the screen of the thing, but... You know, it was, ten foot console, something like that, very impressive, lots of flashing lights. And it made rude noises. And, but this round object in the corner of the room really attracted a lot of attention, and it was one of the modern vacuum cleaners, you know. So, it was all very naïve, and, and simple, in those days, but, it was a wonderful place to work.

[07:58]

And the early computers you worked with were Pegasus?

Well before that I had worked on something called HEC 4.

Oh right.

I can't really remember much of that. Pegasus was the first one I worked on. I had... I joined the British Computer Society on its inception, and, I had asked my boss if I could move into computing. I mean there wasn't a grade or anything for programming or anything like that. That's right, there was a big, the British Computer Society had a big conference at Cambridge, and I wanted to go to it. Would they send me? And the answer is, no. So I took holiday and paid for myself and went, you know. I was always doing this sort of thing. I wasn't going to be held back by some of these social norms.

[09:00]

Pegasus was the one we used on ERNIE, and it... What I remember there was the sort of, sheer excitement of using such a powerful computer. It cost a pound a minute, which for a junior public servant was an enormous quantity. So you really sort of, rushed to get on, catch every second. And get off quickly, and... It was held in...

Anyway, in the West End, in a lovely Georgian building. You've got this contrast between a Georgian building with an Adams ceiling and this rather ugly Pegasus And miles and miles and miles of paper tape, which is what we used for, for storage. And I did learn quite a bit then. I was still very much the junior of the two, but, it was a pretty responsible job.

[10:02]

You joined the BCS very early on.

I joined when it opened.

Are you a joiner?

Yes I am. Definitely. There's something about me, I do join. Yes.

Right. Because of the Worshipful Company as well.

Yes.

Yes. And you worked on Atlas as well.

Yes. That was the London University Atlas, which was round Euston somewhere. And, that was even more enormous, you know, I mean now it probably has the power of my Apple watch. But, it was called a supercomputer. And I was using it for two operational research tasks. One was to do with the scheduling of British Railways freight trains, and the other was to do with stock control. Now which one would that be? Stock control. They were... Again...

This was commercial work.

Commercial work. Yes. So both of those were my company's jobs, I had started the company by then.

[11:23]

Oh right. And you left in 1959 Post Office Research Centre, when you got married.

Yes.

Did you have to?

No. There was a certain amount of social pressure. At one time you did have to, have to leave, as a permanent civil servant. And there was a delightful remnant of that left in that if I chose to leave on marriage I could get out my pension contributions. So I did that, and we got married on the strength of them. But, I left really, because I didn't want to work at the same place as my husband, who was a physicist working on wave guides, which is how I met him, and... Why didn't I want to work with him? There was one other dual career couple in the... And, I noticed how people reacted to them. If they had lunch together, they'd sort of say, 'Look how unprofessional, they're having lunch together.' If they didn't have lunch together, people would say, 'I wonder what's gone wrong, they're not lunching together today.' So, the whole thing as pretty, I thought, unpleasant. So I left.

[12:28]

So you were there eight years. What would you say the main things that you learnt while you were at Dollis Hill are?

Perfectionism. Accuracy. Controlling my moods, because at eighteen you really are sort of, all up and down really, and you just had to sort of, stabilise. I did write some of this down. I've got down here, 'Meticulous training.' I was trained in a lot of basic things. I used to work with these large sheets of, squared paper with numbers all over them, and, I developed something called figure sight, in that if I, I could look at a whole mass and have a feeling that, there's something wrong in this area. And, I've never been able to explain that. It was very irritating to my colleagues. And I lost it with the years, and I don't work with figures any more, so all is well there. But I did maintain my love of maths, and, they did encourage me to go to evening classes and move on.

And you got your BSc from Sir John Cass College in Birkbeck.

Well I got my BSc from Sir John Cass, and then did a postgraduate year at Birkbeck, of whom I am an Honorary Fellow, which was, I think on logic design or something like that. I was starting off to do a Master of Science, and then I realised that that wasn't going to give me what I wanted, which was acceptance. I needed to get a PhD. And frankly, I could not face studying a PhD part-time, because I had studied part-time for six years, and that was enough. It's not something that I would recommend to anyone. [laughs]

And then you moved to Computer Developments Limited in 1959.

Yes.

And worked there until '61. Now one of your jobs, you were chief programmer there, was that right?

Yes.

So you had achieved something as a woman.

Yes. Computer Developments Limited, always known as CDL, in Kenton, north London, and, they had an unusual director, whose name currently escapes me, but I worked for a super guy called John Wensley, who then migrated off to the States. But he was the sort of innovative scientist that I enjoyed working with and working for, and largely working for... He, he said, 'Where do we want to go?' and left me to do it. And I think I learnt a lot of management from him. It was casual, it was friendly, it was team working; it was accepting; we had a, a quiet room, so if you didn't want to be disturbed you could go and sit in the quiet room, and everybody knew you were in the middle of something, focused. It was a, such a contrast to the public sector that I really enjoyed, and that I learnt from. In particular working in teams. We were paid by skills really, so, I had an enormous, probably my salary doubled when I left the public service. But it was also the environment that I must say suited me.

You were responsible in that role for checking the software for the ICT 1301 computer.

Yes.

What was that like?

[pause] Well, the 1301 machine that we were using was at Coventry. And the engineers were on it during the day, so I used to work on it at night. And I was newly married, and everybody was expecting me to say, 'I don't want to work at night.' But again, I did, unpleasant though it was. And, it was quite eerie, turning up at... It was part of GEC in Coventry, a large factory where at night, well at five o'clock everybody lined up behind a line on the, with their bicycles, waiting for a hooter to go, to leave. I mean it was a different... We, we used to sign in and out.

[17:17]

I felt very responsible. I had to get through those tests and not hold the overall schedule up when they were developing it and so on. Was it particularly challenging? Not particularly. It was just pressurised from the point of view of commercialism and time. ICL and GEC had developed this machine between them, funded it, and there was a lot riding on it. It needed to be announced. So, I felt that I was very much part of a professional team. And I enjoyed that very much, and I'm still friends with one of the people I met there.

It was a decimal machine I understand, not a binary machine, and it had pounds, shillings and pence calculations hardwired.

I don't remember that at all, and I think it's unlikely. Honestly. [laughs]

[18:12]

OK. OK. Now you're in management. You're managing a small team. Yes?

Yes.

What challenges did you face there?

[pause] Possibly I faced fewer challenges than I would have expected, because, I was already a high performer, I did clearly outperform my colleagues, and... I enjoyed life as well, I, so people did I think enjoy working with me. What lessons did I learn? I learnt, I suppose, not to stress my technical competence. And that was something that took me a long time to learn, so, probably over a period of about five years, where, when you are suddenly sort of, 'Oh I can do that, I'll show you how to do that.' 'No, you don't do it like that at all.' And as a manager, I eventually learnt to be much more, to show my weakness, and say, 'Well, this is a bit I can't do. I don't think I have the skills. I wonder if you would like to have a go at it.' And that sort of approach stood me in good stead as a manager, and I began to be able to get good work out of other people. What happened of course was that I was no longer doing the software design, which I love, because I was doing management, human resources, finance, and again, it, it happens to most entrepreneurs.

And did you regret that?

At the time, yes. Yes.

It was a loss for you?

There were, there was a short period, and unfortunately I can't remember the years, when I felt I was on the peak of my scientific capabilities, and at the same time was a competent manager. I really became *only* a competent manager because, I mean, I'm an entrepreneur, I prefer leadership, I prefer doing things for the first time. This day-to-day, you know, quarterly results and so on, I, I do them dutifully and carefully and accurately and so on, but I don't enjoy them.

You were only two years at CDL. Why was that?

Well I hit the glass ceiling again. And this was this super CDL, which I think I've indicated was a very exciting, buzzy young company doing great work, and, again I found myself blocked. And, this time there was an incident, and this time I, overnight I decided that, you know, I've been in a large, good public sector business, and had

problems; I've been with a small, super high-flying company, and have had problems. I'm going to set up my own company where this isn't going to happen any more. And so that was the start of really what became my big contribution to computing.

1962 is the great breakthrough year.

Yes.

So overnight you decide to set up your own company. And you decide to base it at home. And you have capital, I understand, of about £6.

Yes. It was worth about £100 in today's money, I've looked that up. It was a company that I would have liked to work for. It was a company that I felt other women would enjoy working with. So the first approach was very much sexist-oriented. Minute number one in the company's annals was that, the company's employment policy shall be, jobs for women with children. And then as I gradually learnt how important training was, that changed to careers for women with children. I mean it was a different world then really. And finally, in 1975 when Equal Opportunities legislation came in, and as an example of unintended consequences, we had, my women's company, had to let the men in. It then became the employment policy of people with, was it... [pause] Domestic, something, dependents. People with dependents or something like that. But it was broadened very much.

[23:19]

What led you to that path of thinking, initially, women only, who are based at home?

Oh, I think, my own experience. I was able to fish in a pond of 50 per cent of the people who were trained, because women were coming out of the universities with decent science degrees, and, it was, nobody else was using them, and I thought, well I can use them. And, I wanted to work from home myself.

Who did you recruit first? And how did you recruit them? Did you know them beforehand?

I'm just trying to remember who the first ones were. No I don't think... The first recruits were... [pause] Well the second batch of recruits, let's put it this way, came as a flood, and they selected me, rather than me selecting them. So however the first ones came, it was unimportant, because, I still had the pick of very good candidates. And I had this idea of affiliates or consultants, they were not employed. We even used zero hour contracts, and I assure you they can work very well for everybody involved. And they... [pause] What was I talking about? [laughs]

Well, let's get into the...

Is this all right?

Yes this is lovely. This is lovely.

Yes, OK.

[24:44]

Let's dig into the, managing women at home. This is a considerable challenge of management, a style of operation that has not been put together before. You don't have any templates to do this with. You're making it up as you go along.

To a certain extent you're making things up as you go along. But when you're young, everything seems new to you, and it was a long time before I realised that. It wasn't me being foolish, everything actually is new, and you are just at the fringes of, of scientific knowledge and... I wanted to... I considered getting an MBA, because I suddenly found myself running a business, and I didn't know how, I didn't know anything about it at all. I didn't know how to price it, I didn't know how to keep records. Hopeless. I had a little book where, in the front bit I wrote the money I earned and in the back bit I wrote the money I spent, and, took that to the auditors and expected them to sort it out. So, I soon learnt better than that. But I felt very untrained, and I wanted to go... Didn't do an MBA, but there weren't any in Britain at the time. [coughing] Excuse me. So, I approached a lecturer, I don't think he was a professor. I... Yah. Approached a lecturer called Jack Bungard, who worked at the, who was a lecturer at the Watford Management Centre, it's changed its name

since, and suggested that he come and give me a hand, and get first-hand knowledge of a new IT service company, and I get the benefit of his academic experience. And that actually worked very well, I think mutually. I learnt a lot from him. He taught me how to sell, I mean he went out on sales calls with me and told me all the things that I really was doing wrong. Again, typically, this business of saying, 'I know how to do it,' rather than sort of saying, 'Well what is it you would like done here?' So I had a long learning curve there.

And this for someone who you say is naturally shy. And that's a big step into sales.

[pause] I think my sense of duty is very strong. And the company after a bit was making demands of me. It was no longer providing me the environment that I wanted, but now had a life of its own, and demanded that I sell. And so I did. And it demanded that I became competent on finance, so I did. And was driven to a quite extraordinary degree to, that I had the feeling that I was carrying all these difficult people on my back, just to get their technical skills out of them. Because there was this one that wanted to have children and couldn't; this one who had a learning disabled child; this one had children and didn't want them; this one... I had my learning disabled child, who was autistic and became extremely difficult. So it, it was a sort of... the added child pressures were enormous. What I was, and I think still am, good at is in finding good people before they're demonstrably high achievers, and growing them, and getting them to do all the work, and becoming... And listening to their ideas. I mean some of the really strategic ideas did not come from me at all, they came from my colleagues. And so, later on I took the company into co-ownership, because it seemed only right and proper that... I didn't put any money in. Yes, I had worked for the company for years before I got paid, but, it, it became very much a collegiate, cooperative institution, that people laughed at, they laughed because, at that time software was given away free with the hardware, and they laughed even louder at the idea of a woman doing it, from home. What does she think she is doing?

[29:18]

What were the first jobs that you managed to get for this company which you first of all called Freelance Programmers?

There was a lot of discussion about what to call it. And, the Freelance Programmers defined exactly what it was. They were a whole group of programmers, and it was in the plural, I intended to grow it. The first task that we got was for a City company called Selection Trust, and I've looked them up and they no longer exist as far as I know. And I was doing program evaluation review techniques, against, sticking to this operational research, where, I wanted to do scientific things, but the market was paying for commercial things. I didn't want to do commercial things. Because apart from the size of some of the files, it was really quite boring. So, we hit a compromise on the operations research. And so that, the PERT work was in that area, and I then started doing PERT work for the Mars sweet company, they wouldn't call themselves that, confectionary, and there was another one we did a lot of PERT for. Business Operations Research. A whole host of things. We got a sort of, a certain amount of specialism in that operations research stuff.

And, you did Tate & Lyle I think, early on?

Yes, we were scheduling their, their lorries all over the place. And...

[30:56]

Take me through the pattern of work. So you would try and get a contract for OR.

[pause] I think it was... I wouldn't be going for a particular task. I would be marketing, these are the skills we've got. What are the sort of companies that might want these skills? And then approaching them, usually when they were advertising for programmers. And my approach letter said, quite clearly, 'You're advertising for programmers. I'm not after a job, but I can do programming for you.' And it was very personalised, you know, 'I would do it,' or later on, 'I would manage a team to do it.' And then eventually it became a corporate thing.

[31:50]

And this is where you hit on changing your name a little.

Yes. I mean I was launching these letters out by the dozen. And really getting next to no response. I mean they weren't very good letters. I used to have a secretary that

came in Tuesday afternoons and she would, again her brief was to get them going out looking like a chairman of IBM or whatever it was, and she, she did. Produced a lot of waste paper, because that was before the days of word processing. What was I saying Richard?

You changed your name.

Yes. It was very depressing to get, not the no's but just, no reply. And, my dear husband suggested that I use the family nickname of Steve. And, so, I wrote the same sort of letters, but just signing it as Steve Shirley. And, I began to get some replies. And, it's not good commentary on how the world was in that day, those days, but, I've been Steve ever since, and, if it works, it works. It's a form of marketing in a way. I turned myself into what they wanted.

Do you feel you've changed yourself then?

Over the years enormously, yes.

Is that a good thing?

[pause] I still regret that I didn't go to university and I would like to do that sort of studying, which I, the nearest I get to now is, is in commenting on, commenting on the computer world, or, or writing speeches or something. Which to me is like, you know, lots of researching, then, eventually you finish up with a, half an hour speech that makes some sort of sense. But I, I certainly changed. And I did feel that I was driven by the commercial world. Because I was the first woman... And, when I went to a conference, the chairman would say, 'Good morning gentlemen, Mrs Shirley,' because I would always sit in the front row and make sure he saw me, you know, and... That, it was necessary really to promote, promote, promote all the time. I mean I was described, probably, *Computing* or *Computer Weekly*, 'the ubiquitous Steve Shirley', because I did buzz around. I used to do five sales calls a day, you know, which is ridiculous, very superficial. But I kept these people happy, I kept them... so when they had some work, they, you know... And I used to do telephone marketing, where I would sit at a table with little cards, and the telephone ringing one

after the other. I had got notes as to what their equipment was and what we talked about last time, and, make sure that my visits were timed when there were a prospect of some work.

This is part of your meticulous approach.

[hesitates] Yes. Or, or practical approach, that was just being practical; nothing very clever about it.

[35:18]

If we look at the IT sector today, you will find a lot more women in the conferences.

Yes.

But not necessarily on the platforms, and not necessarily in the boardroom, and definitely not necessarily at the top of the companies. Why?

[pause] Part of the reason is still sexism. People have unconscious biases. They don't really have expectations of their women staff. They encourage them when they're young and pretty, but as soon as they start to be demanding, they, they're sort of, pushed aside a bit. Then you have a career gap when many women leave for several years, or work part-time, or have their attention diverted to family matters. And somehow we never catch up. The other thing that happens, and I'm quite convinced of this, is that, women today have no idea what the cost of success is, and what they have to do in order to succeed. I mean I'm continually talking with groups of young and older women as to what simple things they have to do in business to work their way up the corporate ladder. They have to be competent at what they do, and be seen to be competent, visibly. They have to master marketing and finance, irrespective of what they're doing, because without those... They have to try and get international experience, because, that's what gives them the innovation so they can come in fresh. And they have to grab the, the things that are offered for them. I mean I was invited to be the President of the British Computer Society a year that was totally and utterly inconvenient. I really thought, you know, shall I say, I can't do it this year, you know.. But you have to do it when it comes. And you pay the cost.

[37:20]

You handed over a quarter of the ownership of the company to some employees I understand.

[pause] My aim was to get it 100 per cent staff-owned. And I never made it. It was just an impractical idea I think. [pause] In the Seventies recession, we nearly went out of business. And I had this group of associates, consultants, call them what you like, who had no work to do, but who continued to represent the company at conferences and so on, so were able to keep up a façade somewhat better than the one job that we had got running at one.... We got down to one job, for Unilever as it happened, who was quite a big client. And Unilever took us into international working, because it was Unilever in Thailand, Unilever in South Africa, you know, just Unilever, a wonderful company. What was I saying Richard? [laughing]

[38:35]

Let me ask you a different question. Did you grow organically?

Yes.

Or did you grow by acquisition?

Oh, we grew entirely organically. I was talking... When I went to... During the recession, the staff helped me so much. And I, in order to cope with the cash flow of a growing business I started gearing payments to the staff according to when the client paid the company, and then there was a limit, if the client hadn't paid for three months, we paid the staff anyway. And that took away nearly all the cash flow problems, because it was all geared to that. And, that made an enormous difference to us. And then when things eased and you realised, well, they've helped take the company and me through those difficult times; now things are better they really should share. And the bonus scheme that had started off twice-yearly on pro rata to the amount an individual had earned, and had resulted in I think six batches of letters going out and saying, we've got this wonderful bonus system but in fact this time your bonus is zilch, when that went, I started thinking in terms of co-ownership.

Triggered very much by a member of staff who came in, a guy called John Stevens, and I met him a couple of years ago, still, he's still around. And it became a, this is what I wanted to do. And so I was doing lots of things at once. I was trying to build the business organically; I was trying to get it into co-ownership; I was trying to develop myself, and I was trying to get out. So, it, it was, they were difficult years. And they were long years, it took me eleven years to make co-ownership happen. And that was only up to 26 per cent. And...

[40:47]

And you decided to float the company. Why?

Pressure from staff, very clearly. They want... By that time we had got stock out among the senior staff, and they wanted to see that properly valued. They wanted to buy using paper, which up to then we hadn't done, and for that they needed to get a quotation. And it was, quite a nasty surprise to me, having handed over, you know, a significant chunk of the business, to then find that, they weren't going to just hold it, they wanted to sell it. And, I assumed that they would have the same drive as I did, which was a question of control, rather than a question of making money. Anyway, that's what they wanted to do, and that's what, that's what happened.

It was a successful float?

Yes. Oh yes. Yes.

Did you begin to lose control?

Oh yes. Some of it deliberate. Again, I spent about eleven years, a third attempt to manage succession. First of all there was Susette Harold to replace me, and I was doing things overseas and stuff. And she got ill and in fact died in service. Then there was Alison Newell, who was again a regional director, who would have been very good running the company, and was very good really. She was very ethical. But, she was running it like I was, a sort of, one-man business. And I knew that I didn't want that one-man business any more. The company had to actually develop some structure. And, eventually I used headhunters, and got Hilary Cropper, who was

a big big success. And she had experience of running home working, she had experience of running... And she was from ICL, who, as somebody told me, she would have been on the board had she been a male. So she was really highly qualified. And she did, how many years? Eight years? I don't know. But it was a good... And she, she just took it, made it commercial.

[43:35]

What advice would you give an eighteen- to 23-year old woman who wanted to enter the IT sector now?

Well I'm out of date with what's happening in the IT sector. But, you know, find a, a background company that you enjoy, whether it be advertising or whether it be factory working or whether it be, sailing. Get yourself trained. Get yourself more trained. And then just go for it.

[44:06]

What's your opinion of the UK IT industry now?

I'm not up to speed at all. I mean, we lost the IT industry I think a long time ago in this country.

There's been a lot of discussion... So why did we lose it? How did we lose it?

Oh I think it's a... It was a Government thing really, wasn't it? I mean, the Government supported ICL, and then it was acquired by, ba-ba-ba-ba, Fujitsu, and then we, we... partly acquired, I think, then they bought the whole lot. And we've got no computer industry and more.

What about the software side, with companies like Autonomy for example?

They're doing, yes.

Or the huge success of games software.

And of course it is the software that in the end is more important. But you can have both, and we have no control over the national hardware. No.

You were right there about software then, weren't you?

Oh yes. Yes.

[45:02]

Yes. What was the biggest mistake you've made?

A fairly classic mistake. I tried to emulate the success that I had had in England in other geographies, in Denmark, then in Holland, the Netherlands, and then through a couple of franchise, in the States. And, it is a classic mistake that people made, and I, I made it. And I had to eventually close all three of them down. [laughs]

Why didn't they work?

Different reasons. In Denmark, the facilities for women, and the childcare facilities provided by the State, were so good that one didn't have that sort of captive labour force that I was used to. In Holland, there were a variety of reasons really. We eventually sold that to a client. I think it just never made any sort of critical mass. It's a little, little country. Deliberately little, because I, you know, didn't, didn't want to start with the States. Because when I got to the States, it was just so, so big that... Started with the West Coast and East Coast. I'm still in touch with some of those guys. But I couldn't make it fly.

[46:32]

If you had your time over, what would you do differently, in your career?

I would have brought in a finance director much, much earlier. It was 25 years before we had a finance director. Partly deliberately. I wanted to keep things simple so that I could understand them. Because I don't value finances, I don't value money as such, so I didn't really value the financial skills. So I kept it running as a cash business. Which in the long run was fine, because I built up market share, but in the short term, it was very much... So, I remember when Hilary Cropper came in, and we'd spend days and days, and I was explaining how the company worked and so on, and she'd, 'Oh yes, yes, yes. You do *what*?' [laughs] You know, she was so surprised at some of the crazy things we did.

[47:24]

There's been a lot of talk recently about the rise of the robot, and the rise of artificial intelligence, and the threat that makes for people's jobs. Do you think that's a credible threat, or do you think that other jobs will be created?

It's a real threat in the sense that there's going to be change. But other jobs will be created. And, you know, we can talk about whether you're going to have robots paying Income Tax or something like that in order to keep the public purse topped up. But it's a very exciting time. It's not all that new. I mean really, some of the things that... What's the... The Google subsidiaries. Anyway. Listening to one of these technical people, I sort of think, yeah, we were doing that in the sort of, I could see that, what we were doing in the Eighties was the beginning of that, you know. And you can sort of see a development. I'm using a robot at the moment to teach autistic children, because autism is now what I do, and, yes, of course it's very sophisticated, yes of course, eventually there will be more and more robot teachers. They won't take over everything, but even if they did, it's fine. Kids are learning. And, I just find it's a wonderful opportunity, both in the UK and I think internationally.

You do really relish change, don't you?

I think my childhood developed that, yes. I, I like to do new things. I like to make new things happen.

[49:03]

You helped set up the Oxford Internet Institute.

Yup.

What was the purpose behind that?

The purpose, or, as far as I'm concerned?

Yes.

[pause] The purpose of the Oxford Internet Institute was very much to study on a multidisciplinary basis the social, economic, legal and ethical issues of the Internet. Not the technology. Everybody else was setting up, you know, masses and masses of academic studies. And the bit that I find interesting, and I think is important, was the social side. And of course that's what I did with my Freelance Programmers, it was doing something, it was a social business, not a money-making business. And, the OII, I don't know how many professors it has now, but, I go there, I'm going there on Saturday as it happens, but, very seldom. It's, it's, again I pride myself on managing succession. I did it in my company much too late, with enormous pain. Since then I've done it with the school, I've done it with my charity, I've done it with another charity, I've done it with the current charity that I set up five years ago: much more than that now. So, it... And once you learn to manage succession, it means I'm free to do the next thing, rather than being locked in to something that is making demands on me for the next five years.

Thank you very much Dame Steve Shirley.

[pause in recording]

[50:50]

We're back in the Archives of the Information Technology with Dame Steve Shirley. Dame Steve Shirley was born in 1933, in Germany. Her father was a Jewish judge,

and he was pushed out of office in 1933 when the Nazis came to power. Dame Steve and her sister left Vienna on a Kinder train, one of the special trains full of children leaving Germany in 1939. And she came to England.

So you came to England. You knew English by then?

No. We had no, I had no English whatsoever. My father had taught me some useful words, so that I could say things like 'slow combustion stove', which are not terribly useful for a five-year-old, and 'vine screen veeper' [windscreen wiper]. But really, I didn't know how to ask to go to the bathroom, you know. So it was pretty traumatic. But you learn languages very quickly when you are young, and by September my English was good enough, we arrived in July, and by September my English was good enough to go to school.

[52:09]

And you went to, for one term, to a village school.

Yes.

In 1939. Then you went to a Roman Catholic convent, which...

Well, I should say why that happened. I suppose. My foster parents lived in a sort of suburb of, a small town outside, in the Midlands, and literally I could walk from their home to this little village school, and it was lovely. But, I began to speak with a strong Birmingham accent, and my foster parents were a bit snobby, and, oh we can't have a child of ours sort of... And, so they took me out and put me in this private Roman Catholic convent, which actually was lovely. I mean their values were great, they were kind, and they were really, really super. And I spent my primary years really with them.

Four years you were there.

Yah.

[53:08]

Where did you get your joy and your expertise in mathematics?

I don't know where it stems from. I think there's some commonality with the law, this very logical, factual, you know, you're either right or you're wrong. And, I think this is why a lot of women don't enjoy science, because, you, you can't wing[?] it, you know, either you're right or you're wrong, and, and the morals as well as science. [pause] What were we talking about?

[53:43]

We're talking about your love of maths.

Oh yah. My love of maths started quite early, because, at the Roman Catholic convent, so, less than eleven, the nuns recognised that I had some gift in mathematics, and told my foster... They were lay teachers, they were sort of, you know, black habits and white wimples. But told my foster parents that they were not competent to teach me mathematics, and that they should find somewhere else for me. So I sat examinations and, and got a scholarship, because you paid for secondary education in those days, and got into a decent grammar school.

In Lichfield.

In Lichfield.

A good solid learning you say about that.

Yes. [laughs]

And then you move to another grammar school, Oswestry.

Yes.

From '46 to '51.

Yah.

So you were boarding there, but it was a day school.

Yes. There was a small annex for pupils who had been evacuated in the main, or whose parents were working overseas or something like that, for them to... I think we had about 30 pupils in a school of, five or six hundred. So, it was not a good compromise, but, it was, it was OK.

And how did your maths do there?

[sighs] With... Again, although the teaching was professional there, they had... I mean they couldn't teach me the sort of, sixth form level of mathematics. In my innocence, I was only thinking in terms of pure mathematics. I didn't realise that there was another sort of, applied mathematics. But I began to say, 'I want to study pure mathematics.' And they'd say, 'You can't, because we've got nobody to teach you.' And it was quite a, a discussion and ding-dong, and they eventually put me through some personality – not personality, intelligence tests, and, the poor psychologist did say that this girl should be studying mathematics. And, they arranged for me to go, have my maths lessons at the boys' school, because there was then, unisex. Which was pretty grim. My days were always disconnected, because the timing of the lessons was quite different, so I would be going out in the middle of one lesson in order to catch the maths lesson at the boys' school. But anyway, we managed it, and I got qualified, and, that was fine.

[56:34]

And you got through. You got your School Certificates.

Yes.

And moved directly into Post Office Research.

Yes.

Where you met your husband.

Yes.

And you decided to leave rather than work together. And you had one son.

Yes. [pause] I wanted a large family, and my husband and I were all sort of geared up for a fairly conventional middle-class sort of life. I knew I wanted to go on working, because I, I think I had been poor for, for so long that I really... I liked the independence that money gives me, the control. [pause] We were living in a small cottage, one of the sort of Rothschild estate, brick and flint cottages in Buckinghamshire. And it was fairly idyllic, but I mean, [laughs] you know, I was trying to paint the outside of the cottage, I was trying to prune the roses, and... But, in the middle of that, and when I was working CDL, I got pregnant. And, baby number one arrived, hopefully baby number one of five. And his name was Giles, and he was an absolutely beautiful baby. And I would say that was the happiest period in my life ever, when we had this rather impractical cottage, very picturesque, and...

[58:17]

What date is this?

'59, '60 or something.

Right.

All would have been well, except, at about two and a half Giles, a bit like a sort of, changeling, moved, over a period of days or weeks, I can't really remember, from this very quiet, placid, happy baby, to a wild, unmanageable toddler. And, it turned out after many consultants and a ten-month hospital stay that he was profoundly autistic, and of course that has changed the whole direction of the rest of my life. He, [pause] with difficulty, got some primary education, and then... I couldn't find any secondary education for him at all. So he stayed at home with me. Luckily I am still working from home. And, you know, you can get some sort of intellectual work done when he

was asleep or... And, they were difficult years. I mean I can remember my husband coming in the front door and I'd walk out, you know, I was just absolutely hitting the roof, with, with stress. And then, he, he would... We just played Box and Cox. I mean it was terrible. We... And eventually, when Giles was thirteen, so, he was born in '63, I broke down completely, we both... I finished up in hospital. Because I was the prime carer, Giles also had to go into hospital. And my doctor said I couldn't leave until arrangements were made so that Giles was not living full-time at home any more. He by that time was a thirteen-year-old, he was violent, he was strong, he was... It was not funny. And that really... I did recover from that, and I talk about my mental health. Because a lot of people don't talk about their mental health problems, which, you know, hit about one in four people at some stage or the other. And you can recover. And, I did. And, have made a, a further life for myself, working for Giles, who died at the age of 35, just about when I had got him living nice and, dignified, in the community. And, which was quite an achievement really.

[1:01:15]

And with the success of what became F International, this gave you some money that you could invest in charities, in established charities. So your philanthropic work is focused on autism, is that right?

No. It started off focused on IT and autism. And in fact, some £17 million has gone to IT through the Oxford Internet Institute and through the IT livery company, and bits and pieces. And over £50 billion – million, not billion, over £50 million to autism. And, the mission statement was always to be pioneering, never more of the same, no matter how interesting or... But also strategic. So something, that if it was successful, and some research, a lot of research isn't successful, but if successful, actually makes a real difference for autism. It's not just impacting this one child, this one group. And, that's what my life is like now.

[1:02:30]

What do you do when you are not working?

I don't really do anything.

You just work?

Mm. I try and keep fit by swimming. I have some family, friends. But I don't see a lot of them. My good friend who is, she's just got her 93rd birthday and we just invited, a little family party, you know, which is rather lovely. Very unusual. I haven't been to a party since, I think her 90th. [laughs] Mm.

[1:03:07]

And you are a founder of things. You seem to have a drive to found things. Where does tis come from?

I think it's... [pause] Let's try again. The drive to found things is part of the justification that I feel necessary for the fact that I was saved when a million children died. And that is as strong today as it was 75 years ago. It wasn't terribly healthy for me as a five-, six-, seven-year-old to be told, 'Aren't you lucky to be saved, aren't you lucky, aren't you lucky.' But the message got home, yes, I was very lucky. And, I decided really to make mine a life that was worth saving, and so I have become, as my father was, for different reasons I'm sure, a driven person. I am driven. And I... I like to feel that I've made a difference. I have the culture of, for the public good. I have the need to make each day worthwhile, that I don't fritter it away on shopping and things. You know, I have my extravagances, with clothes or pictures or something like that, but basically I work, and, very happy these days. That's what keeps me young, that's what gives purpose to my existence, which could otherwise be very sterile, my only child having died.

[1:04:51]

Is there any guilt there, that you survived?

Yes, I think I've got over that. There is this survivor guilt, which is always very illogical, that you should feel guilty for having been one of the ones that survived. But I had six years of analysis to get me out of that. And I would have thought it was gone now. It's just this, this dutiful thing, you know. And, the livery company for example more than anything else, when it occurred to me that I could make a real difference to a livery company in the City of London, some of which are 600 years

old, and, and the IT livery company could be there in 600 years' time. I get an enormous satisfaction of having made my mark. I was here, I survived.

Dame Steve Shirley, you certainly have made your mark. Thank you very much for your contribution.

Thank you.

[End of Interview]