



# **Lory Thorpe**

Interviewed by

**Richard Sharpe**

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By Zoom

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*Welcome to the Archives of Information Technology where we capture the past and inspire the future. It is 10<sup>th</sup> May, Friday, 2024. I'm Richard Sharpe and I've been researching and covering and writing about the IT sector, first of all computing, and then the broader sector, since the 1970s. And making her contribution today is Lory Thorpe, and she makes a massive contribution because I'm not going to do the whole of her CV, we will deal with it, but just listen to this. She's an English native speaker, an Italian native speaker, she speaks French, she speaks Spanish. She studied information technology and computer science in Rome, she then studied telecommunication engineering, also in Rome, she was a network solution architect in Ericsson, and she worked at the SA Group, she worked with others. Oh, and by the way, she's got a BSc honours in psychology from the Open University. Oh, and she raised some children. All of that. Welcome to the Archive, Lory, thank you very much. You were born in September 1970 in Canada.*

I was.

*I presume your mother was there, so why was she there?*

So, yeah. So I was born in Canada and I was adopted as a baby, and my adoptive parents were actually from Italy, so they were immigrants that had left Rome and gone to Canada, and they adopted me.

*Lovely. Now, that's quite a date. Obviously for you, but also for the IT industry. In 1970 Intel was just two years old, Unix was one year old, and in 1970 they had, by the end of that year they had 13 nodes on a thing called DARPA NET, which I think we know happened rather interestingly. The IBM 370 was launched. There were 79,000 computers in the world, that's all. And the next year IBM launched a bit of a Cinderella technology, the floppy disk, which was an important bit of technology, I think. And also people did word processing and the 3270 display – you probably worked on one, wouldn't you, for the IBM Crucial display that they used. Oh, and a man called Bob Bemer predicted there would be a problem with Y2K. And he was at Honeywell at the time. So what was the background of your parents, did they support you in education?*

Absolutely, yeah. I mean I was, since I was very, very small, I wanted to know how things worked and that translated into basically taking all sorts of things apart at any given opportunity. So my parents saved up for a microwave – this was the seventies – and armed with a screwdriver I proceeded to take it apart. So engineering has always been something that has been a passion. My father was an engineer and I think it's just something that always interested me since I was very, very small, so I was always very interested in maths, very interested in physics, in chemistry. Those were the things that I was naturally drawn to, and my parents were always very, very supportive of me doing something that was what I wanted to do. So they didn't necessarily tell me what was appropriate, and you know, we need to remember that at the time the gender roles were very much a lot more defined than they are today, but they were absolutely fine with me doing something that I wanted to do and that ultimately I was very good at doing maths, very good at doing physics, so it was really something that they always supported, which I'm very grateful for.

[00:04:22]

*What was your schooling like, where did you go to school?*

So I went to school, my primary school was called Summit Heights in Toronto, and it was a local school. I mean it was... I enjoyed it, I really enjoyed school, I enjoyed learning, I enjoyed studying. I've always really enjoyed sort of the whole school process, which I guess in some ways is very fortunate because a lot of people maybe don't enjoy it so much. But I was very fortunate that I had some amazing teachers. I mean you were talking about some of the technology at the time, when I was in primary school, one of our teachers, he happened to have a passion for computers and at the time our school bought what was probably one of the first computers in a primary school in the day, and it was a 4k TRS-80. And that was absolutely fascinating because he had this passion and he basically transmitted it to all of us, so showing what the computer could do. At the time we used cassettes to load programs, and that would really be the beginning of a passion that sort of persists to this day.

*So that was your first encounter with a computer. You were programming, were you?*

Well, I wouldn't, I think programming is probably a little bit of an overstatement. We were just very, very happy to actually get anywhere near the keyboard. So you used to earn keyboard time if you got good grades in maths, and we were, you know, there was a game, very, very rudimentary game that – and it came up on the screen – so initially it wasn't even programming, it was just actually being able to get your hands on it. So it started very, very- I mean I was, I think I was probably eight years old at the time, so it was really just this was such a fascinating thing that you really only saw in films, you didn't see computers anywhere else, you just saw them at the movies.

*And there you are, got your hands on one. Excellent. So you went on into secondary education from primary education, yes? And did you stay in Canada for your education?*

For part of it, yes. So I ended up moving to Rome when I was 17. So up until then I stayed in Canada. And the, yeah, I continued with sort of passion for scientific topics. I was also, when I moved I was also struggling a little bit with sort of, I knew Italian, but I didn't know Italian enough to write fluently, so in some ways that was a challenge. And I think I gravitated to more scientific topics. So the topic that I liked most, it was physics, and that's still true to this day.

*And you went on for two years to do information technology and computer science and then you moved into telecommunication engineering. Why did you move to that?*

It was a little bit accidental. So it was at the time, engineering, you did sort of the first two years were common and you sort of studied different topics, and, you know, at the time it seemed like a good idea. There was a lot happening in telecommunications, so this was before mobile, or rather mobiles were just starting, very, very early days. They weren't by any means sort of as prevalent as they are today and I was interested in radio frequency engineering, I was- there were a few things that I was interested in and I thought, why not.

*So you went, your first real job was, you were basically self-employed as an independent consultant weren't you? And a simultaneous translator.*

Yes.

*But I'm glad you left that, you know, because people who do simultaneous translations, it seems there is an accident rate among them. Did you know that?*

No.

*Yeah. Something goes wrong later on in their life, and I'm glad you left it, otherwise you might not be here. I'm glad you did. Now, you then, the first full employment job was with Ericsson.*

Yes.

[00:09:51]

*Where was that?*

That was in Rome.

*Right. And that was 1998, and that was the year Google was founded, and that was the year Lastminute.com was also founded. So you were 13 years with Ericsson. Can you describe the culture of that company?*

Well, I mean we need to put it into the, sort of the context of the time. So this was really when mobile was really starting and it was an absolutely fantastic experience to be part of that. And obviously now looking back, looking at the changes and looking at how big an influence mobile and connectivity has had over our lives is really, I mean we can argue that, you know, it's obviously had some things that are not so good, but, you know, if we think of how it's changed society, changed how we interact, changed what's possible, it really is incredible to think that this has happened throughout my lifetime. I mean, I come from a time – and I still do remember this – when we used to call my relatives in Italy from Canada and that was something that you did, I don't know, maybe once a month or once every few months. You had to book it, so you had to book it, you would send a letter saying, you know, I'm going to

call you. That's inconceivable now. So if we think of how we communicate today, how we can communicate with people on the other side of the world, how immediate it is, how close we actually are as a result of that, that's all because of how we can communicate. So I really feel that I was part of a journey that has really changed the world.

*We, in 1970 we had a telephone in our house, but as ever, it was in the hall, and it was a shared line. The Post Office didn't have enough lines, as a result, so you could listen in to other people's conversations, if you wanted to – not that I ever did of course.*

Of course.

*Of course not. Did you stay in Rome all your time with Ericsson?*

Yes, I was based in Rome the whole time, but I had, I started out actually in a role that ended up being quite fascinating because there was something called intelligent networks, that some people may not remember, but intelligent networks were all of those services that were being built on top of the connectivity itself. And one of the most famous intelligent network services was actually prepaid, and prepaid was a gamechanger at the time, because phones, particularly mobile phones, were really expensive, they weren't something that everybody could go out and buy. And prepaid is actually one of the technologies, one of the services that democratised the use of phones, because you didn't need a credit card any more to be able to go and buy a phone. Prepaid offers were generally more affordable than having a monthly contract, so it really democratised the use of mobile phone, and at the time the concept was, it was completely new and we were looking at how we could do it and how to build that capability. And that really still exists today. So fundamentally when we think of prepaid phones, it's really, you know, do I still have enough credit? Yes, carry on talking. Do I still have enough credit? Yes, carry on talking. That is how prepaid works still today. And that was really revolutionary concept at the time, and that was, it was one of the first projects I was involved in in Ericsson, the development of the service. And we used to do- it was much more of a start-up mentality than you would find in telecommunications today. So we used to do the development of the service,

then we would go and test it, then we would go and we would do support. So it was very, very intense, long hours, but it was hugely satisfying.

[00:14:49]

*It's a proud engineering company, Ericsson, isn't it?*

Yes, absolutely. And we, I mean at the time Ericsson was really, it was a great place to work. Some very, very good people. It was really, we felt like we were building something new. You sort of had the sense of, you know, we're building something new, we're building something that is going to make a difference.

*When you were in Ericsson, maybe you didn't look over your shoulder or over here into the UK, but let me ask you this question, you might have a view on it. How come there's Ericsson, how come there's Siemens, yet where is Plessey? Where is Ferranti? Where is General Electric UK? Gone.*

I mean at the time I have to say the world of Ericsson was quite insular, so it was a big organisation, it was, we were sort of, you know, when you start in a company like that you're sort of immersed in what you're doing and immersed in the moment. So I don't think at the time I was really looking around too much, actually. It sort of felt like we had everything we needed right there. So I think the awareness of the context sort of, it only came later when things started to sort of really change in the telco space, that was when you sort of had more of that... [00:16:30 line frozen briefly]

I think, I mean General Electric, I knew it because my dad used to work for General Electric, but it wasn't something that you were paying attention to at that time.

*Okay. Why did you leave after 13 years?*

Actually, that was probably one of the most difficult decisions I made in my career. It was a combination of- so Ericsson gave me a lot of different opportunities. I changed, I sort of did different roles within the company, I moved to a more global role, so I was part of a global network expert design team that- and we worked in different

places so I got the opportunity to travel, I was involved in standards organisation. So my role did evolve over time and it also evolved as the industry was evolving. So standards came into the picture more prominently, so we moved away from proprietary protocols and proprietary deployments to more standard based deployments. So my role evolved over time. I also moved to the UK during my time with Ericsson, and I started looking at opportunities outside and I think really it was about personal growth, but it was also about understanding what was out there. So Ericsson was very much, you know, this is the Ericsson way, this is how we do things, and I wanted to experience things outside of Ericsson. So it was really one of the most difficult career changes that I've made, because at that point I wasn't even sure that there was anything outside of Ericsson, I wasn't sure whether I'd be able to be successful outside of Ericsson, but I wanted to try, and I think that ultimately looking back with 20/20 hindsight, it was definitely the right decision, but it was a hard decision. And I mean to this day the people that I met in Ericsson, the colleagues, the friends, I'm still in touch with many of them, so it was definitely a very formative time in my career and in my personal life, personal development.

[00:19:25]

*So then you spent, I mean you really did change fundamentally, because although you were dealing with telecommunications technologies, you were dealing with it for that famous Chinese firm, Huawei, and you were three years there. Now, tell me about the inside of Huawei, what's it like working for that company?*

So, Huawei was, again, putting it in context, Huawei at this point was only starting out in Europe and it was, it was a Chinese company that was trying to break into a new market and obviously looking at what's happened since and all of the challenges that Huawei are going through, you know, I look at it now and it is quite sad that things have come to what they've come to. I had an absolutely fantastic experience working with Huawei. So it was, first of all, it was a completely different world compared to Ericsson, completely different culture. At the time when I was interviewed, you know, they were highlighting about sort of multicultural and, you know, openness working with different cultures, and I thought that I had that, you know, I thought, yeah, yeah, I can do that. But actually, I'd never worked with a



Chinese company. It was a completely different, completely different way of doing things, completely different mentality and it was a huge learning curve, really difficult learning curve, but ultimately really very, very satisfying and I had a really good experience working with Huawei.

*Can you give us some examples of how different they were?*

Well, I think the decision-making process is completely different. The way that the company's organised is very different, being, obviously being China-centric it was, there were challenges around language, so not knowing the language was, it was a barrier, it was a challenge. They implemented something that they used to call 'one plus one'. So basically, when I was hired, they gave me a plus one, and that was a Chinese person that was working with me, and he would be working basically the internal aspects and I would be working on the, sort of the more external aspects of the role. And I was very lucky to have a plus one that I am friends with to this day and that ultimately taught me a lot about Chinese culture, about how things worked. So I was really very fortunate to be able to have somebody help me to navigate the organisation, and I think that really that was, the people that had a less positive experience, I think it's because they didn't have that, they didn't have that support, they didn't have the ability to sort of ultimately be able to rely on somebody that could really explain how things were working. And it wasn't obvious, so it was a big learning curve, because being in Ericsson, obviously in Ericsson everybody spoke English, I knew the organisation, I knew people I could reach out to, I had a big network and I go into this company where I don't know the language, I don't have a network, I don't know how things work, I don't understand the culture. So it could have gone wrong, it could have gone really badly wrong, and I knew I was making a bet, but I also knew that it was something that would allow me to sort of really, you know, challenge, I think challenge myself, but also fundamentally I think what, something worth mentioning, it's a very, very good engineering company. So the R&D, the sort of the fact that they're so customer-centric, the fact that the decision-making process means that once they've committed to doing something, that is what everybody does. I think it has some really unique aspects that, you know, were sort of very positive.

[00:24:44]

*Alan Burkitt-Gray, who I interviewed for the Archives – you might know him, he’s a very good analyst and journalist about IT, specially telecommunications – he says their customers love their kit, love it.*

Yes, and I mean that’s sort of what I think sometimes we now lose sight of, is that it was very, very good equipment, it was very good technology and one of the things that, while I was there, one of the things that we did, we set up the Cyber Security Centre, working with the UK government. And actually that was a very good concept, that, you know, looking back I feel could have been better leveraged, because actually that is, that is really what you want as part of the security process, you want all vendors to be sort of, to be able to, you know, to scrutinise what is going into our networks and making sure that what we’re deploying is actually secure. So actually that concept at the time I felt could have been much better leveraged and maybe it would have been, it would have avoided some of the things that then happened.

*Do you think that that was just scare tactics by those who say there’s a security problem with this company?*

Yes.

*You don’t think there’s anything buried?*

Erm, I think that the way to find if there’s anything buried is to put the right framework around it. So that is how you find out if there is anything buried, and if there is, it’s surfaced through the testing. So I don’t believe that banning a company on political grounds means that now the network is secure. I think you still need that framework and saying that it’s [00:26:59 brief sound dropout] because we banned a Chinese company is, doesn’t make the network secure.

*Frankly, I think if there was anything buried, the NSA would have found it by now, and there isn’t. There isn’t. You left, why? In 2014 you left, why?*

I got an offer from Vodafone and I'd never worked for an operator before, so obviously I'd worked very closely with many operators in my time both in Ericsson and in Huawei, but I'd never actually worked for an operator, and they offered me a role and it was an interesting role, so I thought I would try.

*Internet of Things, Innovation and Strategy. That's what you were head of. Oh, I must go back, I must put the reel back, sorry. Y2K, was that a scam? Was there a real problem?*

Well, yes, there was and it's interesting you raise it, because not very long ago I presented to a group of postgraduate students about something that I'm working on today, which is post-quantum cryptography, and one of the parallels between the threat of quantum and Y2K is that obviously they are a catalyst for sort of something happening that basically threatens what you've got today, so whether it's the architecture, the security or the cryptography. In Y2K, a lot of people say, oh well, nothing happened. Nothing happened because there was a lot of preparation done for Y2K. I was actually in the emergency handling centre in Rome for Y2K, so I was in the emergency handling centre because we weren't quite sure what was going to happen with services. We had done a lot of work to try and mitigate any potential threats, but you know, we weren't really a hundred per cent sure that everything was going to go to plan. So there was a whole team of us in the emergency handling centre ready to address anything that came up. Nothing came up, so it all went very, very well, with the exception of sort of usual congestion and things like that that happen on a network on New Year's Eve. But I think the preparation that was done for Y2K enabled the impact to not be sort of as widespread as it would have been.

[00:30:07]

*Okay, now we can go to 2014 and Head of Internet of Things and Innovation Strategy. Now, I went to a conference at MIT about 'Things that Think', it was called, many, many, many decades ago. I think this has been coming for a long time, but it's been coming rather slowly in my estimation. Am I wrong?*

I mean it's been coming slowly. I think we could argue that things can always go quicker and often with technology I feel like with any new technology we sort of underestimate the time that it takes to really deploy capabilities at scale. So it's one thing doing a proof of concept or doing something in a lab, it's another getting to adoption at scale. And it always feels like the initial predictions, it always feels like it takes longer than people expect it to take. But having said that, I think Machine to Machine, so the predecessor of what we now call Internet of Things or Internet of Everything, that started out with a view that actually machines could talk to each other and we could effectively the network that up until that point had been predominantly built for people to talk to each other, it could also enable machines to talk to each other, and that why at the beginning it was called Machine to Machine. I do believe that actually Internet of Things has delivered a huge amount, so even if we think today our cars, our cars, they're all connected and [coughing]... So today all of our cars are connected, our meters are connected, so all of these things that are... [pause to get a glass of water]

*But they were telling me that they were going to have fridges that would automatically know you were out of milk and order it for you and so on. I haven't got that fridge yet.*

No, and, you know, I mean, do you want it?

*[laughs] I don't want to go to the fridge and think, oh no, I've got to go and get some more milk. [laughs]*

Well, I think, you know, I think there were some things that we, that were hypothesised as, you know, this could be a really good, really good use case for connecting things, and I'm not entirely sure that some of them were that great an idea. I mean we've just bought a washing machine last week because our old one broke, and it's got Wi-Fi, and my husband now is told by the washing machine when the washing machine has finished washing. Now, he's really pleased with that. I'm not quite sure what to do with that information. So I think there is a piece about, you know, just because you can connect something, it doesn't mean you should, and it doesn't mean that it's particularly useful. But I'm also looking at some of the other

areas that we have been sort of connecting, so, you know, if you think of road infrastructure, if you think of parking, if you think of the cars themselves, so the fact that your car will tell you that you have a problem and you need to go to the mechanic because the brakes need to be looked at. So these are the sort of things that are actually potentially a lot more useful than maybe being told that you've run out of milk or that your washing machine cycle has finished.

[00:34:27]

*I'm so pleased to hear a technologist say that, just because we can, then should we. I like that approach, that's a good one. Excellent. Now, Vodafone, a very English company, so what was that culture like?*

Well, it's, Vodafone actually is, it's English but it's multinational. So, because of the reach of the different operating companies, I was part of Vodafone Group, so I had the opportunity to work with all of the other countries that form part of Vodafone. So actually it was very multicultural. The, I think one of the things that I appreciate most from my Vodafone days is it's been one of the, sort of the very rare times where most of my team was actually based in the UK, sort of with a few exceptions, we also had part of the team in Germany. But we were all based together in the office and I think that was, looking at what happened afterwards, looking at what happened with Covid, and looking at what happened with sort of geo-distributed teams, that was actually one of the things that is sort of something that I really appreciated. But, yeah, the culture in Vodafone it was, I mean it's a very complex organisation, it's a very large organisation, and again, I was working in a role that was ultimately pioneering some of the most exciting things that were happening at the time. So I was working with an ecosystem of partners that was really at the cutting edge of technology and it was, I mean I used to say that that was one of the, it was the best job in the company because I really felt that I had exposure to all of these new ideas and new things that were happening and that, you know, even today they're still in the process of materialising. So things like intelligent transportation systems and connected cars, things like non-terrestrial networks, these were all things that we were looking at as part of the innovation and strategy and they were all things that are sort of now, you

know, slowly coming to fruition, but, you know, as we said earlier, I think things take longer than sometimes we predict.

*Then in 2019 you moved to Nokia Software, Global Head of Enterprise Products.*

*Explain that role, would you, Lory?*

Sure. I mean so Nokia Software was, it was branching out from Nokia and at the time it was a separate company and it had ambitions in the software space. So it was not focussing on the sort of traditional Nokia infrastructure piece, it was very much focussing on the future of software and I was part of a team that was looking at different aspects of this and including things like security and analytics and automation. And the focus for Nokia was obviously selling to the operators, but one of the things that over time had also evolved in the telecommunication industry is that more and more enterprises were using effectively telecommunication services, and in some cases they were using them through the operators, working with the operators, in some cases they wanted to source them directly. And this is where things like private networks were sort of becoming more accessible. So the role that I took on in Nokia, it was really to look at of all these capabilities that we were traditionally selling to the operators, which ones would it make sense to sell to the enterprise directly and how could we work with enterprises and with operators in parallel to really progress the digitalisation across the different sectors. And this was working transportation, working in manufacturing, energy and utilities was also a sector that was sort of going through, and is still going through, a lot of transformations. So it was really looking at how some of these technologies around connectivity, but more than connectivity, so it was connectivity, it was security, it was how do you leverage the data assets that you have. And Nokia Software wanted to explore how to work more closely with these enterprises, as well as continuing to work with... [00:40:06 line frozen briefly] ... with the operators.

[00:40:14]

*Why did Nokia pretty well implode?*

Well, I mean the challenge that I had personally was that when the new CEO came in, Nokia Software was incorporated back into the Nokia mothership, so effectively the, that strategy of Nokia Software sort of disappeared at the time. So I felt it was... I was a little bit disappointed that that happened, but obviously the overall strategy of Nokia changed at the time, because ultimately they needed to adapt to what was happening in the market and needed to focus on certain things, so one of the casualties of that was Nokia Software.

*Okay. But the strategy was a great success. No, it wasn't, was it? The strategy was a failure at Nokia.*

No, not at all. I mean even now if you look at the role of Nokia, for example, the role of Nokia in private networks, it's still one of the sort of the big success stories really. I mean obviously we're looking at more happening, I think that the digitalisation process across the different sectors, that's very much a work in progress, but Nokia is a key player in this space and part of it is because of the work that was done at the time in preparation for this.

*You, I believe in June 2021, you moved to IBM – is that right?*

Yes, yes.

*Now, there's an amazing company. Describe the culture within IBM, in comparative terms.*

Well, IBM is, it's an iconic organisation and it's been around for such a long time and it's done so much over its history, so for those of us that have been involved in computing and- it's just an iconic organisation that has evolved over the years, but has ultimately produced some of the most extraordinary technology, you know, that we still use today. Moving into IBM was challenging. It's a very, very big organisation, very complex organisation. This was still in the aftermath of Covid, so the added challenge there was that a lot of the initial, the initial work that was being done was still being done remotely. It's, I mean I still believe it's a fantastic organisation. The shock for me was that it's the first time I've worked for a non-telco company, so IBM,

telco is one of the sectors that obviously form part of the strategy, but I'd only ever worked for companies that only did telecom, so that was one of the things that was very different. The breadth of the work that's done within IBM is, it still surprises me. Generally if there is- the challenge in IBM, you know that someone somewhere is doing something, you just need to find them, and it's not obvious how you do that. So again, you know, it's, over the last three years – I've been in IBM now for three years – you need to build your network, you need to understand how the organisation works, and that's always a challenge in a big organisation. But I was very fortunate, so the person that brought me into IBM, so my manager at the time, he was somebody that had been in IBM for a long time, so he was very much, not just a manager, but a mentor and somebody that really helped in sort of making, you know, enabling me to do a good job and to be effective in the organisation. The role I had, I started out was, it was a very interesting role, it was a new role with a new team that was created, effectively created from scratch at the time, and I had the opportunity to work with some really clever, really interesting people.

[00:45:31]

*Who was your mentor?*

Steve Goetz.

*Okay.*

So Steve is, he's based in New York, and the reason – and he knows this as well – so the reason I agreed to work for him after the first interview was because he sounds like a New York gangster.

*[laughs] I won't mention the Italian connection, okay? I won't mention that.*

But that was the point. The rest of the interview process, that was sort of noise, but that was the main reason that...

*Okay. And you're now in the quantum area aren't you?*



Yes.

*You are, okay. How long before we have a stable quantum computer?*

Well, I mean, so IBM has actually published a roadmap, and the roadmap that we've published, we've so far hit every milestone. So there is huge progress being made in the development of quantum capabilities. There are a lot of, as... [00:46:50 line frozen briefly] ... lot of research ongoing, and what we're seeing now is we're seeing a series of breakthroughs, things that get published, things that then get scrutinised, some are true, some are not true, but it's undoubtedly, progress is being made. And even if we look at some of the more recent announcements, and even some of the new machines that IBM now has working, we can see that even over the last sort of couple of years, some incredible progress is being made in terms of the scale, in terms of the performance, also in terms of technologies around error mitigation and error correction. So, I expect that over- there isn't going to be a date, so it's not like Y2K, there isn't going to be necessarily a date where all of a sudden, right, we're ready now, it will be an evolution process. And we're already seeing now that with some of the work that's being done, that actually quantum computers are becoming more useful and becoming more able to support the resolution of certain problems. So I think that is going to be a process that over the next ten years will be sort of a little bit comparable to when we started out with mainframes and, you know, as progress was made there is a parallel there, and we will see that quantum computers will be doing tasks that go beyond the capabilities of classical computing and complement the capabilities of classical computing in a way that actually becomes more and more relevant and more and more useful.

[00:49:03]

*Won't it tear up the security of the internet and won't the internet have to be redesigned?*

Well, so the, I guess what you're referring to is a cryptographically relevant quantum computer...

*Yeah.*

... so one of the things that we know is that quantum computers can do a lot of really great, useful things. One of them is solving mathematical problems that underpin some of the cryptography that we use today. Exactly when they'll be able to do that, again, there isn't a date that we can sort of pinpoint. It's not quite like Y2K, so we can't say 31<sup>st</sup> December 1999 at 1159, that's when you've got a problem. In this case, first of all, cryptography is not all created equal, so the ability to break cryptography will also depend on what cryptography we're referring to. But there are also a number of things that can happen that can accelerate that. So if we look at the optimisation of algorithms, so if we think of the algorithms that we have today, there's a lot of work at optimising some of those algorithms that we'll be able to break, for example, RSA, so Shor's algorithm. Those algorithms are being worked on and are being optimised. The scale and the performance and the speed of quantum computers is progressing. Error correction technologies are being studied, techniques are being studied, and there are, again, there are a breakthrough in error correction could actually accelerate when a cryptographically relevant quantum computer will appear. So without sort of having an exact date, my advice is it's better to be prepared, so to start preparation and to start looking at, you know, it's not even obvious how and where we're using cryptography today. So if we think of in the context of a bank or in the context of a telco network, it's not obvious how and where cryptography is being used. And generally what I would say is that it's being used a lot more than people would think. So even in our everyday lives, if you think of, you know, have you used cryptography today? Well, have you logged into your bank, have you sent an email, have you taken money out of the cash machine. So all of these things. Have you made a phone call. All of these things mean that you've used cryptography. So one of the things that I would say is that cryptography is pretty relevant to our everyday lives, pretty relevant to our digital society, digital economy, so I'd like to think that people will take that seriously in preparing the right timescales and not sort of leave it till the end.

*Yeah, indeed. Is it the end of human beings when AI takes over, or won't it take over?*

AI, will it take over? I guess if you've been looking, if you've been watching *Terminator* then, then yes. AI, it's a very powerful technology and we need, as a society we need to be looking at sort of responsible use of technology. That is something that is true of any powerful technology. So it will be true of AI, it will be true of quantum. I think AI has huge potential for good, huge potential to sort of really be incremental in terms of the capabilities that it brings and allowing us to do things that, potentially more efficiently or better than we do them today, but it also does have the potential for misuse and that's where sort of that responsibility piece comes in. So I think, yes, there is potential to do harmful things, as with any sort of powerful technology, but I think it's up to us as a society to ensure that we put the right, the right framework in place to avoid that.

*Did you or would you sign that letter saying, hold on, let's pause for a minute?*

I don't think you can pause. I think you can only correct the course and there isn't an option for let's stop for a minute, I mean the genie is out of the bottle and things will progress. But again, I think it's really up to us as a society how we, how we, how we manage and how we use new technologies in general. So I think, you know, AI is one of the technologies but, you know, if we think back, there are many technologies you could argue, well, you know, was there an option to stop and was there an option – and I don't know if there is, I think that, you know, once something is out there, then in some shape or form it will progress.

[00:55:13]

*Yeah, and yet, they can't get a system that doesn't go wrong for many, or Post Offices. I'm talking about Horizon, and we have people like Cambridge Analytics around. You know, it worries me.*

It, yeah. I think it worries everybody, but the problem there is not the technology. The technology isn't, the technology isn't good or bad, the technology is the technology. I think it's what people do with it and what is prioritised, and I think ultimately what happened in Horizon, that was, it wasn't because the technology had failed, it was how that was dealt with and how people sort of ultimately prioritised

either the company's reputation or money or whatever else was prioritised at the time that meant that that wasn't dealt with maybe in the way that it should have been.

*And yet there is something about AI technology – sorry to press you on this – but there is something inherent about the technology which is that it is fundamentally a black box, we don't know how it comes to certain conclusions, and indeed, if it even hallucinates. How do we deal with that?*

Well, I think there are ways to deal with it. So- and certainly IBM has taken a very sort of ethical stance to AI to ensure that it's not a black box. So it's a black box if we want it to be and if we, I mean ultimately if we don't control the data that goes into it and we don't have visibility of how it's coming to its conclusions, then it is a black box, but it doesn't need to be that way. So ultimately it's about the implementation rather than the technology itself. Obviously it's a very powerful technology and left unsupervised or left in the hands of maybe people that are, you know, that don't have these ethical concerns at the top of their mind, it can definitely go badly wrong.

*Mm, yes, Mr Putin, I'm afraid. Yes. Now, throughout this period you've not only been a technologist, but you've been a manager as well, haven't you?*

Yeah.

*What is the Lory Thorpe management style?*

So for a long time I was an individual contributor and I actually went into management very, very reluctantly, because I didn't want the responsibility of managing a team. But actually once- and I started sort of on my management journey when I was in Vodafone. It was, it was difficult, because when you're used to being an individual contributor there are a lot of things that you don't need to think about. So it was a difficult, it was a transition, but I think, I mean generally I would say the time in, my time in Vodafone, it was one of the best of my career and the team that I actually built in Vodafone, so I built a team from scratch, it was a completely new team so I was able to recruit people into the team, I didn't just inherit a group of people, and they were the best, so they were a very, very good group of people. And I

believe I also created a very good collaborative environment in which to work. So I think ultimately it ended up being a very positive experience, possibly because I wasn't expecting it to be.

[00:59:47]

*Okay. Big question now. Are you ready for it?*

Of course.

*What's the biggest mistake you have made in your career?*

The biggest mistake?

*Was it leaving Vodafone?*

No, I don't regret leaving any of the, I mean every role that I've had has been, has been, it has helped me grow, it has ultimately allowed me to do new things, new interesting things, so there hasn't been a single role throughout my career that I've actually thought, I wish I hadn't done that. And I realise that I'm incredibly fortunate from that perspective, because when you accept a role, no matter how much due diligence you might do, no matter how much research you do, it doesn't always work out, and actually I've been really fortunate that, you know, the roles I've had, the companies I've worked for, none of them, I wouldn't do anything differently in terms of accepting those roles. I mean some have been, obviously, you know, Ericsson is, it's a little bit like your first love, you don't forget that, and it was very formative in my career. Nokia, I was there for a much shorter period of time so, you know, it had probably less of an impact overall, but again, I still had the opportunity to meet a lot of people, had the opportunity to work on things that were interesting. I've sort of followed the principle that if you're doing something that you're not enjoying, then you're in the wrong job and so I've always tried to do something that was interesting that I felt was worthwhile. And that's sort of what led me always to be looking at sort of the next generation of technologies and what was coming next, and that's really been the constant thread throughout my career, looking at what's next. And because

it's something that I'm really passionate about, that I really enjoy, I guess I've been one of those lucky people that has really enjoyed the job that I've had, the roles that I've had and the opportunities that I've been given.

*Do you think perhaps some of those opportunities were not given to you because you were a woman?*

I think certainly in, I think in the early days I would say that they were probably given to me in spite of me being a woman. I mean telecommunications in the nineties was a very male-dominated environment. There was very little diversity. There was no talk of inclusion. And, you know, and I'd love to be able to say that now things are completely different. I don't think they are, but I think there is a lot more awareness and certainly on the surface every company now has a diversity and inclusion agenda, and depending on the companies I think that they believe in it and really act on it, more or less. So, you know, every company has it, it doesn't mean every company really believes in it, but there's a lot more of that than there used to be in the nineties, and certainly in the nineties the women that were part of telco, they were very, very few and far between. So I think that things have moved on, not as much as I would have liked. I still think that there's a long road ahead to make sure that actually that, not just women, but anyone that has, that sort of deviates from sort of what we consider, right, this is how we do things around here. Anyone else, you know, coming from different cultures, there is still a lot of work that needs to be done to make sure that we are able to really leverage the potential of the, you know, the diversity of people that are, that we encounter in the workplace. And it's not just about, it's not just about having, you know, fifty per cent females, it's also how do you accommodate, how do you support, for example, women that are going through sort of the different stages of life and are having children and having to either take time out or need more flexibility. And I think those are the things that really it's important to look at as part of the policy. How do you ensure that those people that can't do nine to five, but actually maybe they can do, you know, ten to two, but are willing to work maybe later. You know, how do you accommodate that flexibility to ensure that you don't actually disenfranchise some of the people that actually could really contribute ultimately to the workforce and contribute to the objectives of the

company. And I think there's a lot more that needs to be done, but, you know, I have to say if I look back at when I started, things have progressed a lot.

[01:06:44]

*Have you given a screwdriver to your children and given them a microwave and say, yeah, take that apart?*

I haven't, and interestingly, they, my daughter is an engineer.

*Oh good. What type of engineer?*

So she studied engineering with architecture and she came to me when she was six years old and she said, 'I want to be an architect'. And at the time I thought, okay, fine. You know, I didn't think that that was going to be sort of the final... but my daughter is quite determined and...

*I wonder where she gets that from?*

Well, that's what she did, and she is one of those people that, you know, she was absolutely clear that that was what she wanted to do. My son is currently studying engineering, so he's studying mechanical engineering. I'm not sure he has the same sort of clarity that his sister had, but I think, you know, we're a family of engineers and I don't... is that genetic? I don't know.

*Thank you very much for your time, this is very inspiring. I said that the objective is to capture the past, which is what we've done, Lory, at last, and also to inspire the future, and I think your contribution will inspire future people when they look at it. Thank you very, very much, Lory Thorpe, for your time.*

Thank you. Thank you very much.

[end of recording]