Capturing the Past, Inspiring the Future

Simon Segars

Interviewed by

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Welcome to the Archives of Information Technology, where we aim to capture the past and inspire the future. It is Tuesday the 23rd of July 2019, and we are in Cambridge, and the reason why we are in Cambridge will soon become clear. The IT industry, which I have been covering since the early 1970s, is an industry which obviously involves technology, sales, start-ups, customer relationships, the management of people, mergers and acquisitions, turning around failing operations, government and industry collaboration and helping to make policy. And our contributor to the Archives today has done all of those things, and mostly in one company, the famous and important A-R-M, ARM. And our contributor is Simon Segars, who is at the moment the Chief Executive and also a member of the board of the parent company of ARM.

[01:04]

Simon, you were born in Basildon in Essex. Was there any contribution made by your parents to the IT industry, or computer industry as it was?

Ah. Well, producing me I guess. My mother would, would tell you that, after having left school she programmed punch cards that went into some big old computer that ultimately paid people for, I think it was Crosse & Blackwell she worked for when she left school. But apart from that, you know, growing up in Basildon, my parents weren't particularly scientifically-mined. I was very interested in all things science, and they encouraged me a lot to go and experiment with things, and, and build things. But in terms of, you know, their background, it was, it was not particularly technical.

She was a teacher?

Yes.

Of?

She did, primary schools. So, again, you know, left school with no qualifications at all, and ultimately studied and became a teacher.

And your father was a fireman.

He was. Yeah, my, my parents moved to Basildon, out of London, in the early Sixties. Basildon was a New Town. My dad had joined the Fire Brigade in London and had the opportunity to, to move out.

And move out he did.

Yup.

Or they did. And went to wonderful, wonderful Essex.

Wonderful Essex, yes.

Are you an Essex boy?

I am, by birth of course.

But do you feel it?

Well I haven't been there for a while, I've got to say.

OK.

But, you know, it's, it's where I'm from.

[02:37]
Did you enjoy school?

[pause] I… Did I enjoy school? I, I guess so, yeah. I mean the, the primary school that I went to was, it felt, felt pretty small and, and safe, and… Basildon, you know, being a new town, lots of people had moved in. There was a good kind of sense of community I remember. The little kind of square that we lived in, everybody knew each other, and so, you know, everybody went to the same school. It was, it was quite social in that regard. Where we lived, a lot of people, a lot of men worked at the fire station, so, you know, everybody knew each other. So, I, I…

Instant community.

Yeah. I, I don't have…

Is community important for you?

[hesitates] Ye- To an extent. I, I describe myself as, as a bit introverted, so, I'm not out making lots of friends the whole time. But, I do think community is important, yeah.

OK. And, you went to, therefore, a state school.

Yup.

Then a secondary school, Woodlands secondary school.

Yes. So, I had been to, for primary school and, yes, infants and juniors I went to Greensted. We moved across town in the summer that I, I moved from junior school to secondary school, and I went to Woodlands comprehensive in, 1979.

1979, the record says.

Seems like an eternity ago. [laughs]

And, comprehensives have to a certain extent got a bad name. Did this one have a good name?

[pause] A bit hard to tell. It was, to me it just felt like a, a big school. There was a lot of people there, and I knew virtually no one, because we, we had moved across town. So I had gone from that environment where I knew basically everyone to knowing basically no one. But, you know, again, I, I remember having a, a fairly good experience there. Amusingly my, my mother had managed to dig out a bunch of my old school reports that I was looking through last night, and, the teachers talk

about me, you know, quite positively. So I obviously had quite good relationship with the, with the teachers there.

Not too embarrassing then?

[laughs] Well it was quite funny to, to read my, the first year English teacher describing me as being slack with my punctuation. [laughs]

Ooh.

Although being, being reasonably intelligent. [laughs]

Oh. [laughs] Oh, damned with faint praise.

Yeah. Yeah.

And there you got your O Levels in maths, English, physics, geography, biology, craft, design and technology, CDT.

Yes.

So, here is orientation towards sciences almost right away, apart from geography.

Yeah. You had to do something, you know, geography… I, I think you had to do either geography or history, and geography was the one that I disliked the least, so I ended up doing that one.

Right.

But things like, you know, CDT was, was a lot of fun, because you got to cut things up and weld things together in the metal workshop.

Then an A Level in maths.

Mhm.

And, a CSE in French.

Yeah. I, I did not enjoy languages. I was in the O Level group, and I realised I was going to fail O Level maths – O Level French. So I had a conversation, I remember having a conversation with my mother saying, you know, 'This is not working. Why don't I volunteer to go into the CSE group,' which is allegedly easier. Spoke to the teacher, who let me do that. And, I ended up getting a grade 1 at that, so, that worked out.

There's nothing, nothing bad about not doing O Level French. I failed it four times.

Ah, well done. [laughs]

[06:30]
Then you moved into a sixth form college.

Yeah.

Which is where you say that, you were in classes with people who actually wanted to be there.

Yeah. You know, there's a, there were a lot of people at, at Woodlands who clearly, you know, could not wait to leave school, and so, you know, the… If you wanted to learn, it was, it was hard work. I… The reason I went to the sixth form college was actually because I failed chemistry O Level the first time. Had I passed, I would have likely done maths, physics and chemistry A Levels at a combination of either the school or, there was a local FE college just across the road. Because I failed that, I was then kind of looking round at different options. A friend of mine at the time told me about Palmer's sixth form college, which was in Grays, so that was, I don't know, 20 miles up the road from where I was living, that offered an A Level in, in what they called electronic systems. And I thought, well, that sounds interesting. I was, you know, by that point very interested in computers, and getting into programming, and,

thinking about how computers worked. And so the option to do an A Level in electronics sounded like a lot of fun. So I went to Palmer's. And Palmer's was great, I, I enjoyed that, enjoyed the people that I met there. The teachers were good, and, you know, encouraging of, you know, thinking, thinking more broadly about the world. You know, growing up in Basildon was a, was a fairly, you know, insular place at the time, and, you know, I was young obviously, but, Palmer's was, was somewhere where, I guess it started to, to give me a view that there was a bigger world out there, and started to think about what I might do within it.

[08:20]
Right. And, what was your first computer?

Ah, somebody asked me this the other day. I had a computer called an Oric-1. You, you're reacting as though you, you remember this?

Yes.

I don't think it was a huge seller. But, it was, about, 30 centimetres on a side, something like that. Small, you know, a very underpowered computer of course. But the beauty of, of the computers that were made in that era I think was that they didn't have much by way of compute power or memory, and you really had to work hard to program it as a result. So I think it, it forced a learning, and it, and it forced a kind of, a better understanding of, of actually how the computer worked, and how to get the software to do the computer, to do the thing that you were trying to get the computer to do, to think much more about that.

What were you trying to get the computer to do?

Well I, I couldn't afford software to run on it. [laughs] So I had the computer. So if I wanted to play computer games, then I had to make them up myself. So, I, you know, me and, and you know, my, my friends at the time, we were, you know, just trying to write basic computer games to entertain ourselves.

Right. A Level maths B, physics B, electronic systems B. I say that not to point out, hah-hah, you're a B student.

[laughs]

Well, you might have been a B student then, but, we just want to tell those who are listening to the Archives, young people who are listening to the Archives, you can be a B student at A Level and you can be an absolute stunning success in your career, as you have been, Simon. So that's part of the, part of the learning curve for them.

Yes, my A Levels were good enough to get me into university. I went to Sussex. I ended up getting a, a First in electronics. And, yeah, my career has, I think been OK.

Oh it's pretty good, yes.

[laughs] Not bad.

[10:18]
So, why Sussex? It wasn't known for electronic engineering, necessarily.

No. I mean I've got to say, Palmer's was great, but, I can't say that I got fantastic advice in terms of, of where to go next. So, yeah, I got a bunch of prospectuses from universities, talked to friends, and a friend of mine had decided to go there. You know, you read these, these university prospectuses, as I did at the time, and, and it was impossible to choose between them. How do you know? I liked the fact that, Sussex University, the campus, is just outside Brighton, it's right on the sea there. Looked like a fun place to go and spend three years. As I said, I had a friend of mine who had decided to go. And, I thought, hey, why not? So I applied there. I applied to a bunch of other places, and, you know, I got acceptances from, from a few different universities, and decided to go to Sussex.

Who was teaching you there?

Specific…

People?

Specific…

Specific people, yes. Any inspiration from them?

I… I remember, the guy who was the… I, I can't remember his name unfortunately, but the guy who was the, the vice-dean of the, of the School of Engineering at the time, you know, day one, we're all kind of piling into this lecture theatre. And he drew this graph of happiness on the, on the board. [laughs] And he was basically, he was basically saying, you know, 'You all have just moved out of home, and you're in this place, you know, Brighton, you know, famous for being quite a fun place to live. So, your happiness is going to spike over the next few weeks. And, unless you actually work, and do well in your studies, your happiness is going to drop off the end of this,' this blackboard that he was drawing on at the time. And it made me think, you're right. [laughs] Actually, you know, I, I came here to get a degree. I wanted to do well. I, I had gone there with the, you know, genuinely with the intention of getting a First. And, so I looked at this, I thought, OK, that is, that is good advice right there. You know, you can experience a lot when you go to university, but you, you know, you get one opportunity really to, to be there, get your degree, so, don't mess it up was, was basically the message here, and, and I took that on board.

[12:38]
The Sixties and early Seventies had already kind of, the tide was already gone out, sex, drugs and rock 'n' roll were not necessarily 'it'. It was, get your head down and get a good degree. But you seemed to be particularly driven. Are you?

[hesitates] Yeah, I think I am. I think I am.

An ambitious person.

Yep. I don't think I'd have ended up being the CEO here if I wasn't. I was driven to do well. You know, when I got to university, you know, it's, it's funny, looking at

that school report from Woodlands, you know, 'Simon's a bit slack here.' [laughs] And, and… But, there were a few, and it kind of refers to… I clearly had a bit of a, a dip a couple of years into secondary school of, of my own kind of motivation. But, I look at that now and think, I'm a pretty motivated person now. I was motivated in my years at Sussex to do well, which I did. I had a, a sponsorship through university, I got a sponsorship from STC, telecommunications. I had worked there for a year before I went to Sussex. That was, was a great experience, because I got a greater insight into what work was going to be like, and, the kind of practical application of what it was I was going to be learning at university, and that was in itself very helpful.

What did you do at STC?

Oh, you know, it was kind of, a graduate, you know, sandwich student programme. So, they rotated people around a bit. I remember being, being given this circuit board, and the guy said to me, 'You know, we designed this. It should work, but it doesn't. See if you can work out what the problem is.' And I think he had sort of, given it to me, and, this will keep him quiet for a very long time. I did work out what was, what was wrong with this. And like, 'Oh my God, [laughs] we, we didn't expect you were actually going to fix it.' [laughs] So… But, you know, it was good, because it was, it was about problem-solving, it was, you know, working out the specifications, these components, of what had gone wrong along the way. STC also had… It was at STC where I got a taste of, of what chip design might be like, because they, they were doing that, they were quite an early pioneer I think in the UK of doing, designing their on chips. So I got to see some of that. They had a lot of high performance computing equipment. They were one of the first places I think here in the UK that bought some SPARC workstations when they were brand new and, the hot thing in computing. So, so very exposed to a lot of stuff that I otherwise wouldn't have done. And, and that was, I think that has been really helpful throughout my whole career, having had that experience so early on. And, and being given, you know, sort of, freedom to, to go and play with, with all this stuff that they had, without too much actual accountability.

[15:36]
You must be good at detail.

[hesitates] I think, as, you know, you go through an engineering degree, if you're going to do engineering, yeah, you have to have an appreciation of detail. Designing, you know, circuits, chips, everything has to work. You only have to, you only have to get one thing wrong to get, for it all to be wrong. It's, it's not additive, it's, it's like multiplication, if anything's a zero, the whole thing's zeros, a guy I know is, is fond of saying. And so…

Sorry, who is fond of saying?

There's a, a CEO of a company called Synopsys, Aart de Geus, who uses this analogy of, it's about multiplication, and if anything's a zero, the whole thing turns out to be a zero. And it absolutely applies to, you know, designing a chip. You sweat over getting this thing right, you send it off to manufacturing, and of course it's, it's built, in a, in a wafer fab, and when you get it back you, you can't really stick a multimeter on the circuits to work out where the bug is. You know, it's all got to work, and you're kind of, kind of, almost blind when you're, when you're trying to debug something. So, you do have to have an appreciation for detail.

[16:43]
But the role you play now, at various levels and various, various places, and we'll come to those in a while, means also that you must have some degree of helicopter vision as it's called, be able to see big pictures.

Yeah. I mean, people talk about, you know, the role of the CEO is to be able to, you know, dive down into the detail when necessary, and pull back out. You know, you, you need to spend most of the time kind of, back out at a high level. But, you know, for me, having, having had that background in engineering, having had that background in designing some of our products, you know, does give me, I like to think, an advantage of, you know, a pretty good appreciation of what we actually do, a good appreciation of what our customers do when they get a product from us, and that helps. But you do have to operate at a pretty high level. You do have to trust that the people who work for you are doing their thing, and force yourself not to, to get sucked into the detail in fact.

[17:45]

You joined the IT industry at a very interesting time, at the beginning of your career in 1987. It was a year of rapid and destructive change, I would suggest, which might have presaged your position at the moment. IBM launched the PS/2 with the OS/2 operating system and a new video connection, and MCA, and tried to grab back control of the PC industry. It completely failed, as we know. IBM announces a system application architecture for software development. It completely failed to do it. Two researchers at IBM got a Nobel Prize for discovering high temperature superconductivity. People hoped that that superconductivity would allow them to build a radically new form of, well not semiconductor, a thing called Josephson junctions. It completely failed, after millions of pounds. And the project IT '87 in the UK, there was 250 million for UK research, and God knows where that went. I mean there were, I, I can't find really any historical, any historical success from that. The industry was rapidly, radically changing in form. And STC was a victim of that, was it not?

[hesitates] Yeah. You know, when I went there, as a, you know, before I went to university, so, so I worked there the year before, before I went, I had no idea what to expect really. It was this big company. It was on the industrial estate on the other side of Basildon from where I lived. You know, lots of people went there. But, you know, they had all this stuff that just seemed really interesting to me. They, they manufactured their own circuit boards, when I first went there; made some of the components that they put on them. They built these big racks that ended up in telephone exchanges, and… So it was, it was this kind of, you know, it was like, I was, like a kid in a candy store. It kind of, you know, seeing all of this, this stuff. And, meeting these engineers who designed things, and, you know, which, which was as much about experience as it was knowledge. And, and that, that was, you know, to me just, just really interesting, and I, and I learnt a lot from that. The actual dynamics of the industry and how well the company was doing was, was frankly lost on me, and one thing, one thing in contrast to ARM, you know, after a while, after I graduated, and I went back there in 1990, you know, it was pretty obvious that the company wasn't doing very well, but as an employee, I had no insight into that really. The kind of communications from management about the, the company, its priorities, what we should be doing, what we shouldn't be doing, what was working, what wasn't, was

non-existent. And, and I remember thinking, I can put my feet up on the desk all day, or I could work really hard, and I don't know if it would make a difference to the company. So that was completely uninspiring. And then when I, you know, we'll come on to, you know, when I ended up in ARM, you know, our founding CEO, Robin Saxby, was the opposite of that. He drove a culture that was completely opposite, completely transparent. Would tell us how much money we had in the bank and when it was going to run out, and… [laughs] And it, it was very much, you know, we're at the sharp end of doing things here, and unless you work really hard, we might actually go bust. And, and that, that was kind of liberating to me. That, I really enjoyed. Whereas that initial culture of, you know, you're a cog in this large machine, and, you've got no clue what you're doing, that was, that was completely un-enjoyable.

And that transparency means that you can't sit with your feet on the desk all day, because you do have to make a contribution.

Yes. Yeah, absolutely.

[21:51]
And you decided to move then.

Yes.

In '91.

Yes. So, well I…

What happened in '91?

I… So, I graduated. I spent a couple of weeks driving around California with a few friends. I had a job offer from STC that I, I could go back to, and I took a deliberate decision while studying for my finals that I wasn't going to look for a different job. I was going to go back to STC and kind of, work out what I wanted to do next. So I did that. STC was in the process of being acquired by Nortel. And there was even less

happening. So, I was looking through the trade press, as everybody was, looking for other things to do, and I read an article about ARM being spun out of Acorn to design microprocessors.

Did you know about Acorn?

Oh yeah, yeah I knew about Acorn. I had… So, the Oric was my first computer; a BBC Micro was my second computer. So yeah, I knew all about Acorn. And, and through university I had become interested in microprocessors; through STC I had become interested in how you design chips. And so ARM being spun out to design microprocessors was like, OK, this is the job I want, and it's in the UK, and it's just up the road here in Cambridge. So, I, I actually went back to the careers department of Sussex, managed to dig out the address of the HR department of Acorn, and wrote them a letter, you know, completely on spec. It wasn't, I wasn't applying to a job advert; I just wrote them a letter saying, 'This is me. I'm really interested in this. Please can you interview me?' And they did. And, they offered me a job.

[23:30]
In 1991.

Yeah, I joined in, yeah, I guess the interview would have been in '91, and I joined in, I think March or April '91.

Interesting year. IBM made losses, '91. Linux kernel is devised. And Microsoft launches Windows 3.1, and goes on to strangle the software world. No, I didn't say that. But you know what I mean.

[laughs]

1991. And you start as an engineer.

Yeah.

What was your employee number?

Sixteen. So…

You were the sixteenth employee?

Yup. Yup. So, I…

And the company was being run then by…

CEO was, was Robin Saxby. And, there was a team that had spun out of Acorn, hired Robin as CEO, hired a couple of other people, hired me. And we were in a, a converted turkey barn that's about five miles from where we are now, in the middle of the country, in a village called Swaffham Bulbeck. It was a little cluster of, of barns that they had turned into offices. It was very nice. And, it was, it was completely different from that environment at STC, where, you know, you turn up… At STC, literally, you clocked in with a cardboard punch card, and at the end of the week had to manually calculate how many hours and minutes you had been in the office, because they ran this flexitime programme which was a, just a disaster. ARM, it was like, you know, we're here to do this thing, and, you know, here's a key to the office, and if you're the last person out, lock the door when you go and turn on the alarm. So it, it was completely different. Everybody had to chip in and do whatever it was that was necessary to get the company to the next level of success.

[25:16]
On April the 12th 1984, some years before the first ARM chip as it would later be really called, was delivered from Plessey, and Steve Furber turned it on. And, by three o'clock it was running. And they soon found something amazing about it. It could run on incredibly low levels of power.

Mhm.

Is that not right?

Yes. The… There's a, there's a beauty in the simplicity of that, that first ARM design, that, you know, we, we try and live by today, you know, if you can make it simpler, you can make it lower power.

That was Furber and Sophie Watson?

Sophie Wilson. Yep.

Sophie Wilson.

Yup.

Excuse me. Sophie Wilson. Who had been given some documents by Hermann Hauser saying, 'Hey, look what they're doing at Stanford about RISC. Build me one of these please.'

Make one of those. How hard can it be? [laughs]

Yes. How hard can it be?

Yes. And, and thankfully they did.

[26:15]
Right, they did. So you're seven years into the iteration of this technology by the time you join.

Mhm.

What are those sixteen people doing at that point therefore, in 1991?

Well, up until the company was spun out, the technology was used to power Acorn computers, and, you know, they had gone from a processor to adding, basically three other chips around that, memory controller, a video controller, an I/O controller, to form the chipset of the Acorn Archimedes. But that was all for internal consumption.

They had licensed the design to VLSI Technology, and VLSI had started to use it as a building block in other ASICs that other customers wanted to, to build. So there was this kind of, very early idea of…

Application-specific integrated circuits.

Yup.

OK.

Very early idea of, of, why don't you put a microprocessor inside a chip, and that will probably turn out to be useful. And we didn't know exactly where that was going to turn out to be useful, but, but when ARM was set up as a stand-alone company, the idea was, can we licence this processor to other semiconductor companies on the grounds that, a processor inside a chip was going to, going to be useful? And also, the company had been set up to create a processor for the Apple Newton. Apple was, was the other partner in the joint venture who were building this, you know, hand-held, post-PDA, personal digital assistant, a product that did not turn out to be wildly successful. I've still got one in, in my other office. When you put batteries in it, it still works. I mean it's a fantastic piece of engineering. So, so that was what the company was set up to do, not build chips, but to evolve the, the processor technology, license it to chip companies, and, you know, this business model of, of taking a royalty on the chip, you know, was, was hopefully going to, going to turn out and work well.

[28:28]
So this business model that Saxby came up with, I should say Sir Robin shouldn't I, that Sir Robin came up with, was one, 'Over my dead body are we going to manufacture chips.' I mean, any fabrication processes. 'We'll let other people do that. Not only that, we won't necessarily be making chips ourselves with somebody else's fab plant. We should be licensing it out, and having royalties and licensing income from that.' Quite an adventurous approach.

Yeah. Yeah. And, nobody else was doing that really at the time. Robin came from the semiconductor industry, he worked at Motorola, and, had not desire to build a fab. I mean, in those days, this is before, you know, the rise of TSMC and the other pure-play foundries, so that, that idea of manufacturing in somebody else's fab wasn't really a concept either.

No.

The goal would be licensing to vertically integrated chip companies who were doing everything top to bottom. As you say, radical idea, made even harder by the fact that, the companies we were going to license to had their own processor design teams and their own processor architectures, so you were trying to convince people to stop doing something that they actually saw as a, as a competitive advantage. That was hard. There was a lot of, you know, doors being slammed in faces, and, and being told to go away. Robin's got incredibly thick sin, and, [laughs] you know, as, as the lead sales guy for the company at the time, you know, has got incredible drive, and, was, was determined to make that business model a success.

[30:09]
You did that for eleven years, in that type of role, various engineering positions.

Yup.

You remained an engineer pure to that to that original vision.

Yeah, although, the, the fun about ARM at that time, and the fun of, of any start-up, is that, you know, no one's role is narrowly defined. So, yeah, I was a design engineer, I was really interested in designing microprocessors and chips, and, and seeing how computers get put together, but, you know, from a very early stage it was, OK, we've got this potential licensee coming in; we need to go and pitch them on this thing. You know, 'Simon, you're going to do that.' And, you know, this is how the meeting's going to go, and, you know, we'd be making it up before we walked in the room, and pitching it. And so, the kind of, engagement with, with our partners, with our

customers, people who are going to build chips, that that started, like, almost on day one.

[31:08]
As it would have to. And, after those eleven years, you became EVP of engineering, Executive Vice-President, is that…?

Yeah. Yeah yeah.

OK.

So yeah, over the years I, I took on more responsibility of, of running teams, and, managing projects, and, eventually became responsible for the engineering functions of ARM.

You are now leading 450 staff in this role, in the UK, France and Austin, Texas. So you've become an international company in terms of operations. How do you transfer from being a brilliant engineer, as you obviously were, otherwise ARM wouldn't have, wouldn't have kept you there, to being able to manage people? Very different things. Many people fail.

Yeah. As I said, being in this start-up, everybody had to do a bit of everything, and, and really, I just kind of evolved with the company. You know, as, as we grew, there was just more to do, you know, and ultimately there were, there were projects to manage, there were people to manage. We were hiring more people. I, you know, was doing well, and so got given more responsibility. So, it was very much on-the-job learning. There wasn't a huge amount of kind of formal career development going on in the kind of, you know, like you mentioned IBM a couple of times. There was no kind of, management development programme like a company like IBM would have, or, or even as existed at STC. It was, learn by doing, learn by, you know, seeing what more experienced people had done; learn by going out and visiting these companies all around the world who were interested in using our technology. And just, you know, run faster to keep up.

Which you were able to do, because the transfer was successful.

Yeah. Yeah, I…

It wasn't always successful for many people, was it?

Um… No. I mean, for me, you know, this kind of career progression, you know, clearly it worked out well. I, I had a lot of energy, and, and enjoyed doing it, enjoyed the growth of the company, enjoyed seeing the success we were having. And you know, always, you know, to this day, I think about that time at STC where, I had no idea really what the company did and how it made money, but I, I liked being in the, you know, at the sharp end of it with ARM.

[33:38]
Your next role was Executive Vice-President, Worldwide Sales.

Yes.

And here's a completely different… OK, you're still in the IT sector, and you're still in ARM, and you're still in this, this wonderful growing company with its super-duper technology, but now you're dealing with sales staff, over 100 or so, in the UK, France. You can hear the question in my voice, can't you?

Yes.

Israel, India, Japan, Korea, Taiwan, China.

Not the most natural career move. [laughs]

No? You did it for two years.

Three years in total.

Three years. There you go.

Yeah. Yeah, I, I had been running engineering for a while, and, by that time Robin, I think was probably Chairman then, Warren East was CEO. He said to me, 'Look, you know, to help your career, you should do something else now, because you've been doing engineering your whole career. You should go and run Worldwide Sales.' And my reaction was, you know, 'You've got to be crazy, what are you talking about?' I, I increasingly had been spending my time with the sales team, you know, with potential licensees, you know, selling our technology, and I had been involved in many of our early licensing deals where we had, you know, defined the terms of, of how IP was going to be licensed. So I had a lot of commercial experience, but I had not run a sales team before. But the idea of actually managing them all seemed… I mean I knew them all. So, it felt like a bit of a, a bit of a big step, but, Warren and others talked me into it, and I went from running worldwide engineering to running worldwide sales.

Salespeople click to a completely different clock, do they not, than engineers?

Absolutely. [laughs]

I interviewed for the Archives a man who founded really a very important software company based, happened to be based in Cambridge, and, his scepticism, shall we put it like that, about his salespeople, is absolutely immense. You don't have that, it seems.

Yeah. Well I certainly did have it at times, and, you know, certainly, you can probably walk around here and find people who will say, 'Ah, why do we need salespeople? You know, our products speak for themselves, and, you know, what we're really doing is, is taking an order, and not selling.' But, you know, that, that isn't really how it is. The… The sales team at the time, as I say, I, I knew them because I had worked with them on helping get deals done. So, I, I came into the role, at least being respected by the team even if some of them certainly were looking at me going, 'Well, what the hell do you know about sales?' I'm going to learn nothing from you.' But, you know, for, for me, it was a great experience, and it forced me to learn how to manage and get on with and communicate with and motivate people who

do have a completely different set of skills, and drivers and motivations. So, you know, I'm not going to say it was like, perfect from day one, there was a lot of learning for, for me, but, you know, that worked out well. I, I learnt a lot from it. I formed really great relationships with, you know, many of the people that who were in the sales team at the time are still with the company, and, you know, having had experiences back in those days, you know, it's just helped.

[37:06]
By the time you get that role, EVP Worldwide Sales, you your basic RISC technology is 20 years old.

Yes.

Why isn't someone coming up after you lot, as you came up after other people? You seem to have a monopoly of, one, the business structure, the business model, of getting to market, and two, that form of technology. Other people have got RISC microprocessors, but they're nowhere near as successful as you lot. Why… Where's the competition?

Um… Well, there is definitely competition.

And where is that from?

I mean, there are, there are still people who have their own in-house microprocessor design teams.

You see that as competition? That's interesting

Well, well it…

Now I can see what you mean. Yes.

If… You know, if you want to grow your market share, then anyone who occupies market share is competition, by definition. [both laugh] There are other licensable

processors. So, in… One thing that absolutely helped us in the early days was being absolutely resolute that we would keep the product consistent. We wouldn't let people modify it. One of our competitors at the time, MIPS, was, was very free in what they let their licensees do, and as a result, if you are a software developer, you, you had to choose which company's chips you were going to design your software for. We, I personally, had, you know, lots of conversations with people who said, 'Yeah, I like your product, but I really want to do this to it.' And we'd say, 'Oh, it's a good idea. Maybe we'll put that in the next one, but today, no, we're not going to let you do that.' It's a standard, we wanted to build a third party ecosystem of companies that were going to support that standard, develop software for it, develop models, develop software development tools, operating systems. And if you know exactly an ARM processor from semiconductor company And semiconductor B and C, it's architecturally the same, you can develop that, that standard. And that really helped us. And that was, you know, that was a, a set of decisions that were made in the very early days of ARM that have turned out to be, you know, the right thing to have done, and have helped us, you know, grow to the scale that we have today.

Why haven't others then followed that path?

Well it wasn't obvious back in the, you know, early to mid-Nineties that that would be…

But we're 20 years in now, by the time, by this time, 2004. They've seen this remarkable growth, this operation, that you were employee sixteen, and by now you're delivering 750 million pounds of, million dollars, excuse me, of new business. Your whole sales staff is over 100 worldwide.

Yeah. So, you know, for us, getting design into mobile phones in, you know, as they went from analogue to digital, again, in the moment, impossible to know how significant that was going to be. You know, analogue mobile phones were not owned by very many people, and they were very expensive. So, a digital one, well, maybe it's just a digital one like an analogue one was. But, you know, the whole process, or, or number of cycles that the industry went through, of driving cost, and, driving up the volumes of mobile phones, and us being at the right place at the right time with

the right technology and the right set of partners, enabled us to catch that wave of, of growth. We licensed the processors to many people who wanted to, many chip companies that wanted to play in that market, and of course some were hugely successful and some weren't. Both the, the companies that were successful and those that weren't in the mobile space generally started to look for other markets to expand into. Having a chip with a processor in it that can, you know, run software and utilise all the other features of the chip, turned out by that point to have been a universally good idea, and because by that point so many chip companies already had an ARM processor in their kind of portfolio of IP, and had engineers who had experience of using it, it was just the natural technology choice. And the pricing of our product was such that, it was, it was economically an easy decision to make as well. So we found ourselves being designed into things that we had no visi-, we had had no visibility of. Bcause we had done a license for mobiles, say, and suddenly you find you're in the anti-lock brake system of a car, having not done anything to particularly make that happen. So, so we found just, all these design wins were happening, and of course we were building a, a field-based team to help on some of that, and, build our ecosystem to, you know, provide some kind of specialist software if there was some market we were going after. But, but the fact that we had done all of this licensing off the back of mobile, suddenly meant we were getting exposed to all these other markets. And, and so just, the, the momentum was building. And with any processor, the more software that's written for it, the stickier it becomes. And so, you know, suddenly, the barrier to entry for somebody else coming into this space was, was very high.

Right. Particularly after 2007.

Yes.

When the iPhone…

Yeah. Yeah, I mean when the iPhone took off, you know, that, that was… That actually, you know, it was after a period where, regular mobile phones, you know, look like they'd peaked, or had peaked, and, you know, we were public at that time, and, you know, shareholders sere saying, 'Well, you know, where's the next wave of growth coming from?' Smartphones came along. Drove an enormous wave of

growth. And with, again, the sophistication of product going up, consumer electronics getting more, getting more… Well, the compute side of consumer electronics becoming a bigger and bigger piece, again there were chip companies used to using ARM technology, looking for these other markets to go into. It was just easy to use ARM.

And the manificent, the, the magnificent I should say, excuse me, the magnificent thing about your business model is, you didn't have to set down billions of dollars in new fab; you didn't have to have contracts with fab organisations. You just had to make sure there are a proper number of zeros after the main number on the cheques that came in for royalty and licence, didn't you?

[laughs] We… We did have to care about manufacturing. I mean, oh…

Oh yeah, I mean, you had to make it manufacture-able.

We, we did and we didn't. I mean, not in the, not in the way that a chip company has to sweat over every transistor, but, but you know, over this time period, the industry disaggregated from chip companies who did everything from, you know, marketing and end product… If you take a company like TI, an early licensee of ARM, they're making, you know, Speak & Spell as a product that was, you know, sold to kids, and, and they made chips, and, and really, fundamental technology. So top to bottom, industry disaggregated into companies that built chips, companies that made EDA software that use, you know, as part of their chip design flow, IP companies like ARM, fabs. And, and you know, so through that, through that disaggregation, we invested a lot in building the relationships through that supply chain to make sure that, you know, an engineer sitting at their desk wanting to, to put a microprocessor in a design, could be confident that, you know, if they picked software tools from Synopsys or Cadence or Mentor, an ARM processor was going to work with it. So we invested in R&D work with EDA companies to make it easy to use an ARM design with their tools. We worked with the foundries to look at how transistor technology was going to scale from one generation to the next, and understand how we could utilise those new improvements, or avoid the issues in our next generation processor design. So, the kind of, that ecosystem, the relationships into people around

us in this whole supply chain, became really important, and, you know, to this day we invest a lot in that, so that the design process can be easy, and also predictable.

[45:28]
And you have your third EVP position, of business development in 2007. What has been happening is, it's been building up as a company quite a number of mergers and acquisitions.

Mhm.

And, this was one of the points at which you had become, some degree of expertise but not always. The history of mergers and acquisitions in the IT industry is, in my opinion, I haven't seen a lot of research of it, there must be tons, is that, a significant proportion fail. Did you have that experience?

[hesitates] Oh. Yeah, absolutely. I mean we, we had done quite a few acquisitions, mainly small, and, you know, a kind of spectrum of outcome. Some had gone really well, some were acquisitions of teams effectively. So, you know, our kind of, batting average at that point was not bad. In, I think by last year, running sales, we acquired Artisan Components, which was the biggest acquisition to this day we've ever done, that was close on a billion dollars. It was I think about a third of our market capitalisation at the time. So it was a big deal.

What did that bring for you?

So, again, back to manufacturing. We had, you know, designed our processors, as you point out, kind of, independent of where it was going to get manufactured. We knew that the performance of the processor was dependent on all the other bits of technology that you need to go from what is effectively software source code that we shared to actual transistors on a wafer. And what Artisan did was provide what we call physical IP, low level logic libraries, memories, the, the I/O that sits round the edge of a chip: the physical building blocks that you actually build a chip with. And the idea was that, if we can start to optimise some of that physical IP for our processor, then as performance goes up and up, and the desire to go, keep having

power go down and down, that was going to become more important. So, we went out, we, we acquired Artisan, and, you know, there were issues there, right. So that that was, that was the biggest acquisition we did. It didn't turn out how we expected it to. And, as you say, from my, my CV there, I was running business development at the time, but we weren't doing any business development, because we had just done this big acquisition that was proving problematic. So, I said to Warren, 'Look, you know, this job I'm doing is, is frankly wasting my time, because we're not going to do anything else unless we get the Artisan acquisition right.'

You've got, you got to digest that goat that you've eaten. You're the snake…

Yup.

…and you've eaten a goat, and you'd better…

And it's a big lump in the belly.

Yes. [both laugh] You've got to digest it, rather than eat anything else.

Yes. Yeah. So, I said to Warren, 'Look, I think the best thing I can do for the company is, go and run that business, and try and turn it around, and, and get the, the strategic advantage that we wanted from doing the acquisition in the first place.' So that was what drove me to, to move out to California in 2007, and, take over running that, that business.

[48:58]
And, that business therefore made you the EVP and general manager of the physical IP division as you called it.

Yup. Yes.

The physical IP are actual physical bits that are on the chip surface…

Yes.

…as opposed to your intellectual IP, IP is intellectual, as opposed to your software IP, which is really just a series of digits which describe where the transistor should go. Is that right?

Yeah. When, when you write, we write in, basically a high level programming language.

Is it yours?

No. There's… Basically, everything these days pretty much is written in a language called Verilog, which is an industry standard hardware description language, and in it you can say… You can, you can describe it, in very high level, things like adders and multipliers and register files, pipelines. You can define your, your processor. And it's like software source code. You know, it's, it's like C, or, or something like that. To turn that into something you can manufacture, involves synthesizing the design down to actual logic gates, NANDs, NORs, ANDs, D types, all the low level building blocks, to then have that… So, so that's kind of, that gives you what we call a netlist. To have that netlist manufacture-able, you've then got to take each of those logic functions and replace them with a drawing which is the transistors themselves. That's the bit that we call physical IP.

Right.

So not actual… You couldn't touch them. [laughs]

No no. Sure.

But they are a description of the physical structures that go down on a semiconductor wafer.

Right.

And that's what Artisan did. And they had built this business to, as part of this disaggregation that I talked about earlier. You've got foundries who will build you wafers without needing to know too much about what was on the wafer. But to map from your design down to something that's manufacture-able requires all these, these building blocks. And Artisan had built a business optimising libraries for different foundries, manufacturing processes, and they, they had this business model where they, they gave them away. You could go their website, you could download the libraries, as a designer you can use them. So great, I'm taking out to, TSMC, or UMC, or SMIC, one of the foundries, and then when they, the foundry, shipped a wafer back to you, the designer, they paid a royalty to Artisan for the IP that was on it. So to the designer it was free, and there was a business relationship with the foundry, and Artisan acted as a distributor of IP on behalf of the foundry. A very neat business model.

Very, very clever business model. As clever as yours.

Absolutely. And that was, that was when there was, there was phenomenal synergy in the businesses. [pause]
[51:50]
What we found… Artisan weren't as focused on the leading edge as, as we needed them to be. So we, you know, we did a lot of work on leading-edge design, creating specific optimisations for our processors, you know, really deepening the relationships with the foundries. The foundries themselves were, you know, from pretty much that point on, as the processing technology was getting more and more sophisticated, the number of people, number of foundries there are in the world offering manufacturing services on that leading-edge was going down. So there was effectively a consolidation phase going on there. And we're in the middle of kind of, all of this. So, so getting that business on the right track to be focused on the strategic objective we had, which was, how do you make better microprocessors, how do you make it easier for people to deliver really high performance with really low power, and not have to spend, you know, a year doing back end layout of this processor, it accelerates designs. That was our strategic goal.

Right.

And that was what I went there to, to do.

[52:56]
And since 2005 you've been a main board director of ARM.

Yeah. Not long after that acquisition of Artisan I joined the board of ARM.

And so this meant, from 2007 or so, moving to Palo Alto?

Yes. Our office out in California, we were in Sunnyvale originally when I moved out. We were in Los Gatos before we acquired Artisan, then moved to Sunnyvale. Our office now is in San Jose; I live in Palo Alto.

How was that move? By now you're married.

Yup. And, my… When I agreed with Warren that I was going to move out to California, my wife was expecting our third child. So we waited until he was born before the family moved out, I moved out a couple of months beforehand, just after he was born. California is, is a, easy place to go and live. I mean, you know, the sun shines every day, you know, English is the first language of, of most people there, a lot of people who are there. It is not the hardest from a kind of culture shock point of view. I had been to the US obviously umpteen times up until that point. My wife's from Western Australia, so the weather was a bit more, similar to, to what she had grown up in than Cambridge was. So it was a pretty easy move to be honest.

[54:20]
And you moved from the Cambridge phenomena, which I want to ask you about in a moment, to the Silicon Valley phenomena. Which is the most dynamic?

Oh, I mean, they're just completely different.

How?

Silicon Valley is… Silicon Valley is, is a bit of a bubble. You know, there's, yes, similarities with having a world-class university. Obviously there's a world-class university here, there are a number of them in in the region. In, in Silicon Valley, lots and lots of people move there to go and be in the tech sector. There's a lot of venture capital money, there's a lot of people who have had successful exits of their companies, either doing it again or, at some point becoming an investor, becoming an adviser to other businesses. There's a huge celebration of success as part of the culture in Silicon Valley, and, almost an expectation that you're gonna work in some interesting thing in tech. Here in Cambridge, you know, there's a lot of that. It's obviously on a, on a smaller scale, and the, I would say the, the city, you know, or at least, this was the case when I moved from here, obviously, is, is less dominated by the tech sector than Silicon Valley is generally.

[55:54]
OK. IBM tried to set up a research centre here in the 1950s in Cambridge, and was turned down.

Oh really?

Yes, that's part of the, the history of the Cambridge phenomena. And then Cambridge County Council changed their planning rules and, and bang. I suppose being in Cambridge is a certain advantage, and of course you have, your company has made a massive contribution to the Cambridge phenomena, but it's also a certain advantage, is it not?

Cambridge has been a great place for, for us to be. You know, it's close to London, it's close to, you know, Stansted, you can hop over to Europe. I was meeting with, with some of our, our team this morning, and, who… The meeting I had first thing was with a bunch of people who have come from all over to be here in Cambridge, some people who are on secondment from Japan, people from, there's a guy from Poland, from Germany, people who have lived all over the world. And they were discussing how, you know, in their research, Cambridge has got, like, more hours of sunshine than any other parts of, of the UK, and it's driest, so actually enjoying the weather [laughs] quite a lot. You know, we, we found, for us, as a, as a technology

hub, it's, it's been fairly easy to hire people to come to Cambridge to, to help with our growth; whether it's from other parts of the UK, mainland Europe, or in fact all over the world, Cambridge has, has been relatively easy to get people to, to move to. And people like being here. I mean it's a, it's a cool place. You go, go into the city, and you're wandering around, and, you know, there is so much history of science in Cambridge. It's quite an incredible place really.

[57:41]
What's your working day like? When do you start?

I… So if I'm at home, in California, I will generally get up at about, between six and 6.30. I'm looking through the overnight emails on my phone while I'm having my breakfast. I'm generally in the office before, just before eight. I will often use the, the commute time, which is about half an hour, to talk to somebody, you know, here in the UK while I'm driving in.

You drive yourself?

Yeah. Yeah. Not quite at the point where my car can drive me, so… [both laugh] I occasionally experiment with the, the features of, the self-driving features on the Tesla I'm driving in, but… And, and then it's… The mornings are particularly, you know, full-on, because of the, the time zone overlap with the UK. So, it's usually, video conferencing.

It's just a string of meetings for you, is it?

Yeah. Especially the, the mornings are usually back-to-back with meetings and calls.

When does Simon think?

I generally… I, I try and arrange my week so that, Fridays is fairly open, and I will often, in my house I've got a good office set-up, I'll often work from home on a Friday. Typically, again, first thing in the morning there's calls. We use, you know, video conferencing a lot. Over the last couple of years the use of video conferencing

has gone through the roof here. So, that is, you know, very much a, a common form of communication. But, but I, I try and carve out some time when I'm not travelling on a Friday to step back, regroup a little bit, you know, do, do some of the things I've been thinking about through the week. You know, maybe write something. The kind of, longer emails from me to my team [laughs] tend to come out on a Friday after I've had a bit of time to, to think about things that are going on.

Bill Gates used to take his, basically, not a sabbatical, but a vacation, but it wasn't a vacation really. It was several weeks of him reading tons of stuff. Do you do that immersion process, or, you just keep it going?

Tend to just keep it going. I, I don't do the, the Bill Gates sort of disappear off into the mountains for a week and, and reread stuff and think. There's a lot of international travel with my job, and, I do find the, you know, particularly the end of a week, travelling back from somewhere on the plane, you know, whether it be consciously thinking about it or just, you know, crashed out asleep, there's a lot of sort of, synthesis that goes on. The, the… There's enormous benefit of, of travelling, and, and meeting people face-to-face, and, and go to different countries, and seeing what it is people are actually doing with your products. And, and meeting people from all different parts of the supply chain. It just gives you a broader context. And, and some of these things, I, need a bit of time occasionally for it all to sink in and go, oh OK, as a result of what I've learnt, you know, maybe we should do this slightly differently, or we should go and experiment with that, or we should stop doing this, or do this more. So those long-haul flights, as painful as they are, and as monotonous as they are at times, do provide that kind of break away from the, you know, tsunami that is email. I very rarely use Wi-Fi on an aeroplane.

OK. You've got to break.

Because… Yeah, it does provide the break. I also very rarely watch movies on aeroplanes either.

OK. Good.

It is, it is a time just to stop and think, and, there's something about the white noise in the background just helps.

I have a friend in the IT industry based in Seattle, Washington DC, and, he uses these white phone, earphones.

Right.

Where, where, white noisy earphones, where you don't hear anything.

Yup.

Do you use those, or not?

No, I don't. I don't.

You don't mind aircraft noises?

I… I do use the earplugs a lot.

OK

So, I'll typically stick those in.

OK.

That helps block out.

[1:01:46]
2013, you are anointed the CEO of ARM, the whole operation.

Yup.

The whole caboodle. Only the third CEO in the whole history of ARM. Yes, that's really quite something isn't it?

Absolutely. Yeah.

By then you are, how old?

[hesitates] 2013. 46, 47.

46, 47. Still young. Still plenty of energy. The chairman unwittingly, untimely retirement of the incumbent.

Ah.

What's that about?

So…

Hired a new chairman following the untimely retirement. Who was the incumbent?

So… Well, so, look back. I think, we did a, a very good job on, around succession. So chairman succession. Doug Dunn had been our chairman for a long time. Doug's a great guy. We, we recruited a new chairman, Sir John Buchanan, knowing that, you know, Warren was then going to step out, so, John then ran the succession process. The board interviewed a bunch of people outside, interviewed me, put me through the wringer. I got the job. About a month after we announced that I had become CEO John phoned me up and said, 'Bad news. I've been diagnosed with pancreatic cancer.'

Ooh-ooh.

Exactly. So, that is what led to John's untimely departure. Unfortunately, he defied the, the medical odds and, and lived quite a long time afterwards, but, pancreatic cancer is not something you can escape unfortunately. So, we then hired Stuart

Chambers as our chairman. Stuart was, was great, a phenomenal chairman for me as, you know, being first-time CEO, you know, I, I needed a, a coach as much as I needed a chairman, and, and Stuart filled those roles. So I, I really enjoyed working with him. So yeah, the untimely departure was unfortunately due to John's health issues.

[1:04:01]
By now as well you are being seen outside ARM. You are a board member of ESDA. What does that do?

So, ESDA is an industry association. So there's a couple of industry associations I'm on the board of. ESDA specifically is around EDA and chip design, and as an IP company, as I said earlier, we work very closely with the EDA industry. I got invited to join that industry board, which I did, and, yeah, that, that helps promote standards amongst that kind of design community, and, and you know, build, help build a strong industry network.

[1:04:50]
I've looked, obviously, at your annual reports, well, until recently, when you aren't producing anything now you've been taken over. And what I would have thought would have been that there would be a huge lawyer's bill to protect your IP. There doesn't seem to be very much left of IP going on. Is there? Am I not seeing it?

We have not suffered from IP theft in the way that, that you might think over the years. We've had the odd issue. But, you know, we've not had, you know, to any large degree, clones, or, or, or general IP theft. Our business model I think helps generally protect us here. We are, you know, licensing to companies who really want to buy into our roadmap, and so, you know, paying us fairly for use of the technology for today's product is the thing that's going to enable access to tomorrow's product. Like I said earlier, software stickiness is a big thing with a microprocessor architecture, but by the time you've used our product, imported a load of code, you want to keep that going through our roadmap. So people, people want to develop long-term relationships with us, and that is one of the factors I believe that's helped avoid any, any bad IP issues over the years.

President Trump and others are banging on about China stealing IP of Western IT companies.

Mhm.

Not your experience?

No. We've had a, a positive experience of building business in China. My experience has been that the companies we've worked with are incredibly pragmatic, they want to get their product to market. They want to do that as quickly as possible. And licensing established high quality IP from us helps them focus on the things that are most value-add for them. Helps them spend their R&D on things that are most differentiating for their product. And so, we haven't had issues of IP theft in, in China.

[1:06:45]
Board member of Global Semiconductor Alliance.

Yup. That is another industry body.

Isn't this the body that comes out with the roadmap?

No.

The silicon roadmap. It's not?

No. I know who you're thinking of. Er…

No, sorry, it's all right.

But, no, no GSA is, it's association of largely semiconductor companies and, and a bit of supply chain. I've been on the board there for a while. I'm actually the Vice-Chair of that at the moment. And actually I just became Chairman of ESDA at the last

meeting. And, and GSA has got very broad membership, very global membership, and again, it's about building network, it's about doing things together to, to help promote the value of the semiconductor industry.

[1:07:31]
Is Moore' law over?

Well, depends how you look at it. [both laugh]

We haven't got all day.

[laughs] So… Stepping back. Yeah, Moore's law. Moore's law was actually an observation of…

It was.

Yeah, what, what Gordon Moore thought the semiconductor industry do. It sort of became a bit of a self-fulfilling prophesy, but the…

Well, yeah. It became a way of organising R&D to make sure that it got there.

Yes. And organising an industry, yeah. The, the semiconductor equipment companies, the fabs, everyone needed to march to a roadmap, and, yeah, that back lot defined in every way was it. Many years ago now the kind of concept of, from one generation to the next, you know, you scale by, you know, .7 on a side. That stopped happening. Power scaling stopped happening. So, the industry has been working hard to, make up for the fact that just the optical scaling from one generation to the next isn't delivering what it used to. So more sophisticated materials, different transistor structures, you know, the future is about, 3D stacking of, of die, and different interconnect structures, and different material. You know, a whole load of R&D going on across the semi industry, to enable the effective delivery of what looks like Moore's law. So is it over? In the conventional sense, yeah it's been over for a while; in the sense of, are you going to get more transistors, better density, higher performance, that's going to keep going for some time.

How long?

I… I… Probably for at least as long as my career. [laughs] The remainder of my career.

[1:09:26]
OK. Do you see any technology coming along to replace silicon?

Well, so, there's, there's some real funky stuff going on with DNA at the moment that's, that's kind of interesting to look at. People have been talking about carbon nanotubes for a long time. Yeah, I think, silicon is going to be the, the backbone or foundation, whatever you want to call it, of chips for a long time to come.

[1:09:53]
You're a member of the UK Prime Minister's Business Advisory Group. What are you advising them on?

So I *was*…

You was? You were?

So, under David Cameron, he formed a business advisory group. That was, that was quite a broad collection of, of people from, from different industries, you know, insurance, oil, tech. There was a quarterly meeting at Number 10 which was really interesting. A bunch of topics to talk about. Of course, after he resigned, that got put on hold.

Perhaps Boris will revise it.

Maybe.

[1:10:27]
Member of the UK Ministry of Defence Innovation Advisory Panel.

Mhm.

What are your recommendations then?

So that's really kind of, getting off the ground now. The MoD is interested in how industry innovates, you know, is looking at the, the future of issues that it's going to have to deal with, and, you know, it's obviously got a lot of legacy. And, you know, is wanting to bring more innovation into what they do. So, again, there's a collection of people from, from a number of industries that have been brought in to that. We've had a couple of meetings so far. I've actually got a meeting there later this week. And, it's, it's, it's early days, but, you know, the idea is to learn from the, from best practices across industry.

I should think when you see the, the hardware of a new aircraft carrier, which has no aircraft, and is leaking internally, you tear your hair out, and you say, how about a bit more technology folks? [both laugh]

Yeah, obviously, they, they have a very large budget on what they spend, and build some very large pieces of, of hardware. And, they use a lot of technology as well.

[1:11;34]
And, then a company called SoftBank Group takes a look at the world and says, 'We want to invest.'

Mhm.

And, approaches you, your company, I don't know whether they approach you or your chairman, but they approach you somehow, and says, 'What about a takeover?'

Mhm.

Did you think about it twice, or, when you saw the money, did you say, 'Let's go'?

[laughs] No, I absolutely thought about it in, in multiple dimensions, not, not just money. So, so they history of that. Warren and I actually met Masa in, I think, about 2006 in Japan, just after he had bought Vodafone. He bought Vodafone Japan, which was the basis of SoftBank KK, the, the mobile carrier there. Yeah, we were in all mobile phones at the time, we had relationships with, with different carriers. We went and met with Masa, and, somebody had set up the meeting. And he was very interested in ARM, it was clear he was like, quite intrigued by what we had done. He has got a very broad entrepreneurial background, has reinvented SoftBank many times over the years, and was interested in what we had done. Turns out very interested, has had a very long-term interest in microprocessors. Every so often we'd run into SoftBank in some way. Met Masa a few times over the years. And then after, after Warren had left ARM, he phoned me up one day and he said, 'Oh, I got a call from Masa saying,' Masa had assumed that Warren was chairman after he had stepped down as CEO, which he wasn't, but saying, 'Hey, you know, can we have dinner in London?' So me and Warren met with Masa and one of his guys in London, we had diner, nice discussion. We walk away, and Warren and I are looking at each other going, 'Well, that was a bit weird. Wonder where this is going.' About a year later I met Masa in San Carlos in California. We had a discussion about things we might do together. Didn't go anywhere. About a year later, I get an invite to go and have dinner with Masa at his house in, in the Bay Area. I go to that. We have a discussion about AI and IoT, and the future of technology. And again, I walk away thinking, OK, that was interesting. A couple of days later he rings me up, saying, 'Simon, I'm very excited, and I want to meet with you and your chairman this weekend.' Er… OK.

[1:14:04]

And, and… We had, we had always thought about defence, you know, defence of the company, you know, what happens if we get, you know, a random phone call with a… And, and so, I had a defence manual, and I used to keep one here, one at home, one in my desk in California. So, literally, I'm on the phone with Masa, I tuck the phone under my ear. I'm opening the drawer, getting the defence manual out, flicking through. Aha, aha. [laughs] Skim-reading the, you know, what to say, what not to say. OK, well… And then, you know, followed through the script. Basically, basically, try to get Masa off the phone as quickly as possible, whilst then, you know, I talk to our general council, and our, I think it was just the general council actually at

the time. Spoke to my chairman, who was on vacation in Turkey. We ended up meeting Masa in this fishing port, Marmaris, in Turkey, where we had lunch in a restaurant where Masa had booked the whole restaurant, so we didn't get interrupted. And they made us an offer. And, and what was I was thinking about at the time was, you know, put your shareholder, you know, protect shareholder value hat on. Is this a good outcome for shareholders? Tick yes. But I was really thinking, you know, is this a good outcome for the company? You know, I had worked here, almost my entire career. I wanted to… I would not have wanted to sell the company if I thought it was going to destroy the value, destroy the partnerships that we had built, and it would be the end of the technology. And for pretty much anybody else acquiring ARM, it would have upset the neutrality. Because we, we license to everyone. We license to companies that compete with each other fiercely. If one of them bought us, nobody else would ever license technology from us ever again. SoftBank looked, and are, completely neutral. They can own ARM. They don't buy chips, they don't manufacture chips. They're big into technology of course, but, but they weren't going to upset that neutrality. So it looked like a great way to actually grow the company faster. And not being public any more, Masa was very keen on investing more aggressively for the future, so we'd be able to expand, you know, without having to explain to the stock market every 90 days why our margins were going down. So it looked like it was going to be a, a winner all round. Great outcome for shareholders, but great result in terms of our ability to drive the company more aggressively. Which is how it's panned out.

[1:16:33]
Staggering outcome. Staggering outcome for shareholders.

Yeah.

42 per cent over the all-time high share price.

Yup.

How can an acquirer pay 42 per cent over the all-time high share price, and get a return?

So…

And you may know the answer to that, because now you're not only CEO of ARM Limited, the whole operation, but also you're a board director of SoftBank Group.

Yup. So, Masa takes a very long-term view on, on things. So, you know, the, the premium that we negotiated was about, you know, how much you'd have to pay to buy the company from the, you know, from the public markets, from the owners of it, the shareholders at the time. And you know, you can look at that, one way you can look at that and say, OK, roll the clock forward three, four, five years, you know, the company keeps growing. What will the company be valued in the future? Discount that in today's terms, what's a good premium? You know, do the risk…

Have you been a dividend payer?

We were a dividend payer. Relatively small, but we did pay a dividend. We…

So you're more of a growth stocks…

Oh absolutely, yeah. We bought back shares to offset dilution from stock based comp- Pay, pay, maybe, maybe a one per cent dividend. I can't remember exactly what the numbers were. But, not enormous. But it was, you know, it was enough to, keep everybody happy. So, so yeah, that, that 42 per cent premium was, was what we believed the shareholders, the minimum the shareholders would accept, and obviously they all accepted that. But for Masa, you know, he, he takes a long-term view, you know, this is a man with a 300-year view of the company, and he's looking to build a company that's going to survive and prosper long after he's left this earth. So, you know, he is not measuring the return in a way that, you know, public market shareholders would, or most acquirers would, who are under the pressure of the public markets.

[1:18:37]
Your growth is going to probably come from what we call the Things That Think.

Mhm.

The Internet of Things.

Mhm.

The ubiquity. I remember in the late Nineties going to MIT and watching presentations about what their strategy was called, Things That Think

Right.

At the Media Labs. And, it has, it has taken an awful long time to get here.

Yes.

And you hope to be very successful about it. Let me suggest this to you. This is a philosophical question.

Mhm.

It's the second last question, so…

OK

'When the price that we pay for having wall-to-wall technology in our lives, which is what you are aiming for, and what you want to profit from, is potential chaos. Regular attacks, threats to our safety, privacy and finances. We need to know that each new invention is truly worthwhile. It may seem blasphemous to say it in the age of tech worship, but not all technology equals process, and not all technology is necessary,' said Clare Foges in the Times on Monday the 20th of August 2018. I like to quote that to every technologist like you.

[laughs]

Your comments sir?

Ah. I, I don't disagree. It… The security and privacy issues around IoT are, you know, are, are complex, and not ones that the tech industry can just brush aside. And, and you know, it happens less these days than it used to, but, but certainly there has been a, sort of, mentality around, you know, technology is good. I mean, you know, look, you know, life expectancy has gone up enormously over the last, you know, 50, 60 years; it's all about technology, all technology is therefore good. And any disruption that happens, well hey, that's just, the price you pay. That is, that is not how we think about life. When, particularly when you think about security, you read, you know, every day, I'm sure today in the *Times* there's an article somewhere about, you know, some cyber threat from something. And this is before the Internet of Things is really deployed in any, any big volume. So, one area where we have really focused is, is around security in IoT devices. So, we are already in billions and billions of, of, very small chips that are, the kind of device that you would find in a smart thermostat, or a smart light bulb. We've done a lot of work on, OK, what sits around the microprocessor to allow you to build a secure system? Where do you put the encryption keys on the chip to keep them away from the application? How do you architect that in a way that software can be built in a, in a sensible and, and tractable way? So, a lot of work down on, on the devices around security. We're also building an operating system, we're putting a whole software stack to allow remotely deployed IoT devices to have their software and their security managed remotely.

And that's going to be open source, your operating system?

Some components of that are… Some of the components of the software are open source, not all of it is open source. Open source and security…

Don't mix very well.

Well, no, there's a school of thought that says, if it's open source, it will be secure, because lots of people will look at it.

Mm.

That's a, that's a complete misconception. You can have security flaws in open source things, you can have security flaws in non-open source things. What matters is, that you care about security. And, we have a role to play in that, but no one company is going to fix security for IoT. You know, when you buy, you know, you, you've got this recorder sitting here. I don't know if you can Bluetooth connect that, or whether it's got Wi-Fi built in, but, imagine you did. When you pick that up off the shelf in, Dixons or wherever it was you bought that from, you've got no way of knowing whether, whether the company that made it spend any time thinking about how good the security is. So, you know, I can do everything in my power to make sure the IP that goes into the chip is all built with great security practices, but if the person that integrates it doesn't care, then, you know, all of that's for nought. So, we are also trying to drive some industry collaboration around security, because it is the responsibility of the supply chain to get security to the place it needs to be.

And I, that wasn't my last question. I've got two more.

Mm.

[1:23:12]
Intel found that it was not known by customers, by the end customer, and it needed to be known, and therefore we have Intel Inside, ding-dong, ding-dong!

Mhm.

Are you going to see that, the need of that?

So, we have never felt the need to build a consumer brand.

You never felt that?

No. No, I mean…

Do you feel… Would you feel it in the future, do you think?

I, I can't imagine it any time soon.

[1:23:39]
OK. What's the biggest mistakes you've made in your career?

Oof! Biggest mistakes I've ever made in my career. I think… Probably, made mistakes around people. You know, one thing I have learnt is, having a great team who are all aligned around what it is you are trying to do, makes an enormous difference. And, I have absolutely been guilty of tolerating having some great people who weren't all, you know, rowing in the same direction as everybody else.

You're not a good axe man?

[hesitates] I've learnt to be better at that, let's put it that way.

OK.

I've made the mistake of tolerating that for too long in the past.

You, you tolerate, not failure, but lack of excellence, is it, that…?

Not a lack of excellence. It's about alignment. You can have somebody who's absolutely brilliant, but doesn't really buy into what it is that you're trying to do.

OK.

And it can look like, well they're producing some quite good results, but actually, that kind of friction around, they want to go in a slightly different direction, and they're not really on board with the strategy that, that you're trying to pursue. That creates drag. And, yeah, something I've learnt over the years is to, is to deal with that, to recognise it and deal with it. Despite how brilliant the person appears to be.

So people above… Sorry, so people around you have to be real team players?

Be… Team players, be bought into the strategy, be up for a discussion, and then, you know, when the discussion's been had, when the decision's been made, get on board with executing the decision.

And you're quite ruthless now in that process?

I'm a lot more ruthless than I was.

Thank you very much Simon Segars.

Thank you.

[End of Interview]