Capturing the Past, Inspiring the Future

Sir John Chisholm

Interviewed by

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Welcome to the Archives of Information Technology. It's the 11th of June 2019, and we're in the offices of the Worshipful Company of Information Technologists in Barbican in London. I'm Ian Symonds, and I've been working in information technology and management consultancy since 1976, a period of enormous change in the industry.

[00:23]

Today I'm talking to Sir John Chisholm. Sir John started his IT career in management roles at early software and systems companies like Scicon, CAP Scientific, and Sema. In 1991 he became Chief Executive of the Defence Evaluation and Research Agency, later rebranded as QinetiQ. He is perhaps best known for this role in leading QinetiQ to become an internationally successful technology services company, which floated on the London Stock Exchange in 2006. He became Chairman of QinetiQ in the same year. We'll be talking about Sir John's background and influences, some key events that shaped his career, and his views on the industry today.

[01:07]

Sir John, where and when were you born?

I was born in Middlesex Hospital, not far from here, in 1946, very much in the wake of the war. My father was a bomber pilot, never expected to survive the war. And, he and his young wife decided to leave England by means of buying a small single-engine plane and flying out to, Australia is what they planned. In fact, they kind of ran out of money in, on the way, in India, and he needed to have a job, so he got himself a job there. And he spent basically the rest of his career in the Far East. Up to the age of sixteen I called Calcutta my home.

And what are your memories of that?

Of Calcutta? It was, although it was well passed the Raj, it was, you know, a wonderful sort of post-colonial life. My, I hardly ever saw my parents in the evening, they would always be out at a party somewhere. And…

And what were you doing, apart from your early schooling?

Well I used to fly kites. As soon as I put a kite up, the local villagers, a storm of kites would come out to fight me. [laughs] So I got, got quite good at that. But, ultimately of course I had to come to school in England, and, about the only people who would offer me the necessary scholarship, it being the fact that translating rupees into pounds didn't buy you very much in those days, and, so, I went to be educated by monks at what was then a new school, Worth Abbey.

Which is in West Sussex.

In West Sussex, yes.

[03:21]
We'll come on to that in a moment. What was your family life like? Well you said your parents were often out at parties, but, what else.

Yeah, well it was, it's certainly a world which doesn't…

They were supportive, were they?

It was a world which doesn't exist any more.

Mm.

If there's any language other than English that I don't sound a foreign, it's Hindi, because, obviously I was brought up by an *ayah*. [laughs]

Which is a kind of nanny.

Yah, that's right. Who used to speak Hindi to me. So, I can say '*Tum*[Hindi],' [laughs], in an Indian-sounding accent, which I used to hear a lot, which is, 'You're very very naughty.' [laughs]

Mm.

And, as I say, it's a, it's a world which doesn't exist any more. The only connection to my current life is, in amongst my father's sporting activities he was a founder of the Calcutta Motor Sports Club, and in the Fifties he used to race a motorcar, which is something I do to this day.

Yes. You had a Jaguar XK120.

120.

Still do.

Yes, still do. I still do. In fact, I've just come back from a rally in Spain with that. But I race proper racing cars these days.

[04:40]
Yes. OK. So, you left India, and you were sent to Worth School. That was a day school, was it not, a boarding?

No, it was a boarding school.

Boarding? OK. So your parents were still in India at this time, were they?

Yup. That's right, right, yes.

OK

Yeah, and it was, you know, it's a strange life now. When I mention it to people these days, 'Well how did that work?' I saw my parents once a year basically, for one of the holidays.

Mm.

And went to holiday homes for the holiday time, the holiday homes for the holiday time in, in the UK. Would anybody consider that as a way of bringing up their children these days? I doubt it. [laughs]

And how, in what way was that formative for you?

Well, I mean, it's not something… When you're a child, you don't have any comparator. [laughs] It was life. And, I guess it teaches you self-reliance. Doubtless it's all got all sorts of negative learnings that, that, you know, other people talk about. [laughs]

[05:53]
Mm. Mm. OK. So, what are your fondest memories of Worth School?

I mean I was an athlete at Worth School, and so I very much concentrated on my physical prowess. Because, in schools in those days, my other characteristic, of being good at sums, was a distinct social negative. [laughs]

Yes. OK.

So…

So what was it, rugby and…?

So, I mean I was in all school teams, because I could run fast. So obviously rugby. When they played football I played on the wing at football. In cricket, I, I had a reasonable eye, and I could run fast around the boundary. [laughs] So, that was the, that was my key memory from, from being at Worth.

OK.

And, of course it gave me a lifelong facility to get up at five o'clock every morning.

Which you still do to this day.

Which I still do to this day.

And did you have any interests outside school? Or was…

It was… It was an all…

All-embracing…

All-embracing experience.

[07:06]
OK. And what did you do for A Levels?

The, the classic mathematics and science subjects.

Mm. Maths, physics and chemistry was it?

That's right. I mean, being good at sums gets you into that space.

[07:19]
Yes. And, when you finished at Worth School, what happened then? What did you do then?

Well, I needed a scholarship again to go to university.

Yes.

And, so I wrote to the Government and asked them about scholarships, and they sent me a book. Because I didn't qualify for county scholarships, which were county grants, which were what most people were depending on.

Yes.

Because my parents didn't live here. So, I ran my finger down the right-hand column, which was how much [laughs], and amongst those that came up through that elaborate search process was Vauxhall Motors. So I applied to them for an apprenticeship. And I was successful in that. And that worked out very well, because, while there I got the scholarship to, passed the scholarship exams to go to Cambridge.

OK. Which college was that?

Queens' College.

And was there an expectation that when you finished at university you would spend your career working for Vauxhall afterwards?

There was a hope, but there was no obligation. But… When I was up at Cambridge… These were the days when there were nine men for every woman. But, one of the things that, having gone through Vauxhall apprenticeship, it made me have a motorcar. Although that was strictly not allowed, I did manage to keep one. [laughs] And that was extremely useful as a social means of getting to know the girls at Girton. One of those distinguished herself to me, and I admit, I guess to her. And, so, we decided to get married. Because she was the year behind me I stayed on to do research at Cambridge, but then I had to get a job.

Mm.

And then I applied to a company called the Council for Economic and Industrial Research, CEIR, which by the time I joined had rechristened itself Scientific Control Systems, Scicon.

And this, this relates back to… I mean you did control engineering at Cambridge, didn't you, and mechanical sciences?

Yes. The key thing that happened… The key thing that happened, because, in my undergraduate degree I hated computing, because, it was all punch cards, handed in, wait a week for it to come back.

Yes.

Debug, the same thing.

And that was your first exposure to IT at that time?

That was my, my first exposure to IT.

Yes.

However, in the control labs we had our own computer. And, that got me into computing, and in particular to the joys of mathematical modelling. It's a wonderful thing. You have a complex, you have a, well a physical, in those days, issue to solve, and you build a model, and you try it out on a computer, and you see how things go wrong. And, therefore, you get an idea of how to improve them. And, so that's what my research work was about at Cambridge. And, I then joined Scicon. And you're going to ask me about the break in my career. I mean, the key first thing, and most important thing in my life other than getting married, was getting involved in what was then called computing. And, I thought, why was I… What first… What first I ever see which attracted me to that, it was a cartoon in some magazine. It could have been *Punch*, or it could have been the *New Scientist*, but I don't know. But I, I remember it to this day. It was of a, a room with computers, and you could tell they were computers because they had [inaud], and two white coated gentlemen who were obviously in charge of the computers. And, one opening the big cupboard, and saying, 'Would you like to see our new computer?' And it was a little matchbox down at the bottom. And, that intrigued me to understand what was going on behind that, and the idea of the space race having generated the technology to shrink computing.

Mm. So this was one of the first microprocessors, was it?

That's right.

Yes.

They weren't called microprocessors in those days. But anyway…

Mm.

That caused me to think, this could be a good place to go. And that was an unbelievably good decision.

Mm.

Of a dimension which you couldn't, I couldn't possibly have imagined at the time.

Mm. Mm.

[12:26]
So that, that was the first thing. The second thing is that, shortly after… In those days a graduate could get a job and buy a house at the same time. [laughs] Those were different days.

And you got married about this time, didn't you?

And I got married, yes. Yup.

Yes. And you had been…

We were desperately short of money, as we had a mortgage to pay, but, but we could do it. [laughs] And, within six months or so the company announced that it was going to relocate out of London to Milton Keynes, this new city that was, what, I mean, only planned at those days, in Milton Keynes. And so, we took the brave decision, I took the brave decision I guess, that we should move, we should be amongst the first to go to Milton Keynes, because that would be a good career move.

Mm.

And, so, we decided to relocate to Milton Keynes. It was unfortunate, the early Seventies economic collapse, you know, that ended up with, you know, miners' strike and all that kind of nonsense. So selling the house we had bought in London for the price we had bought it proved to be difficult, so I ended up commuting to Milton Keynes for eighteen months from south-east London, which was a challenge.

Difficult, yes.

But, in that period, in fact just after we had got into Milton Keynes, which was still a plan, none of the roads leading up had been built, the then managing director, John Ockendon, who will turn up later in the story, who was managing director of Scicon at that time, came up to see the small group of people who had moved to Milton Keynes, 20 or so of us, and said, 'I've got news for you. The economic circumstances of our, of the company, have changed, and we're not going to move to Milton Keynes, we're going to stay in London. So, here's your choice. We can, we will move you all back to London, if that's what you want, or, you can stay up here and see if you can develop business out of Milton Keynes.' I was kind of, the leader of that group, you know, out of 25 or so, just by, you know, a few months of seniority or something, I don't know what. And, so, the rule was, if we wanted to stay, we could see if we could make a business out of Milton Keynes. The only stipulation was, we must not compete with anything going on in London. [laughs] Which was, turned out to be a wonderful thing. Because we built a business based upon mathematical modelling, which is what we were, my team then was doing, because I was running a team, and, for the next ten years, or nearly the next ten years, not quite, we built that business to about 140 people, and it was a wonderful experience.

[15:47]
So this all happened relatively quickly after you joined Scicon, did it?

Yes. Yes, that's right. Yes.

So it was a great opportunity.

Well, I was the first engineer that Scicon employed. And so, this thrust into modelling physical systems. And we developed a technology: I didn't, but one of my team thought of a brilliant idea, I helped make it into something which really worked, commercially, called unit modelling. So, whereby, if you had a complex system, the challenge that was being faced by the, particularly the aerospace industries, how could you ever build another new aircraft system? Because, it was getting so complicated that the number of trials you would have to do to prove that it worked would never be affordable. So, we developed what we called unit modelling, which said, you break the system down into distinct units. You prove each of those units, you build a model for each of those units, prove your model for that, and worked across the whole span of, of possible inputs. And then, finally you stuck it all together, did the whole system, and then, you had only to do limited trials of the whole system to be confident that you knew how it was going to work in all circumstances.

Mm.

That was the idea. And it was actually a very good idea.

And it's an idea which is still in use today isn't it?

Oh, absolutely. I mean, you would never get Airbus's aircraft into the sky without, without that concept.

Yes. I guess the models have become even more…

Well, I mean…

…an order of magnitude more complex now, but…

Several orders of magnitude more complex.

Yes.

But it was a very good idea at the time. Though I have to say, I remember, you know, two or three years, struggling to get that concept across to people who thought of models as things which went round and round on tracks in their bedrooms. [laughs] So… But no, it worked very well. And, we built a very interesting business in Scicon, in Milton Keynes, on, on the base of, of that, of those, those modelling technologies. And it was a wonderful opportunity for me. How often do young people get a chance to really spread their wings? Now of course, these days, we'll come to later, in the digital world, you see it again.

Mm. Mm.

Being able to pick on a technology and actually make something out of it, with a relatively small team.

[18:35]
Mm. So you, you weren't a typical graduate trainee then, because you didn't get inducted and have…

No no.

You didn't have a lot of induction training and, the rest of it.

No.

Did you get any training at all, or were you just expected to…

No. No, I, I tell you, the thing that, my very first day in Scicon, went in, went to the personnel department. Lasted the morning. And, then went to see the person who was my, what was called managing consultant, the person sort of, over, overlooked me, and he said, 'I want to put you on this team.' And it was a team involved in rocket trials as it happens. And, I… And I went to see the project leader, and he said, 'A bit surprised to find somebody,' somebody to join his team. But he said, 'OK, well, here's a bunch of data from the most recent trial. Would you like to have a look at it?' And I sat down that afternoon, and the next morning looked at it. And being

an engineer, I started to graph it all, and do some simple progressions. And, it looked to me that there was something to do with the wings, it was facing, that was interesting. And, I took it back on Tuesday afternoon to the person, and he said, 'Oh that's interesting. Why don't you come… We've got a quarterly review on Wednesday. Why don't you come in and just show our customer that, your graphs.' And I did. In those days no PowerPoint, nothing like that; they were literally graphs, drawn by hand. And, the customer said, 'Oh, that's very interesting. Now I think we need to explore that. I'll give you a budget of £10,000 to explore it.' And I thought… And then, he said, 'And, I'm going to take you all out to lunch at the White House.' That's in Chandler Street. Which is one of the better restaurants in London. [laughs] And I thought, wow, this is an industry to be in. In that, I mean, in my Vauxhall days, you never saw a customer. They were far from everyone's mind. But here was a space where what you thought could actually have value.

[21:10]
Mm. Yes, immediate, yes, gratifying. [both laugh] So apart from, apart from the, the manager who gave you the opportunity of developing a business in Milton Keynes, was there anybody else in Scicon at this time who you remember as being particularly influential?

Well my managing consultant, a chap called Mike Crozier… I mean, it was John Ockendon who gave us the opportunity, and he'll appear later on. Mike Crozier was a physicist from the atomic energy industry, and he was really very clever, very clever. And, he was a very useful person for bouncing ideas off. He ended up Chief Scientist of New Zealand, because he was a New Zealander. So… It was, it was a very interesting bunch of people.

Sounds great. Yeah.

And a lot of them continued, you know, probably, sort of followed my career through various jobs I've been in.

[22:28]

Right, OK, so they're going.. And… But, in the late Seventies, you, you left Scicon and joined CAP.

Well, what happened was… I mean, by that stage I was running, you know, pretty much a separate business in Scicon, indeed possibly the most successful business in Scicon, one of the six group managers as they were called reporting to the board. And one day I was called down to the boardroom. I had, I had moved in, back to the head office by then. And, someone I had never seen before addressed us, and he said, 'I'm,' whoever he was. 'And I'm your new chairman. I'm from BP, and I'm your new chairman.' BP owned Scicon.

Yes.

First I'd ever seen BP. 'And I have to announce a new direction for the company.' And it clearly had no bearing at all on what I was doing. Basically BP had found that Scicon was doing something important in Saudi Arabia, and that, the people they put onto the board were the people who were involved in that. Which kind of, disenfranchised all of us.

Mm. Mm.

And that, that happened at the back end of 1978. And, I got together with my sort of, closest colleagues, plus John Ockendon, who by the way had been ousted in that coup from BP. And, over the Christmas period we looked to raise finance to, well, to develop a business plan to start a company, and raise finance, which we did, and we had three offers. And, one of those was, was basically financed by the venture capitalists behind CAP Group, who were Cinven and Charterhouse. And the idea was that we would build a company which we would call CAP Scientific. But it was a separate company with separate board. And, our exit route would be into CAP Group shares.

Mm.

I have to say, we did not do a great job on the deal. [laughs] Something, a mistake I did not make again. But, nonetheless, the company, CAP Scientific, turned out to be very successful.

Mm.

Basically our, our…

In what way did you not make a great deal? Because it's going to be interesting to contrast this with the great deal you made later on at QinetiQ presumably.

Mm. Well it was this exit into CAP Group shares.

Yes.

[laughs] Which, didn't turn out to be worth a lot at the time the exit took place.

All right. OK.

I mean, it's an interesting story, for this reason. A) we were successful because, by the end of the Seventies we were moving beyond the idea of just doing analytical modelling into using those techniques to build them into what were then called microprocessors, into real-time control. And, the headline in our business plan, which myself and a colleague called Graham Ferrero, who has sort of worked with me most of my career, the headline there was that there was, that that technology was going to eliminate the rationale for the big electronic majors who existed at the time. Because you could do in software what a box-load, a room-load, of, of bespoke electronics was doing at the moment. And so, we would go after that, and we, our principal targets were two big UK-based engineering firms, Ferranti and Plessey. We thought they were particularly vulnerable. And so, we would compete in the markets which they were addressing. And this was quite ambitious for a team of what was originally four people in a room with a telephone in the middle. [laughs]

Mm.

[27:31]
So that was one thing. The other thing was that, CAP in Alex d'Agapeyeff had, had a, a chairman who had extraordinarily, had extraordinary vision. He, he had the vision in the Seventies that software products were going to eliminate most of the business for bespoke software, and he was right obviously, and he also had an even sharper vision, that these microprocessors would end up on every executive's desk. Which was a brilliant idea. But it affected us because, by, I've forgotten exactly which date it would be, '83 or '84, when we were getting ready to do our trade-up, he had invested in a company which was called CAP Microsoft In California. And, this was in order to create the software which was going to be important for making it useful to every executive. And what he had invested in, the group's net worth frankly, was a, a disk operating system, to run on any microprocessor. So it was at one level interpretive. It was interpretive.

Mm.

Which… Anyhow. I remember well when the telex in those days came in from the guy running CAP Microsoft in Silicon Valley which said, 'Fantastic news. IBM have just decided that they are going to make a PC. And for the first time in IBM it's not going to be an in-house design, and they're going to buy out everything. And they're going to need an operating system.' Well, we had, CAP Group had an operating system. Unfortunately it was an interpretive operating system, and IBM wanted it to…

Compile.

Yes. And, that would require another major investment.

[30:14]
So, were you involved in this work? Or was this…

No. No that was all…

This was all going on…

This was all… We were rather separate from the CAP Group. We were called CAP Scientific.

But you were moving up the management hierarchy in CAP, weren't you, at this time?

Not… I mean I, I was Managing Director of CAP Scientific.

Yes.

That was it.

Mm.

And, although occasionally got invited to the CAP Group management meetings, we did our own thing. We financed ourselves. So, that created an issue. In the end, CAP Group did not invest to do it, and, an unknown person called Gates, who didn't have an operating system, he had seen at the same time the opportunity, but he had invested in a COBOL compiler.

Mm. [both laugh]

We had the operating system.

OK.

But, anyway, so…

Well, the rest is history, as they say.

The, the rest is history. But, the issue from our perspective was that CAP Group were, were short of money, Cinven and, and Charterhouse, said they would have to refinance the company, and clearly we got hugely diluted, in Scientific.

[31:46]
And then… And…

So, at that stage, CAP Scientific got fully merged into the CAP Group, and, you know, not long after that, the issue of, you know, how is CAP Group going to go forward? Other parts of the CAP Group had done a very good job of developing software for the new financial market, developing financial market pre-Big Bang, and so, the group was going, was doing pretty well. We decided that we, rather too early, and I was a great advocate of this, that the European market was going to be where we needed to be, and we decided to do a merger with SEMA-METRA SA. That then created a squabble with the, CAP Sogeti in Paris, which caused us to have to change the name of the group from CAP Group Plc to Sema Group Plc. But actually, it was a purchase by us of SEMA-METRA SA.

Right. And you became MD of…

I became MD of…

…UK, North America and Australasia.

Yup.

Yes. Did you have a role in the negotiating the merger?

Oh yes.

Was that… Yes.

Yes, yes. Mm. Yes. I mean, I was in favour of it. And, it was, it was ahead of its time. I mean what I discovered, and which, which I think is true to this day, is that, British companies are more inherently international than European companies.

Yes.

I mean for instance, it was very obvious to us, we would have to consolidate our business lines. So, telecoms wold have to operate on a transnational basis, and it had to have the telecoms headquarters somewhere. Banking would also have to operate on a transnational basis. And, as far as we were concerned, that was easy to do, because you just look at where all the strengths are, and saying, OK. I mean, the French were very good at, you know, the nuclear industry, and we were very happy for the French to lead on the…

Do that. Yes.

…the nuclear industry. But obviously, banking was a strength that lay in London. That was extremely difficult for our French colleagues, extremely difficult. [laughs] It… After my time it did eventually happen. But, it was, it was very strange. You know, the British are regarded as isolationist, but in business, we were far more open to a rational approach and non-national approach.

Interesting.

Mm.

[35:00]
Then, early Nineties, move, you…

Well…

As I understand it, you were headhunted by the Government.

Well, I was indeed. I mean, strangely enough, it happened, it happened to coincide, after we had been doing our… Let me roll back. A consequence of that merger is that, CAP Sogeti did not like what was happening, and bought a large minority stake, 30 per cent, in the group. And that precipitated… And in France the idea of concert parties is not illegal. [laughs] So, there was a group round CAP Sogeti, financed by Suez and others, which was a bank in those days, which were buying shares. Paribas

were the big defender of Sema. And equally they had their friends buying shares. So, by the early Nineties, whereas at the time of the merger the French shareholding and the British shareholding, pretty much equal, by that, by the early Nineties more than 90 per cent of our equity was held in France. And, so… And, so, so my French colleague, Pierre Bonelli, now diseased, was the group chief executive, and I was basically, the second in charge. I was younger than him. And so the obvious thing to do would be to plan for succession, and the obvious thing is that I would have to move to Paris to get to know all the French shareholders. And that thinking was going on in the group in the early, early 1991, which was obviously a big personal move amongst other things, when out of the blue I got this approach from Government to say, Margaret Thatcher had asked why the Government still had 14,000 scientists in 80 different laboratories, researching defence, when we had already won the Cold War. And, the notion was, they were such a valuable asset it should be commercialised. And so, I got the approach, would I take this on? When you know you've decided to change your life anyway, and another option comes along, you think about it.

Mm.

It wouldn't otherwise have happened.

[38:18]
What you say is interesting, because I was, I was going to ask you actually, I mean, given the subsequent history of DERA and then QinetiQ, was there always, we'll come to that in a minute, but I mean, was there always a business plan there to, commercialise, float on the stock market, or did thinking evolve over the course of the next ten years or so?

Well, I mean basically, the idea was, make something out of the, the scientists and the technology that we've got. Clearly on the back of the Margaret Thatcher regime, privatisation was very much in the air, but it was a very very distant… I mean at the time, the Government spent 800 million a year in, in these labs. And, that was all cost.

Mm.

So, how do you turn that into a commercial business? So that's what I was brought in to do, to try and make sense of that. And, that's what I set about doing.

And what challenges did you face in, in merging such a, presumably disparate group of research organisations?

Well the, the good… Let's start with the good things. The good things is, I soon discover that they had extremely good people. It's not a big surprise, it had been recruiting the very best science graduates from universities for several decades. And it also had some extraordinarily good innovations, like, held key patents in liquid crystal displays for instance, and made a lot of money out of that during those 30 years. So, there was a lot of asset there. But, the key thing would be to move away from, you know, an organisation which was just used to having money poured in from the top, to one which went out and found customers who actually wanted what they were doing.

So a massive sort of cultural change programme as we call it today.

It… That would be a huge underestimate – understatement, cultural change. You had to change absolutely everything. I mean the sad thing is, that it was clear to me from the start that the key decision had been made a decade before. A decade before, when, I can't remember his name, came in, from industry, to be head of procurement in, in the Ministry of Defence. He had changed the way procurement was done, to being an arm's length process whereby a requirement was produced, industry all over the world was asked to bid against it, and they chose the best. Against, essentially in-house process, whereby our laboratories largely study the problem and designed a solution, which was then put out to industry to build. Now if you change that, why do you still have laboratories? If it had been a company, they would then, that company, would then have downsized its laboratories. That's what happens in companies. Of course in Government, that doesn't happen. And, so, it was a bit of an orphan organisation. It's still doing fantastic work. I mean, just last week I, travelling to and from Spain on a ferry, I came up to, happened to sit at a table with somebody who,

down in the, down in the sort of, the real hardcore research work with the organisation, had been there all through that. And, you can imagine the pain of, of being faced with not just having… Because they were deep believers that they were there to serve Her Majesty, and the armed forces, to save lives, all those things. To have that re-orientated to something which you are not at all familiar with, and you're not terribly sure whether you're going to be any good at, was, was a very very big change. But nonetheless, it proved in the end successful.

[43:30]
Mm. When do you think it kind of, when do you think you turned it round, I mean, so that it was on the, the pathway to success? Was it by, you know, 2000, 2001, when…?

Oh no, no. No we, we were… By 1997, in fact by 1994/5, we were already cash positive as an organisation. And we had done the major structural changes, and we had established strong customer relationships. Now a lot of them were with, Government customers, but they were, the money never came to us, from that moment on it didn't come to us… I was asked at the start of this, how much of my budget did I want to come by right, and how much did I have to go out and win? I said, 'I want to win it all.' Unless we went, you know, did the full cold turkey, we would never manage to overcome that mindset. So… And that happened in 1993, the sort of, cold turkey part of it. And so, '94. '95, we actually turned a profit in. And so by 1997, I was being called to see ministers who were telling me, could I try to be less successful in competitions, because industry was complaining bitterly that it was unfair. And at that point, I decided that the only way out was to put ourselves on the same basis as industry, not to have so-called soft access to capital.

Mm.

We would have to be put on the same basis. And I put, in 1997, '98, I put forward three options as to how that could be done. In the end the Government chose another one, but… [both laugh] Nonetheless, that's what kicked off that process.

Mm. Mm.

You will have noticed, 1997 was the time when the Labour Party came to power.

Yes. Yes.

And that was important, because in my experience, you could only do anything radical when there's a new government.

Yes. [both laugh] Yes, because they were still trying to find their feet, so they could…

Well, they… A new government comes in with lots of ambition, enthusiasm, openness to what to do. Whereas, I mean, John Major, who I've got a huge respect for, he was in that period of government when, he's tied down in all, in every direction.

[46:45]
Mm. Mm. Yes. I mean what did happen actually was, as I understand it, in 2001, about a third of DERA was hived off as, to the…

That's right. DSTL.

…the Defence Science and Technology Laboratory.

Yes, that's right, yes.

Presumably that was for national, was that mostly for national security reasons, because of the stuff they were working on?

That's a, a long, a long story, but anyhow, that's part of… I imagined that we could create out of DERA an organisation which would be financed by private capital, but would essentially remain focused upon its core roles. In the end it was decided to split it to a small publicly-owned organisation which did the bare essentials, and then leave QinetiQ completely free to live or die by…

The market.

Yup, that's right.

Yes.

Which was, which, you know, is an entirely legitimate and practical way forward. Which has indeed worked very well.

And this is when you got some investment from a…

Well, this…

…private equity group, wasn't it, Carlyle, at the time?

I mean, we, we created the company, QinetiQ, and John Egan was our first chairman, and, the idea of the QinetiQ board was that, that we would float it. And, we had… Because, you know, I was very active in, in going round investment banks and people, and places like that, in those days. We could see… I mean, although the, the technology, dotcom bust had happened, nonetheless there was great enthusiasm for technology in the market. And we thought we could float in 2002. We could get an IPO away. The Government decided, no. It would prefer to, to do the selling itself, and sell it to private equity. And the winner of that private equity competition was Carlyle.

But they only sold about 40 per cent, didn't they. It wasn't the…

The… They sold, a bit more than 40 per cent, but, but a minority stake. But, in the shareholders' agreement, Carlyle had control. Carlyle had complete control.

OK.

Other than interests, other, you know, national security interests.

Right. Yeah yeah.

But in terms of management control, they had management control.

OK. And presumably they were, they were, an eventual flotation was how they saw they were going to get their money back eventually presumably.

Yup.

Yeah. Yeah.

Well, I mean they could have done it anyway. They could have sold it, you know, on, onto, someone else.

Yes.

I mean it was entirely up to them how they did it. But, what happened is that in the two years that they had control, I mean, it was up to them who they then chose to run it. They chose me, and, and in fact most of my colleagues, not all of them. We, we did a very successful expansion into overseas markets, and that led to a successful flotation.

[50:45]
Did you have a lot of conflicting interests to manage around this time though? Because, when I was doing some research, it seemed that, around about the same time you signed up to a 25-year partner agreement with the MoD for testing and evaluation. 25 years is a hell of a long time.

Mm.

And, you think, kind of, [laughs] you know, that's in-

Mm.

It's kind of, at variance to some extent with a more sort of, buccaneering, commercial type approach, and, developing new markets.

Yes. Yes, it's not unheard of. I mean what… The problem with that is, there's a whole bunch of assets there which you have to take onto your books, which can only really have one use. And, so, somebody has to undertake to provide that use.

Mm. Mm.

So… I mean…

I suppose it provided a, a sort of baseline income didn't it?

[hesitates] It… It's an area of DERA's business which was most troublesome. So if you looked on the history, it was most troublesome. [pause] Customers needed it, but were very reluctant to sign up for it. [laughs]

OK.

And, so, we said to the Government, 'You've really got to help us be clear as to whether these are the assets you really want.' Because, the only other thing you can do is, at huge expense, because the, the environmental cost of closure are vast. [laughs]

[53:03]
Mm. OK. As you said, the flotation when it came in 2006 was a great success.

Mm.

And by 2008 I think you had revenues of 1.4 billion.

Yes. Mm.

Yeah? Which, of which, half came from the US.

Mm. Yup.

So it's a… [both laugh] Yeah.

No, it was, it was a… It was a very good story. I mean, that's the, the 2006 figure you quote there.

Yes.

No, it was… It was a… The period of private equity ownership was a very fruitful period, because you could just get on with developing the business. And…

Did you have a good working relationship with the Carlyle people?

We had a very good working relationship with them. Once you've floated of course, things are more complicated. Inevitably the top management team is, is more engaged with, with the plethora of investors, and, you can move less quickly than, than you can with private equity.

And you took on the chairman role about this time didn't you?

I took on the chairman, yes, that's right, yes. Yes. I was initially Executive Chairman, and then I stood back to being Non-Executive Chairman.

And you continued in that role until about 2010?

No, 2009.

2009. OK. Yeah.

2009. Just into 2010 I guess. Yes, just in 2010.

[54:51]

And, I mean we, we kind of skipped past it in the history there, but of course in 1999 you were knighted.

Mm.

And that was presumably, that presumably because of the, the contribution, your contribution to the industry…

Well I don't… I mean obviously, these things you're not involved in yourself except being told. [both laugh]

It must have been a great…

Oh, obviously, I mean, a huge…

You must have felt it was a great honour.

A great honour. And, I mean, you feel, one feels, and I'm not alone in this because I know other people who have been knighted, a bit that, you know, it's, it's what a lot of people have done which you are getting the, the accolade for. But I mean, you know, we employed a lot of people, more than, still, in those days more than 10,000, more like 12,000 people. So… No, about 10,000 people. So, there were a lot of people who had changed their lives, really thrown themselves into it, and made a great business.

[56:05]
What do you think in your career up to this point, say up to about, 2009, 2010, what do you think the, in career terms, what were the key decisions you made, positive and negative, which made a difference?

Well, I mean, I think I've, I've covered some of that, haven't I? A) committing to what became the IT industry, and therefore riding on the back of the microelectronics revolution. And what I say about that to youngsters is, if you're choosing a career, pick a fast stream. Because you've only got to go a little bit quicker than others in

that fast stream to be going along at a hell of a pace. A good friend of mine at Cambridge, still a good friend of mine, who went into the fibres business, Courtauld, nearly ten years later when, you know, I was involved in, I had built the team in Scicon and started CAP Scientific and things, he was still the most junior person in his, in his part of the company, although a very capable individual. In fact he in the end had a good career doing other things.

Do you think you need special insight to be able to identify these fast streams?

Well I think that, I mean, my story about the little box at the bottom of the… shows… the bottom of the, the computer box, computer rack, it shows that, you know, if you keep your eyes open, you can see things. What I shall tell you later is, the space of genomics will transform the life experience of humanity. And so, you know, if you are a youngster these days, that's the sort of thing that you should be on the lookout for, something which will be transformative, and therefore has to, it has, anyone in that space has got to be able to do well.

[58:34]
Mm. You were… You were, I think during your time at QinetiQ, you are on record as saying, in the UK we're good at, we are good inventors, but not so good at turning our inventions into wealth.

Yup.

And you identify some of the reasons for that. Just tell us a little bit about that. Because it does kind of, what you've done subsequently I guess is, is try and, is try and promote…

Well I mean, it's what, it's what I was brought in to do in, in DERA. We had a, we had fantastic people resources, and a box load of patents, and actually, some very interesting physical facilities. But, it had not been orientated towards building things, that, you know, the public might know about, you know, commercial markets wanted. We have… If you compare us with the United States, we, our national expenditure is too focused upon discovery, and not enough on the process of maturation of that into

really worthwhile products. And that is a huge discrepancy. We have fantastic universities in this country, and we have fantastic science, and we're very proud of our record in Nobel Prizes and, and all of that. And that's a very good thing. Nothing wrong with that at all. But you've got to establish the rest of the pipeline, and, and, I mean, you will see that we've done a, I've done a lot of business in the United States, and the US are equally good as us, and that discovery was a huge. But what they have is a very powerful machine, very strong stimulation, in the pulling through of that into maturing it and making it ready for market. And that's what we lack in this country.

Mm. Well of course this was ten or fifteen years ago. We'll come on to some of the things you've been doing since then in a moment, but do you think things have improved in the last ten or fifteen years? Is it getting any better?

Oh, they're definitely a lot better. There's no, no question, it's a lot better. If you go round universities these days, the idea of saying, 'Ooh! commercial world. I'm not interested,' that's largely gone completely. You find that, certainly in the Golden Triangle down, down here, there's a huge emphasis on getting ideas funded, and out to market. And so that's a good thing. But it takes a while, I mean, you know, it, it won't happen instantaneously. And it's still true that the, the methods of assistance from Government, although they're better than they were, there's still big discrepancy, compared with the United States.

Mm.

Now whether we can do it, whether we're too small a nation to do it, but on the other hand, the Israelis do it fantastically well, for instance. And even paragons of, of social regimes, like the Swedes, do it pretty, they do it better than we do. So, I'm sure, you know, we could do it better, if we put our minds to it.

Mm. I suppose, without getting into any, too much controversy, I suppose, Europe might have the scale to do that, but, the UK on its own doesn't have…

Well that, that's what Europe thinks. I mean for sure, the, the Framework Programme has been very important in helping the UK move in the right direction.

Mm. Mm.

And now it's, you know, like… I mean, if you talk to people in the United States, they're enormously frustrated with the programmes that they have, because, people are always frustrated, looking upwards, and, you know, see the same frustration in the UK about dealing with Europe, about the Framework Programme. But nonetheless, there is a, a weight of money there, and, it will do a good thing.

[1:03:45]
Mm. You've continued to promote research and development, haven't you, since you left QinetiQ, or, in fact even before you, while you were still chair there.

Mm.

But, initially, you, you had a year as President and Trustee of the Institute of Engineering and Technology.

Yup.

But then, you were chair of the Medical Research Council.

Yup.

So just tell us a little bit about that.

Well, I mean that was…

What you achieved there.

I mean, that took me into an entirely different world. Up to then, my career, although, you know, I'm an engineer, and it's always been IT in and around the engineering world, and, so, QinetiQ was not at all alien to me; it was, if you went to any of our labs, you would see banks of screens everywhere, because that's, that's the way

technology was. And a lot of what we did was, in QinetiQ, was implemented through software. So it was a very, it was a very similar world. Moving in to the MRC, you're in the biology world, which is, quite different. And… But my remit was familiar, the remit was that, you know, the MRC had been awarded at that stage some 27 Nobel Prizes, which, you know, put it right at the highest step of the performance. And the question was, how much of that is ending up either as products in the market, or as therapies or diagnostics which are helping save lives, patients. That was the question. And the answer is, probably not enough. And, so, my key riding instructions was to think about how we could begin to shape an organisation which had a fantastic reputation all over the world; without undermining any of that, how could we begin to move it in, in the direction of more translation into products and services of value to… You can't say customers in the medical world, you have to talk about patients.

Mm.

And, so that's what I was engaged to do. And fascinating it was too. It's an entirely different world. The process of going from a brilliant invention to something that's in the market is about seventeen years long, and, so the underpinning economics is very difficult. Which is why, you know, countries all over the world put so much money, public money, into it at the front end. I found that we were incredibly poorly connected with the translation avenues, like the pharm industry, but not just the pharm industry, just with the, in the hospital medical world, we were less well connected than we should be. And at the same time, the Government was creating a, another institution called the National Institute of Health Research, NIHR, which actually had an even bigger budget than, than the MRC. And, I looked to form a close working partnership with this new institute run by Professor Sally Davies, who is now Chief Medical Officer. And, yeah, a lot of things we were able to do which…

So you had some success in building those, starting to build those connections.

Yeah, that's right.

Yeah.

And, I wanted to move… We had, in my view, too many in-house institutions, and it was better to put those closer to areas of application, and we did that too. So, it was, it was a very stimulating time, because, it's an area which is obviously only a public good, and finding a way to gain the benefit of that public good out into the public was what we were trying to do. How are we doing for time?

[1:08:56]
We… The… I think in parallel with your chairmanship of the Medical Research Council you were also chair of the National Endowment for Science, Technology and the Arts, Nesta.

Yup. Nesta.

Which was a, as I understand it, a National Lottery funded organisation.

Yeah, it was, it… I said before, a new Government is a time when they can do things which they don't at other times, have a good idea, and here the good idea was, the Lottery was starting, can't we put some of the money aside that is generated by the Lottery into something worthwhile? And the thing which would be worthwhile is, how do you stimulate innovation in the, in the UK? So we have an endowment to do it. And obviously that plays very much into what I've been very motivated by in my life, and, so that's what I took on. Shortly after that, we were beginning to face the 2010 Election, and the likely winners, the Tories, came out with a policy, or, for a bonfire of quangos, and, strangely enough, although the money was never raised from Government, because it was Lottery, its governance counted it as a quango, because, all members of the board including me were appointed by the Government. So I and my colleagues set about addressing this by building a proposition to turn it into a charity.

Mm.

Which we indeed did. Had to change quite a lot of its, quite a few things which, which didn't quite fit legitimate charitable purposes. And so, the focus became, pretty strongly on social innovation.

[1:11:05]
Could you… I mean, without going into any detail, because we are a bit short of time, but, could you point to one or two successes that Nesta has had?

Well it, it stimulated a number of things which were very forward-looking. It was in, it was an early stimulator of sort of, projects to address global warming. And we, for instance, financed the island of Eigg to turn itself carbon neutral. So it's things like that.

Mm.

All of which you, you can look further down the road and say, yup, that generated something which, which survived, and, and moved on. In the health field, it, it created a, the concept of people-powered health, which was the idea that health shouldn't be something which is done *to* people; something that people should be involved with themselves, in our, in decision-making for themselves and their, and their community.

Mm.

And that, by the way, is a fundamental change in the health world that hasn't yet taken…

It's still working through isn't it I think.

It's still working through.

Yes.

But it will be absolutely transformative. It needs the digital tools to develop further to get there, but, it is another thing which, which an institution like Nesta can do, and be a stimulator, sow seeds.

Yes. I think I've started noticing it happening actually in, more so in the last year or two I think it's…

Yah.

Yes.

Mm. So, there are a lot of things like that. The trouble with, the challenge the board always had is, how do you pick things which are really going to make a difference? And that was always a big challenge.

[1:13:22]
Yes. Yup. And then, in most recent years you've…

When I retired, when I retired from, from the MRC, I was asked to take up the challenge of what was called the 100,000 Genomes Project. This is an idea which frankly one has to credit our previous Prime Minister, still our previous Prime Minister, David Cameron, with. David Cameron had a child that died of a genetic disease, and therefore he knew about it. And he and a small team in Number 10 conceived the idea that, although the first human genome had been published in, complete genome had been published in 2002, ten years later, 2012, if you asked the question, how had patients benefited from it, the answer was, not at all. Why is that? The reason for that is that, the big surprise in the first human genome was, we only have about 20,000 genes. That's not much more than a worm. But you might have noticed, we're rather more capable than a worm. And so how does that work? Well the only way it can work is through our ability to use the, basically those same genes and regulate them in combinatorial ways to enable our phenomenal capabilities and complexities to work. This is the big problem, if you are trying to understand biology by comparing the output that you can see in health history with the input which you can see in a genome. If you are going to match those, now that you know that it's a

combinatorial problem, you're going to need a vast amount of data. The vast amount of human genomes matched with the, with the health data. So you're going to need good health data obviously, but you're going to need a vast amount.
[1:15:46]
Now, the biggest collections of whole human genomes and clinical data were of the order of a few hundred at the time. And so, the idea that David Cameron's team, and he himself was the driver of, was, let's jump towards the magnitude and do 100,000 genomes. And the idea is, not only would that give us a dataset of immense research value, but we can see, the idea was, we can see the generation of an industry around that. And the UK was in an especially good position to do this, because, unlike the two big behemoths in the world, the United States and China, we have a single-payer health system which can operate in a, in principle, in a coherent way, and we also have the underpinning science base to give us the technology to understand the outcome of that. So, the concept was not only one of creating a fantastic science base, but also a basis for building a huge industry around it. So that's what appealed to me. And of course, obviously the other thing is, fundamentally it's a software problem. [laughs]

And the target of 100,000 was met I think earlier this year, wasn't it?

It was met in December.

December last year.

Yup.

Yes. OK.

When I started this project, because it was just myself and my then chief scientist basically, that was us, we went around the world, to look at what everyone was dong, and we weren't the only people who had that idea.

Well Iceland does it, doesn't it, something similar?

Iceland got in it probably too early. Because they then had a big… There's a huge social problem associated with this, because you've got to manage that side as well, and they didn't manage that side well. And therefore, their data's locked down, it can't go on the Internet, they can't connect with the Internet. [laughs]

OK, yes.

And so, their ability to exploit it is limited. But… So, everybody had the idea. When we succeeded with the 100,000 in December, you could look around the world… Everyone's still got the idea, but we're the only people who have done it, by a long way, by a very long way.

That's a great achievement.

And that is, it's all to do… You know, we're in WCIT. It is all to do with thinking of it as a system problem, as a total system problem. People who have gone into it, have tended to dive into corners of it, but you've got to mobilise an incredibly complicated system which works in a systematic way everywhere. And that's what we've done. We have created that systematic infrastructure in the UK, and so we are definitely world leaders in population genomics.

Right, OK. But now there's lots of work to do in, presumably, analysing the data.

Oh, there is, but we don't have to do that, because, zillions of, of researchers are now jumping into it.

OK.

But, but we have, we have the ability to do genomic medicine in a way which no one else in the world has.

Mm.

And, we have therefore the basic infrastructure from which a, not only will that be hugely important for, for health of patients in the UK, and I don't like the use of patient because I think, you've got to start before patients, because you've got to start keeping people well, rather than fixing them when they're ill, but also, the ability to, for small teams to generate ideas and from that to create companies which really provide benefit.

[1:20:04]
Mm. So, what would you say are the biggest challenges and opportunities in the, sort of, IT science and engineering fields in the next ten years?

Well, I think, we, obviously the digital revolution has been phenomenally empowering, and, and that's not going to wind up any time soon. But, clearly, Moore's law has run its course, and that's quite difficult. And so, it will become more competitive. But areas like the one I've just been talking about in genomics are fundamentally based upon digital innovation, and putting that genomics alongside the digital tools which can be built on top of it will literally transform the life experience of humanity. Disease won't be something which is foist upon you by unhappy fate; it will be something which you can engage in, and, and decide how you want to live your life.

So great, great impacts on society as well…

Yup, absolutely.

…over the next ten, ten, 20 years. Yes.

This is a space which I would recommend any youngster to get involved in. Because it, it, by the, by the time we get to the end of this, this century, we will absolutely think of medicine today as no different from bleeding someone because they've got a fever. So little do we know about the effect of the things which we are invited to swallow. We will, I'm sure, in the future, not do that at all, but we will construct something. If you need… First of all, we will help you avoid being ill, but if you are ill, we will have something which is specific for you.

[1:21:58]
That's great. Is there any advice you would give someone entering the IT, IT industry specifically, now?

Well, I would say, just pick an area of that. Because, IT is, is, is in itself, it's open to all sorts of areas of application. And so pick an area of application where, where the IT can really be applied to something which has profound value.

Which this does.

Mm. Yah.

Sir John, it's been fascinating hearing about your life and your contribution to the IT science and engineering industries in the UK. On behalf of Archives of IT, thank you very much for taking the time to talk to us.

It's been a pleasure.

[End of Interview]