Peter Bonfield

Interviewed by

Alan Cane

26th April, 2016

At the

WCIT Hall,
32a Bartholomew Close, London, EC1A 7JN
Kindly provided by The Worshipful Company of Information Technologists

It's the afternoon of April 26 2016 here in London, England. I am Alan Cane, and today I'm talking to Sir Peter Bonfield, who, in the course of a long and distinguished career, has run two of the UK's major technology companies, International Computers Ltd and British Telecommunications. This interview will be in two parts, the first a discussion of Sir Peter's business career, and some thoughts about his background influences, and his views on the information technology industry.

So, Peter, you began your career in 1965 with Texas Instruments.

Yes.

You had, I think, graduated as an engineer?

Yes, I actually graduated in '66, and joined Texas Instruments in August '66. Straight out of university.

Fine. OK. What options were available to a young engineer then? Why did you choose Texas Instruments?

A couple of things really. My dad was an engineer, engineering tech, and he said that the future of engineering tech would be in the US. And so, I interviewed with three companies, all US companies, and that was back in the day when a graduate, you could get quite a good job, you know, straight out of the bat. So I interviewed with Hewlett-Packard, IBM and Texas Instruments. Got an offer for all three, well from all three. IBM said that they'd send me to Greenock in Scotland; Hewlett-Packard said they had some other place the other side of Slough; and Texas Instruments said they'd send me to Dallas. So I joined Texas Instruments, who then sent me to Bedford, England, where, I was there for about six months before they sent me to Dallas.

What did you do in Bedford?

I was assigned to be an engineer, I was an engineer, a proper engineer at start. And I was a design engineer on the first high-speed wire bonder, it's called ABACUS. Because at that stage, back in the, in the mid-Sixties, making semiconductors was still

done manually. So we had loads and loads of graduates, mostly female, stitching semiconductors together with gold wires, under microscopes, manually. And, some very smart people in Bedford decided to build what they thought would be the first machine that could do it automatically. And we were working on that, and I was the engineer, because my specialisation was high-speed server mechanics and vibrations and this sort of thing. So I got assigned to that programme. And after six months the powers that be in Texas Instruments in Dallas decided it was so important that they moved it all to the headquarters in Dallas.

Right.

And four of us went with it, the chief designer, the chief electrical designer, the chief mechanical designer, and me. And, we ended up finishing it off in Dallas. And, that was ABACUS, and, they're still running them.

Really, the same machine?

Yeah. Not… They've been modified but they're still high-speed wire bonders, basically on the same sort of principle that we designed all those years ago.

[03:07]
Oh right. So you went to Dallas.

Yup.

What was that like?

So, I pitched up on the shores of Dallas when I was the grand old age of 23. And of course I thought I knew everything at that stage. And it was fascinating, because it was, Texas Instruments and the whole of the, it was the early stages of the advancement of semiconductors, TI was the leader in semiconductors. And, the company was growing enormously. And it was great fun. And, you were essentially allowed to do, just get on with life. You know, just, do it, as they say, as they say now anyway.

As they say now, yes.

But this was back in the Sixties, and, my friends that I had left in the UK were mostly doing apprenticeships in Plessey or Ferranti and this sort of thing, and here I was, a proper engineer in Dallas with a load of people working for me at a very very young age.

Mm. So, I mean you had finished the work on the bonder.

Yes. Finished the work on the bonder. And then, they were working on, the next thing was the big transition from two-inch wafers to three-inch wafers. Which is remarkable now, because they're now all twelve-inch wafers of course.

Mm.

So I worked on that for a while. I was, did some work out in the universities, Arizona, in Tempe, when I was doing some research out there. And, so I did that for about, two years I guess. And then, I was sent back to the UK to run the discrete business of Texas Instruments in Europe.

To run the business?

Yup.

So you're no longer engineering, you are managing?

Well, it was engineering management. So, at that stage, you moved fast in TI, if the thought that you were any good they moved you fast.

Mm.

And the guy who was running Texas Instruments at the time was a guy called Pat Haggerty, and he had this revolutionary idea that instead of everything being

compen… well, or in a compartment, or, vertically integrated, he had this idea of product cost centres. And so, you, everybody sort of aspired to run a PCC, a product cost centre. So mine was the product cost centre of discretes. And you had the, you then had to develop the market and run the P&L of this business. And they had loads and loads of these businesses within Texas Instruments. So, that was my first bit of… I was still in charge of engineering, the design, but I also did the marketing, manufacturing and the P&L.

Sounds like quite a broad spread for a young engineer.

It was great. You know, I learnt a massive amount. Massive amount.

[05:48]
Mm. You went to the US, as you said. Did you go elsewhere?

That stage, no. Mostly just in, in Texas actually. When I came back to Europe, I did quite a lot of travelling around Europe, because that's where my patch was I guess.

Mm.

And then, in, about the mid, or, '74 maybe, I was then sent back to the States, into the, what was then developing the newly, I suppose, stylised consumer products division.

Mhm.

And there I was more into operations and marketing, and it was the development of the single-chip calculator and, all that sort of stuff.

Mm.

And then I got involved in the early stages of programmable calculators, where I was still doing… I wasn't doing a PCC then, but I was still doing engineering, and I had part of the P&L. Until we came into the scientific programmable calculators, when I had the whole lot. And, so I designed them, manufactured them, and sold 'em. Got a

US patent along the way, my… It was quite funny because we did the, the first programmable calculators, you program it with magstripe cards, but also we had the ones with plug-in modules. And that was the first, essentially, an app that you plugged in. And, I'm the joint developer of that that patent, so…

Really? So you hold that patent?

So I hold that patent. I did that for…

So you were actually doing bench work as it were, I mean, coding perhaps, or…?

Proper engineer. Yeah, used to be.

Drawing? [laughs]

Well when I first got involved in the semiconductor business, we used to draw semiconductors on, on drawing boards. Not, lay 'em out on computers these days. [laughter] But yes, so I used to be a, a proper engineer as I call it.

Mm. Mm. So you were the, as it were the kingpin in the UK calculator business?

No, this was in the US.

This was in the US.

Yes.

[07:55]
OK. But you came back to the UK, and…

No, this was… Then… I went to the US, came back, and I went back to the US, and then I stayed there until I moved to ICL.

Oh right. And what did you finally do in TI before you made that move?

My final position was, I was the Divisional Manager for all of the programmable calculator business. And it also included the home computer. So, TI was in the very very early stages of the computer revolution, but we were a bit too early.

Right. What kind of machines was TI making at that time?

The programmables were the TI-59, TI-57s, all of the single-chip, smaller calculators. Speak & Spell, the first voice-activated synthesis product. Because, the voice synthesis was originally developed by Texas Instruments. So it was, all of that sort of stuff. And so we got into the, the home computer a bit too early, and we, we designed the first home computer using the TI microprocessor, which a big mistake, because the architecture was horrible. And although it worked, it was too expensive and too complicated. So it didn't work out very well. Took a big write-off and they got out of the business.

[09:16]
At that time, did you have a vision of where computers would go in the world?

No, not really. I mean, at that stage, when we did the first single-chip calculator, we thought that was just, magic, you know, that you could get a calculator on one chip. But, I mean looking at it now, it was pretty rudimentary. And, nobody had a really good idea of what computing would be in terms of volume. Because TI was, was making the bigger industrial style of computers, and the first early starts of microprocessors. But when we did the home computer, I don't think anybody really, really understood, you know, the, the volume and what it could do later on. It was mostly sort of, games-related. We had plug-in games-related, you know, after the Atari things and that sort of thing. But I don't think anybody had a real long-term view of saying, this is what is going to happen over the next ten years.

[10:16]
Mm. What lessons do you think you learnt from your time at TI?

I think the, the main one is that the technology does move very very rapidly. So you've got to be flexible, and, and dynamic I think in this industry. And assuming that, you know, that one technology will then set you up for the next ten years, doesn't normally work. You can be, you know, out, innovated by somebody else. I think, the other thing it taught me is that you, from a business point of view, if you can get younger people moving quickly into designated areas, then you, you can stay ahead. If you get too static, and too sort of, defending you own turf, then it becomes a problem. So if you looked at the computer business, you know, after that, you know, Digital Equipment, those sort of people, didn't move fast enough to move away from their own operating systems, got sort of, waylaid I suppose, didn't move fast enough.

Mm.

So in this business, you've got to move fast. And I think the other thing which is still true, but it's an old adage, is that everybody overestimates it in the short term and underestimates it in the long term.

Indeed.

And I've seen that many times.

Mm. What about lessons in terms of management, I mean, in dealing with people?

Well my, my biggest mentor was Pat Haggerty. Pat Haggerty was the, essentially the chief executive of Texas Instruments at that time. So when I was hired in '66, TI had a big push to go international, and Pat Haggerty decided that the best way to do that was to hire a load of engineers from Europe, and give us a sort of free rein. And, he used to coach us. So, in the year that I joined, Robb Wilmot joined, Eckhard Pfeiffer joined, who ended up running most of Compaq. So there was a lot of us, all thrown into Dallas at the same time. And I learnt a lot from the feet of Pat Haggerty basically, which is, you know, to get involved, be involved with younger people, stretch everybody's limits, encouragement rather than beating. And he had a very very high ethic about everything, work ethic, industrial ethic, you know, everything was done at a very very high standard. And I think I tried to model myself on Pat

Haggerty really. I'm sure I'm, I'm a shadow of Pat Haggerty, but that's what I've tried to do.

[12:58]
So you were there for sixteen years.

Mm.

So, you must have enjoyed the job.

I did. Yes.

You did. Yes.

I ended up working for a guy called Morris Chang, Dr Morris Chang. And that comes back to my later part in life, because Morris Chang started up TSMC, which is now the now the second largest semiconductor company in the world.

Mm. OK.

And I worked as an engineer for him in the mid-Seventies.

And, Robb Wilmot was a contemporary of yours?

Yes, we joined on the same, the same day.

Oh really?

He was at Nottingham University; I came out of Loughborough. And, yeah, we stayed in, in touch. He was mostly in the UK. And as I say, after my first six months I was then transferred to the States, but I stayed in touch with him.

Mm. And you were friends?

Yup.

[13:52]
Mhm. So after that sixteen years, in 1981 you joined ICL.

Mm.

Now that's a big change from calculators to mainframe computers.

It was. It was.

Tell me about that.

Well it, it goes back to, sort of, the year before '81. 1980, ICL, as it was at that time, was going through a very bad patch. The business was, was difficult. The Japanese were just coming into the mainframe market against IBM, they'd collapsed the price. Sterling was very very high, and therefore if you were a manufacturer in the UK there was a competitive disadvantage. And the research needed to develop the next round of mainframes was eating up the cash flow of ICL. So ICL went from a profit to a loss, and needed some Government support. So they put in, or, it was engineered to put in a new management team of, Chris Laidlaw came in as the Chairman, Robb Wilmot came in as the CEO. He immediately called me in the States, and said, 'Would you come and join us in helping resurrect ICL?' At that stage I was pretty reluctant, because, I knew quite a lot about the company, because my dad used to work there.

Mm. Indeed.

It was going through a lot of troubles, and as you said, you know, going from what I was used to, to mainframe computers, was, was tricky. But anyway, with a lot of persuasion of, of Robb Wilmot, actually in particular Chris Laidlaw, I decided to join ICL. So, I had to finish some stuff up in Texas Instruments, so I joined in October '81; I think Robb joined in sort of, March '81.

Why did Robb decide to join, and he came in as Managing Director didn't he?

Yah. Oh that was, yeah, before, before CEOs were invented. Yeah, this was a managing director.

Right.

Oh it was just a, a challenge. Robb always just loved a challenge. He had been in Texas Instruments the same time as I had. He had never run a plc before, a quoted company, plc, before. And that was part of my, that drew me as well, I had never run a quoted company, plc. And because I had always retained my UK citizenship, I would always be barred from the top end of the management of Texas Instruments because it was a US eyes only company, because of their defence work.

Right.

So I think Robb was a bit like me, it gave him an opportunity to, to get into a quoted company, never done that before, and of course, you know, we were arrogant enough to think that we could do most of this stuff anyway, so…

[16:43]
I'm just curious, I mean, Robb invited you to join ICL, but how did he get into a company like ICL?

The company at that stage, when, Geoff Cross was the previous Managing Director, was going essentially, the Government said that, you know, you would need a new management team. Robb was known to the DTI. The Permanent Secretary to the DTI was Sir Peter Carey. Robb was known to Peter Carey through his Texas Instruments connection. TI was still then quite big in the UK.

Uh-huh.

And I think the combination of, of that, the DTI, some links with the banks, because the banks were needed in terms of the, of the rescue, they interviewed Robb and gave him the job.

[17:36]
Oh right. So Robb invited you to join him to, to work on the resurrection.

Resurrection. Yes.

Indeed. And you were reluctant, but what finally changed your mind and made you decide to take it up?

I think basically I, I had been sixteen years with Texas Instruments, so, maybe some time for a change. I had never been involved with a quoted company before, and I thought that would be of interest. Robb was a very dynamic guy, so I thought that it would be, that it would be doubling interesting. And at that stage, ICL was a big company, 30,000 people, very international. And, I thought I could learn a lot, basically.

And this would be a purely management job, rather than an engineering job?

Yeah, this would be purely, purely management. I was brought in for, I think actually my official title was marketing, but I was operations manager basically.

[18:32]
Right. Right. So what did you find when you got there? What were the major problems facing ICL?

Going bankrupt. [laughs]

Apart from everything… [laughs]

Going bankrupt.

Yes.

Yeah. Basically, the company was going bankrupt. And, the main reason was that the, the cost of developing the mainframes was massive at that stage, and the base, you know, the volume of, that we could spread the R&D across, was, was really insufficient. So we had to get a different way of, of optimising the R&D. So the first thing was, to stabilise the balance sheet, and that's where Chris Laidlaw really came into his own. Because, he went and talked to… Well actually, it had been done a little bit before as well. Ken Baker, at that time, Lord Baker now, was in the new DTI section of IT. He thought that ICL would be well worth saving. So he got behind the Government to put a standby loan in place, which allowed us to go and do the rights issue. But before we could do anything the market needed to understand that we could essentially develop the next range of the computers with the resources that we had. And the only way we could do that was to do a technology link with Fujitsu. Fujitsu were, I guess, yeah, they were pretty positive about going the technology link with us, but it was going to cost us $100 million. So they wanted to see the colour of the money before they did the technology link. The marketplace wanted to see the technology link before they did the rights issue. So, that's where the Government standby loan was put in place, via Ken Baker, Lord Baker now. And, that allowed us to do the rights issue, do the technology link with Fujitsu, and then, get off and convince the marketplace that we'd have another round of mainframes. Which we did.

Just remind us which series this would have been.

This was the… They're all VME machines, Virtual Machine Environment machines. And it was the, the DM1and the Estriel. One was a CMOS machine, and one was an ECL machine, or ECL [pr. eckle] machine as they used to call it.

Mhm. And a major competition at that time would, of course, have been IBM…

IBM.

…and, and others, or mainly…?

Well, no, the BUNCH, you remember?

Mm, I remember the BUNCH.

Burroughs, UNIVAC, all that lot.

Yes. National Semiconductor, CDT…

Honeywell. Yeah.

…and Honeywell. Yes. [laughs]

And of course, you know, in Europe, then it was Bull, Olivetti, Siemens and Nixdorf were primarily the, the big ones. But at that stage, ICL was, in Europe was probably the best one in terms of mainframes.

[21:31]
Mm. You had to do some quite painful things, I mean a lot of restructuring.

Yah.

Closing down factories, including the one your father worked in I believe.

Yup. Well actually, he had only worked in it very briefly. My father had worked for a long, long time in the, in a company, or its precursor companies, because he started out in Hollerith actually.

Sorry, he started out in…?

In Hollerith.

Oh right. OK.

When he was, fourteen.

Yes. Yes.

So yeah, he had briefly worked in that factory. But the factory that he was running, because he ended up being a factory manager as well, was not the one I closed down. Although it was misreported in the press that I was the guy who closed the factory down, and it looked as though I had closed it down with my dad still in it, but that was not correct. No, it was very painful, because, we had to take the, the number of people in the company down from about 30,000 to, 24,000, or 25,000 I guess. We did it in conjunction with the, with the unions. That obviously took part of the, of the money that we had raised to, to do that. But we managed to do it reasonably successfully.

Mm. Mm.

Because in the end we did, we had to do two rights issues, one, and then about a year afterwards another one. And that stabilised the cash. And of course, you know, we never did use the Government money. Except they did charge us for it.

[laughs] Yes, the, I mean, those issues were subscribed fairly well, were they?

Yup. Yup.

OK.

Robb was a very good sales guy. And Chris Laidlaw had a lot of credibility, he was the previous Deputy Chairman of BP. And we had Warburg's as our main bank. So Sir David Scholey was involved with that, and he had a lot of credibility, and between them, they convinced the market that, that the turnaround would be successful. And in fact it was.

[23:36]
Right. It was. And the technology link with Fujitsu, what did that consist of?

It was, it was two things really. One was that we would design using the same semiconductors as them. But on the upper end machine, the ECL machine, they would actually make the main central processor for us in Japan, and send it over as a module. So the links were basically, the CMOS, first big CMOS mainframe, and then the very very high speed ECL machines. And they were air-cooled, the top end machines were air-cooled, which at that stage was a major breakthrough. All the IBM machines were water-cooled at that stage.

Mm. And the Amdahl were air-cooled I think, were they not?

Yeah. Mostly. And, we, you know, we obviously developed the first CMOS mainframe.

[24:34]
Mm. How did they compare with the top end IBM machines?

Well, the ECL machines were, were comparable. Because, what was interesting, because of the architecture of VME, we could string loads and loads of nodes together. So, you could essentially upgrade them from, you know, a single node up to a four-node machine. So they were equivalent to the top end of the, of the IBM. Maybe not the very very large IBM machines that were used in, you know, atomic research and that sort of thing. But most of the commercial ones we could, had as big a power as, as the IBM machines.

Mm.

And the Amdahl machines.

And the Amdahl, yes. How do you think VME compared with the IBM 360 series of software?

Well we always thought it was much better. I mean it was, it was the first virtual machine environment that could give us a lot, a lot of flexibility that's pretty robust

and very flexible. So, yeah, we liked it of course, but, that was in the days when everybody had their own operating systems.

Mm.

And it took a lot of development, so… At that stage it was, it was unique, and probably more advanced than the IBM product. Obviously IBM had a bigger market presence than we did.

[25:53]
Mm. So you had done all this restructuring, you had cut the workforce. What were the day-to-day problems you were dealing with then?

Convincing the customers we weren't going broke. So, I…

Was that difficult?

It was very difficult, yeah. So the first few days in ICL, I spent most of my time on an aeroplane, going around seeing all of our major customers, saying that we weren't going broke, we knew what we were doing, that we were doing the link with Fujitsu. Fujitsu was then, very very highly regarded. So I guess at that stage, they were, probably in the top three in semiconductors, certainly in the top three in computers and probably in the top one or two in telecoms actually.

Mm.

So once we had got that link in place, and the Government standby loan in place, then I could go round and explain to everybody that, that the machines would be OK, and that the big thing was, everybody had to have a forward path of where they were going to take their applications, on which machines they were going to run. And, so I spent the first sort of, twelve months selling. So my, I left my wife in the US, she didn't come back with me, for a year, while I just, flew around the world convincing everybody that we were going to be OK. And that was very interesting, because, ICL wasn't very international, we operated in, I think, you know, eighty-five different

countries around the world, and it was a big part of our business. And of course I needed to do also a lot of hand-holding with Fujitsu.

[27:23]
Right. How did you find Fujitsu to deal with?

Good. You know, they were excellent. I'd dealt with the Japanese before with, via Texas Instruments, because we used to have big links with Toshiba, a little bit with Fujitsu as well. And I found the Fujitsu management excellent. The main guys we dealt with then, the Chairman was a guy called Yamamoto, and the Deputy Chairman was a guy called Michio Naruto, and I became very very close with them. Well Naruto always used to call me his blood brother. And he was excellent. Because, you know, they, they would essentially stand behind us, so they'd say, you know, 'Yup, we'll stand behind it, and there will be, you know, the new machines will work, quality will be good, the capability will be excellent, and we'll stand behind it.' And that made us, it made it a whole easier selling job I guess. I think if we hadn't have done that link, I doubt if ICL could have pulled it off.

Mm. OK. What did you most admire about Fujitsu's way of doing business?

It wasn't… The main thing was just their, their unbelievable technology lead. I mean they were really, first class.

How had they achieved that?

Well you remember… It's, it's difficult to, to put it in perspective these days. But at that stage, the US was very worried that the Japanese overall would completely dominate the semiconductor business.

Mhm.

So the US were putting anti-dumping duties on the Japanese, really trying to hold the Japanese down, because they were just roaring away. Texas Instruments set up the

first overseas manufacturing plant in Japan, and within six months the Japanese were beating the US in yield for instance.

Mm

So it was the attention to detail, sheer number of engineers that they had. They were really, really good at it. So it was the technology and the attention to detail and the quality, rather than their management capability I think, that impressed us. But I mean, you know, dealing with the Japanese is always, they're very high integrity, they, they do what they say they're going to do, and they expect you to do the same thing.

Mm. But they probably needed ICL software, did they not?

What they wanted from ICL was a view of where VMA was going, you know. So some of the things that Brian Warboys invented at Manchester University…

Yes.

…where that was going to go. They were intrigued why we thought that CMOS mainframes could, could work, and, ICL was developing what became the, the network product line of integrating computers. And we had this big slogan of open systems, which was very very different from Fujitsu. Fujitsu at that stage was mostly saying, we can, not out-copy IBM, we can do better than IBM but copying IBM architecture. ICL's view was not that way. ICL's view was that, going forward it wouldn't be centralised, mainframes forever and a day; that it would be distributed, that the operating systems would be more likely to be open standards, open systems, and we were fooling around with this network product line. And they were interested in that. And of course, you know, they wanted to get an international footprint as well, and in the end they ended up obviously buying Amdahl remember.

[31:09]
Mm. During your time , was ICL interested in microcomputers, personal computers, the smaller machines?

Not really. We thought about that. I guess part of it was, my influence with the, with the bad days of TI's home computer which didn't work. So what we concentrated on was mostly, in business, distributed computing. So we came up with this DRS product line, which was, they were smaller computers, but for small businesses, not for the home.

These were minicomputers?

Yes. Essentially, yes.

[31:46]
OK OK. [pause] Yes. So you, at that time you had no interest in building anything smaller, anything cheaper, anything for domestic use?

Well, we, we did come up with the One Per Desk. Because we did the link… A part of the network product line, the idea was that you would develop an architecture that other machines could, could clip into. So, the first links we did was with Mitel, and the other one was with PERQ. You remember PERQ, which was an old scientific computer, years and years ago.

Mm. Yup.

And Mitel essentially gave us the telecommunications link, and we developed this One per Desk, which was a bit of Sinclair, a bit of Psion, and a bit of ICL. But that was as low as we went. And it was, it, I suppose it could have been used for single person's businesses, but it didn't take off very well. We sold a few, but it was, didn't take off.

No.

We learnt a bit, but it didn't take off.

Mm. Christopher Curry was telling us this morning that, you built some of the Acorn machines for them.

Mm.

Because you had excess capacity. [laughs]

We had excess capacity. We were good at making computers, yeah, we had a very very good manufacturing operation in the Midlands. But I guess at that stage, you know, we weren't afraid to try some things. I mean Robb was brilliant at that, I mean, the One Per Desk was his, essentially his conception. And, you know, looking back, it was OK, it probably was a bit too early. And a lot of these things, you know, it doesn't, they don't always go in one go. But at least we were trying a few things out. And I think in the end, the NPL, the network product line, and our push on open systems, did allow us to move forward as the, as the business changed.

[33:38]
Mhm. Now, Robb moved on.

As, after the STC takeover.

After the STC takeover. And you became Group Managing Director.

Yup.

Yes.

Yeah, the STC thing was, was difficult. I mean, in '84 they made the dawn raid on us.

Tell us about that.

Well… So '81 to '84, we had essentially cemented the link with Fujitsu, developed the new mainframes, developed the new network product line, pushed this big thing on open systems, and we had decided that, that moving into services in a big way,

rather than just hardware, was a, was a good approach. So we'd sort of sketched all that out. And, we were doing actually quite well. Share price was, was up, the people who had supported the rights issues were way above water. And, I was sitting in the office one day and we got this call from the bank saying that, that STC were going to make a dawn raid on us. And so, that was when, Michael Edwardes had just come in as the Chairman. Anyway, the upshot was that we said it was too low. They increased the offer. And, what we got from our shareholders was that, our shareholders really wanted cash out, not stock in the new combined STC-ICL. So, we recommended to the shareholders, about a, thirty-five, forty per cent premium I think.

Mhm.

So it was quite a good deal for, for them. So then STC took us over. But what they had miscalculated was that the, the take-up of cash, not shares, depleted their cash reserves. So, unfortunately about, nine months after they took us over they needed a rights issue. And it was that then that caused all the disruption, because, Ken Corfield, who was the architect of the merger with, between STC and ICL, was asked to go; Lord Keith came in as the Chairman. Robb got, asked to leave. I was asked to stay. And, and we moved on from there. But it was a, it was a difficult time, because, I think everybody expected that STC somehow would have been the, the bank for us. But in fact it turned the opposite way round.

Mm. When you moved into that chief executive role essentially, how different was that as a job to what you had been doing?

Well it was very different because, within STC, ICL was kept as a separate operation. We renamed it STC-ICL, but, Arthur Walsh, who was then, became the Chief Executive of the STC group, wanted to run it separately. The vision of Corfield was convergence between computers and telecoms, remember back then. And that was more of a, of a vision than a reality. I think because of the significant problems due to the rights issue and therefore, you know, the subsequent balance sheet problems, Arthur Walsh said, well we'd better leave ICL alone a bit, we wouldn't take the risk of integrating too much. Because at that stage ICL produced, was producing 60 per cent of the revenue, the profit of the group. So, we, we did some convergence stuff,

but it was mostly left to its own management. So I essentially just ran ICL as it used to be. For a few years. And then in '87 I was made also the Deputy Chief Executive of STC, and we tried to do then a bit more, convergence I suppose.

[37:50]
What were the barriers to that, to doing more convergence that is?

It was, it was basically, at that stage it wasn't at all clear what convergence meant. It was one of these things that, that everybody said, well, you know, telecoms will, is obviously electronics, and, but at that stage, you know, most of the telecommunications switching was done through System X type of architecture, they were all very very different operating systems, you know, the operating system didn't look at all like the operating systems that were looking at. So it was not clear where the main synergies of, of R&D, or in fact technology would come from. And you were selling to slightly different customers. So although we sold computers to BT, you know, STC sold switching equipment, but they were really quite different. And then the other things, you know, the fibre optics, subsea cables, were really quite stand-alone businesses.

[38:51]
Mhm. Was this a period you enjoyed?

[pause] I enjoyed the challenge. It was very very difficult from a motivation point of view to keep the, the folks in ICL motivated. Because, after, when we, you know, after a dawn raid and a takeover, there's, you know, there is a bit of a let-down. But as part of the agreement, before STC was allowed to take over ICL, Fujitsu had to give their agreement, because the technology link could be unwound if ICL was taken over.

Yup.

And they were again very very supportive, and they said that they would continue to support ICL. So, we were able to sort of, rally around this and say, well, we'll keep our own identity. We kept all of the, the ICL names on our buildings and everything

else, we did that. But it was difficult because, I think people expected more of it. And STC was running into some difficulties more or less straight away, and this was primarily as a result of System X. Because at that stage, you remember, there were three main competitors in switching equipment in the UK, and, one of them got dropped out and that was STC.

[40:12]
Right. Mm. Now, Fujitsu was a technology partner, but eventually became a minority shareholder, then an owner.

Yup.

Tell us about that.

Yes. So as STC was going through this slightly difficult patch, we got closer to Fujitsu. Fujitsu had a view that they wanted to make sure that ICL kept going. So, they decided to make this minority investment in the company. And we were very close to them, so they sent people over to sit on our board, and, yeah, we got very very close to them. And at that stage, I guess what we were thinking was, was in the medium term, you know, where to with ICL? Would ICL ever be a separate listed company again?

Mhm.

But, you know, so initially it was just an ICL investment by Fujitsu, which was good for us. And then subsequently, when STC was running into more trouble, and got approached by Northern Telecom, then it was decided essentially that the company would be split back up again, Northern Telecom would take over the STC telecom part, Fujitsu take over the ICL computer part, and that's how we split the company back up.

Mm. So what year was, what year was it that Fujitsu took over ICL?

1990 was the main shifting point.

[41:54]
1990 was it, yes. OK. And so you had a few years as Managing Director under the Fujitsu ownership.

Yup.

From 1990 to '96. How was that? Was that comfortable?

Yah. Yeah, I must admit, I got on very very well with Fujitsu. Michio Naruto was the, was my blood brother. He was very instrumental in, in managing the relationship, because it was quite difficult. Fujitsu had never had a relationship like this before, where it was not, you know, they weren't taking us over, they were trying to run with us. We had, I persuaded them to have a very very senior liaison officer sent to us, he was on the main Fujitsu board, and they sent him over as my liaison officer. And he's still one of my closest Japanese friends.

Oh right.

So they were very very good on that. We obviously used to go out to Japan all the time to make sure that there were no misunderstandings. The biggest issue was, was language and, and potential misunderstandings. But what Yamamoto and I decided to do straight off was, was run transparently. So I told everybody we had no, nothing to hide from Fujitsu, we were completely transparent.

Mm.

And we also did a, the start of a very very long-term programme, all the time I was there, which involved a lot of people, of transferring young engineers backwards and forwards. So, we would transfer young engineers from ICL to Fujitsu, and Fujitsu young engineers from there to ICL. And I think over the years that involved more than, 100, 120 young engineers.

Mm. Oh excellent.

And a lot of those people ended up then working for Fujitsu. So it was a very, yeah, symbiotic relationship, until, really, you know, the… I suppose, the final thing… We thought we'd be able to re-list ICL, and that's what we always had in mind with Fujitsu. But in the end that didn't work out. We never got the company good enough to re-list on the marketplace. And that's probably a disappointment, was a disappointment.

[44:19]
I wonder, what were your thoughts about ICL during this period? I mean, was it your view that, you know, mainframes would continue to be the, the main business computer? What were you thinking about…

No. No. We thought the major growth would be in the DRS systems, the Distributed Resource Systems.

Right. Mm.

Open systems. We put a big push into building the services business. We went into multi-company, multi-product servicing of computer systems, applications development. So we'd develop in applications for local government. Yes, so we were moving away from just the mainframe itself. Because, once we'd, we'd got through the development phase of VME, then, then it was very difficult to see, you know, why you would continue to spend so much more in that complete evolution, because it was pretty clear that it wouldn't be going along very much. So, about the same time I guess as… Well we and IBM moved into the sort of, the systems business at about the same time. But, but ICL was a precursor of the open systems movement. We thought that it wouldn't be closed, and IBM was always closed, so…

[45:54]
Right. Mm, yes. Indeed. And then the move to BT. This was in 1996 I think.

Yup.

This was quite a dramatic move for you.

It was a very dramatic move. And, actually, not many people know the history of the move, because, BT had been, or, Iain Vallance at that stage, had been wanting me to move to BT for some time. And, I said I couldn't because I was working with Fujitsu – and for Fujitsu, my contract was Fujitsu.

Right.

And I had a three-year contract, and I, I don't break personal contracts. But anyway. In '95 Iain Vallance took it amongst, well, on his better judgement to go and see Yamamoto, and arranged my transfer. Which I don't think anybody ever has really believed, that's what it, what it was. So I was in the end transferred from Fujitsu to BT. And my friend Naruto, who was then the Deputy Chairman of Fujitsu, came over when I first, my first day in BT, to hand me over as they say. So it was a very difficult move. I had been with ICL a long time, been through some ups and downs, was very loyal to Fujitsu and Yamamoto and what they had helped us to achieve, and, and I must admit, it was just a fascinating time with the computer business at that stage. But having said that, you know, BT was then, 170,000 people, was a very very large name in the marketplace, and telecoms, I had not really been involved with apart from the STC bit. And so, yeah, I made the leap.

Was Iain Vallance a personal friend?

Not at that stage, no.

I mean was it your reputation as a, as a top manager which attracted you to him?

I think it was that, it was primarily the international part, and, my engineering background. What they had decided was that, it would be difficult to run a big company like that if you didn't know something about the engineering technology And, at that stage, it was then the early stages of telecommunications going international.

Mm.

Because although BT was the first to be privatised in ’84, in 95, ’96 there were no other companies that weren’t controlled, or, still controlled by the governments.

Mm.

But it was, it was clear that the BT model would be followed by others. So Iain had a view that, as this was changing, that BT had an opportunity to expand internationally, and therefore have somebody with the sort of international experience I had.

So how had he gone about finding you? I mean did he use headhunters, or…?

No, he knew of me, from…

He knew of you. Yes.

Yes. Oh I mean ICL used to sell a load of computers to BT. I probably sold him computers over the years. [laughter]

[49:10]
OK. Right. Good. Well, the share price, if I remember righty, of BT was pretty low when you took over.

It was.

It was five quid or something. £5.

A bit less actually. £3.50 I think it was. Yeah.

Was it really? OK. So what did you find, what were the problems you found when you arrived at BT?

Well, it was, a) it was a very very large organisation. So the first thing Iain Vallance told me was, don't visit all the offices. I think the, the main thing was, it wasn't growing very fast. The business of the mobile part of it was very complicated. Because although we had the mobile business, the regulator insisted it was all run completely separately, and we had to have separate shareholders and all this sort of thing. The technology was changing quite rapidly. And we had to try and understand whether an international expansion would be, possible I guess. So they were the main things that I got concentrating on.

Mm. So what were your first actions?

First actions were, I was trying to convince people that, that BT could grow, and it wasn't a utility. I thought that we would definitely have an opportunity to grow internationally. I thought that we would be able to grow by providing more services to other people, a bit like the old model that we had been using in ICL, and that there would be massive change in the marketplace, as convergence of computers and telecoms finally started to take off I guess.

Mm.

And, and again, you know, it's, it's all these things. We underestimated the change in the short term. So overestimated in the short term, underestimated the long term. So we all thought we could move faster in the short term, and that was more difficult.

Mm. You did break the company up into units, rather than…

Yeah. Tried to change it into different structures. So, it was a bit unwieldly, but that would be the understatement of the week actually. So we tried to get more delegated authority. When I joined, every pricing decision, of changing the pricing of any of the products, went to the full board. So it was a very odd structure from that point. Part of it was because it was, the regular was, was so involved. And, I tried to get a more balanced view with the regulator, so, stop fighting the regulator I guess was one aspect of it. Split the company up into the businesses that were heavily regulated, less regulated or non-regulated., and get people to think differently, you know. So the

regulator part is different from the non-regulated part. See how much we could put more into the non-regulated part, and set up a whole international division to try and grow internationally. And then the first parts of the service business, you know, where we'd go out and sell services to big companies, or operate their systems around the world.

[52:25]
Was it obvious at that time how important the mobile division would be?

No, not at all. I mean looking back on it, it's really fascinating. Because when I was running ICL, I had a, a young man work for me called Chris Gent, and Chris Gent at that stage was running a joint venture that ICL had with Barclays Bank, which was the first big data outsourcing business, and it was called Baric. And Chris talked to me and said that he had this offer from a guy called Ernie Harrison to go in and start working on a mobile business. And this was in '84. And was it a big risk? And I said, 'Well, obviously a big risk, but, have a go at it.' And so by the time… And it obviously it worked pretty well. [laughs] But by the time I was in BT in '96, I mean it was, it was growing, but not at that sort of pace. BT was in a difficult position because of the regulatory shackles that it was, that it was in. But I think it was not at all clear that, you know, that it would ever move to the sort of volumes that we, we see now. No, not… I mean I don't think even… Ernie Harrison was a far-sighted guy, but he would even be surprised I think.

[53:43]
Mm. And the Internet, how was that impacting you at that time?

Yeah. Internet was just, was really I suppose just starting to take off. And, the… You know, IP protocol was developed actually when I was in ICL, and, the, the early days of TCP, IP and all that sort of stuff was, was going. And I think that, that actually, early days, we thought that the Internet would be more important than even Microsoft. Because in the early days Microsoft didn't really understand the impact of the Internet. So maybe we were a little bit ahead of that. I always say that I was quite fortunate, because, Sir Tim Berners-Lee's mum and dad used to work for ICL, another little known fact. So not… So, the Internet was just taking off, but, but

nobody really knew what the commercial implications would be. And mobile was taking off, but nobody knew it was going to take off at that sort of level.

[54:50]
Mm. And was it your sense that, size was everything in telecoms?

There was a sense that, that if you, that if you just operated in a highly regulated voice environment, that you wouldn't be able to grow. Because, the regulated environment was so skewed towards consumer pricing, that if you grew a bit, then, the regulator would just put the screws on the pricing a bit more. So, how, how could you grow a business from that base, was our big issue.

[55:30]
Right. Right. So the, the attempt to take over MCI. What was the story behind that?

Well, actually, it started before I joined. Iain Vallance had formed a relationship with a guy called Roberts who was then running MCI, and bought 25 per cent of MCI.

MCI was an American telecoms company.

MCI was an American telecoms. And they were the main competitor to AT&T. And during the regulatory fights, which there were a lot of in the early Nineties, MCI was always regarded as the, the law firm with a telephone tower on the top. Because they used to sue AT&T all of the time. Iain thought that they had an interesting model as a challenger to the incumbent, and, and therefore bought this 25 per cent. At that stage, you couldn't buy more than 25 per cent of a US telco because of the US legislation. And so, when I joined, we thought about it, and, and I guess concluded that if we could buy the rest of it, if we could get regulatory approval to buy the rest of it, it would be a good thing. And, and it proved out to be a bridge too far. I mean it was an interesting thing to have done, and probably if I was doing it again I would probably still try and do it, but because of the regulatory environment, it took us a year to get, or a bit more actually, to get regulatory approval, the US insisted that if they allowed us to by MCI, we had to get the UK Government to get rid of our golden share.

Oh right. Mhm.

So I negotiated with the British Government to remove the golden share, the US Government to allow us to buy 100 per cent. Doing all of the approvals where we overlapped in between was, was difficult. And, that took, well, the thick end of eighteen months I guess. And we made the offer while all this was going on, and then while all this was going on their, MCI's, how shall I put it, outlook deteriorated. So we renegotiated a price, and, they then sold themselves to WorldCom.

Mm.

And, BT made a stunning amount of money out of, but it was a, a bridge too far from our strategy point of view, and really set us back a lot. Because then people said, well, you know, all this international expansion maybe is not what it's all cracked up to be.

So how did BT make the money out of it, where did that come from?

We owned 25 per cent of MCI.

Oh I see, the sale of that to WorldCom.

Yes. So I negotiated with Bernie Ebbers, and Bernie Ebbers wanted us to take WorldCom stock for our 25 per cent, and I refused, and insisted on cash, and we got $8 billion of cash. For the next six months Bernie Ebbers used to go around the world telling everybody what a stupid Englishman I was because, the WorldCom stock had gone up from 50 to 90, and I would have, I left so much on the table. But then of course, you know, nine months afterwards the thing went bust. By which time everybody had forgotten that I got my $8 billion. [laughter]

So it was a pretty smart decision after all.

Yeah, looking back it was. But, but it was a pity because, the MCI thing hurt the reputation of both Iain and myself, that, you know, we'd, we'd blown it all up, and,

and couldn't pull it off essentially, And that set us back I think quite a lot of, of the international thing. Because at the same time we were doing the, we bought Japan Telecom, or the link with Japan Telecom, and we were doing a lot of the expansion into Europe, and that sort of jaundiced a lot of… said, oh, maybe this international is not what it's all cracked up to be.

[59:35]
Mm. OK. So the, the share price came down again in, and, had been up as high as about £15 I think.

Well that just went up with the bubble. I mean I joined in '96, and it went up, in 2000 it went up to fifteen quid. And then down a bit. But we just went up and down with the marketplace. That was not a major… I looked at the stuff then, it was not a major disconnect with the MCI thing. We just went essentially up and down in the marketplace.

Mm. You took quite a lot of flak in the press for the problems of BT at that time. Do you think that was justified?

Well, yeah, you… You're the man in the spotlight, so, everything's justified I guess.

So that's where the buck stops, kind of thing?

Yeah. I mean, when I was running ICL I was regarded as a hero in some aspects of it, and I'm sure that I didn't deserve all of that. So the other, I was put in the cooler, I probably deserve that. So, probably, evens out I think.

[1:00:34]
OK. And you left BT in 2002.

Yup.

Reasons?

Oh, basically, we had quite a lot of difficulty when the… We bid for the 3G licences, paid a lot of money. Did the spin-off of O2. Got all the balance sheet sorted. But those days there was discontent on the board, Iain Vallance was, was asked to go, Christopher Bland came in. Time to change. So, my finance director at the time was Philip Hampton, now Sir Philip Hampton.

Oh yes. Mhm.

And, so we essentially thought that we would move on. So I went and then shortly afterwards he went.

[1:01:18]
In the second part of this interview with Sir Peter Bonfield we're going to be talking about his, his childhood, his influences, and his views on the computer industry, and indeed the information technology business. So Peter, when were you born and where were you born?

I was born during the war, 1944, in a nursing home in Letchworth, Hertfordshire.

And your parents, what did they do? Well we know your father was involved with ICL, eventually.

Yes. He was, he was a very very early employee of Hollerith, which then became ICT, which then became ICL. During the war he was working at the plant in Letchworth, and, I found out later on that he was also assigned to Bletchley Park.

Oh really?

And my mother was a state registered nurse.

Do you know what he did at Bletchley Park?

Well, only now actually. It's really strange, because, you know, during the war, or after the war, you never asked your parents what they did. I knew my dad was a

computer tech engineer, sort of thing. But it wasn't until many many years afterwards that, I met, or I was talking to, Arthur Humphreys, who used to be the, a previous chairman of ICL. And he said, 'What a coincidence,' he said, 'you being the Chairman, now, I'm the Chairman, and what would your old dad think about this?' [laughs] And I said, 'How on earth did you know my father?' And he said, 'At Bletchley Park.' And I said, 'I don't think my dad worked at Bletchley Park Arthur.' And he said, 'He certainly did.' Because, a lot of machines were made in Letchworth, with a guy called Doc Keen, transported over to Bletchley, and my dad was an installation tech. So, he had, by that time, passed away, so I called my mum the next day and said, 'Mum, nobody mentioned that Dad worked at Bletchley Park. Can you comment about that?' And she said, 'No.' And never said anything. He had apparently signed the Official Secrets Act and didn't admit to it afterwards. So I found that out a long time afterwards. Then, my elder brother has done a lot of research, and yes, my dad worked at Bletchley Park.

Oh that's fascinating.

So, that was interesting.

[1:03:22]
Fascinating. What kind of a childhood did you have?

I thought pretty straightforward. I've got two brothers, we were born very close together, so, one year between us. So we grew up in Hertfordshire. My mum was a coalminer's daughter, so, she was a very straightforward lady. And a good nurse as well. So, we had quite a good upbringing. Because her father worked down a pit when he was twelve until he, obviously had to retire with a black lung, everybody was focused on education. So, my mum's whole drive was, everybody had to get the best education they could. So she started out, the best school in our little town in Baldock was the convent school. So, we all went to the convent school, until we were eleven. Taught by the nuns. Which is why I'm still extremely punctual. [laughter] And then… So the nuns got me through the Eleven Plus, and, I got into grammar school, in Hitchin. And studied pure maths, applied maths and physics, and played rugby, and, my rugby teacher was also the physics teacher, said, you know, 'How about

going to university?' Which at that stage was just, nobody had ever thought about it. I didn't know anybody who had been to university. None of my family knew anybody known to go to university. So, I thought that was a bit of a, an interesting thing to try and do. So, he managed to get me there.

[1:05:01]
And you went to Loughborough.

Went to Loughborough. Yes.

To study engineering.

Yup. So…

Why engineering?

Well, I don't know. Just, my dad, you know, so, he always said, we're just, all engineers. So, I don't know quite why. I didn't think about it too much, just, did what I was, I enjoyed. I enjoyed maths and physics at school a lot. So, I was always sort of interested in, in that sort of thing. And maybe it's just, washed off from my dad. Anyway, so that's, I always thought, engineering would be the right thing to do. I liked other subjects, but my dad said there's no money in them, so. And he was probably right.

Did you enjoy engineering at university?

Yes. Yes. I did mechanical engineering. In Loughborough it's a four-year course, and you do a sandwich, and during my off year I worked for a machine tool company called Staveley Machine Tools.

Oh yes. Mhm.

So I got very heavily involved in servos, high-speed servos, vibrations and that sort of thing. And that's really what I specialised in at the end of it. So I did a mechanical

degree, but came out of it with a lot of electronics as well, and that sort of got me into the first job at TI.

Mm.

Yeah, Loughborough was, was good. Because I was an athlete as they say then, and I was…

Yes, Loughborough's very good for all sports.

Yeah. I was a cyclist, and I used to ride for the university cycling team. And it was, yeah, it was, it was good. And the course made it interesting and different. Because it was a four-year course, when I joined Texas Instruments and went to the States they assessed it as an MSc level. Which was a big plus for me, because they paid MSc students more than people with first degrees. And, so my four years at Loughborough paid off. [laughs]

[1:07:04]
Ah. Excellent. [laughs] OK. Looking back over your career, what have you done that you're most proud of?

[pause] Stayed in the industry.

Stayed in the industry.

Yes. Stayed with it. Because, a lot of my friends moved into different areas. You know, they'd do, retail or banking or something else. I've just stayed in the technology field, at the international end of it, for 50 years. And, so I've got a lot of friends that I've known in the industry for a long, long time. Been able to see a lot of the developments unfold, all of which is sort of mind-blowing, I think. And I've managed to meet some very interesting people at interesting points in time. So I met Steve Jobs and Wozniak in 1974, before they started Apple. I met Bill Gates when he was, 20 I think. And, and it just, yeah, it's just been, I've found it a very interesting journey. So, I've not really ever thought about, this is a job. I do things that I enjoy

doing, and people pay me money to do it, which is, a pretty good combination. And I've always enjoyed it. And I still find it just absolutely fascinating.

Mm. What sort of lessons about business and industry do you think you've learnt during your career?

Well, the, the technology business is international, so you've got to think international from the, from the outset. As we said before, it moved incredibly quickly. We overestimate it in the short term, underestimate it in the long term. I think that is definitely true in this business. And it moves very quickly. So that you've got to be in a situation where, if you're not moving forward… You can't stand still in this business, you just go under. And I've found that, a lot of people sort of get to a plateau and say, 'Well we can stay here.' But that isn't the case. Now, you know, sometimes, you know, moving forward, or taking those leaps, you know, does cause all sorts of issues. We were talking about the MCI thing with BT. But I must admit, I, I think I've learnt that, if you don't do that, it's, you know, you've got to try it and some of them work, some of them don't, but you've got to keep trying. And, age is no barrier. I know some people in this business who are still very good at it at 84, and some of them are very good at it at sixteen, so, it doesn't make much difference.

[1:09:47]
You mentioned Pat Haggerty as somebody you've learnt a lot from, modelled yourself on.

Yes.

Are there other people who have had a, a big influence on your attitude to life?

Yeah. Yamamoto in Fujitsu had a big influence on my life as well, because… I guess Pat Haggerty always, a bit like my mum, he always said, you know, treat everybody the same, you know, you shouldn't be deferential to people, treat everybody the same, but everybody well. And he was very inclusive, and very driven. And I've always tried to be that. Yamamoto was much more, I think, longer-sighted, and had incredible, I don't know, personal ethics and, and his responsibilities round that. And

so I've always [inaud] taken that to heart. And I think that, you know, in the end, I think I sort of, tried to model myself around the best of both of those. And then the other guy who's made a big influence on me is Dr Morris Chang, who's the founder of TSMC, and he's my sort of role model of never give up. Because, I worked for him in the mid-Seventies in Texas when he was running the semiconductor business of Texas Instruments. He started TSMC when he was 62. He's still running it when he's 84. And it's a $120 billion market cap, semiconductor business. A little bit smaller than Intel. And he's still running it, and he's still very very sharp. And he still stays focused. So, he's my role model for, you know, don't let age get in the way.

Mm. I read somewhere that you model your management style on a sort of, halfway house between the Japanese consensus approach and perhaps a more American personalised decision-making approach. Is that true?

Yes. I think that, a lot of the, of the bad points of the US were, some of the dictatorial management. When Pat Haggerty left TI, the guy who took over from him was a guy called Fred Bucy. Fred Bucy had a very, very very different style than Pat Haggerty. It was very much, hard, top-down drive, without much regard for, for individuals to tell you the truth. The Japanese were much different, you know, with high regard for the individual. The individuals make the whole organisation work, but that slows things down a bit. So I've tried to do a bit of both. Because I think, unless you can get everybody behind you, there's no use, you can't beat people to innovate, they have to want to. You have to try and unleash people's risk-taking, and therefore they've got to fail, as I have done. And you learn a lot. But in the end you've got to have everybody thinking that you're a good person to work with and for, and that's what I've tried to model on the, sort of the Japanese consensus, so that you… I've never really had a, a mega hostile relationship with my folks I've worked with, I hope anyway.

[1:13:19]
Mm. And, talking about failure, what would you say your biggest mistakes have been?

I think I probably should have, going back to Texas Instruments, I should have insisted that we don't design the home computer using our own microprocessor. We should have used one that was much better developed for it. But, there you go. I didn't manage to get that one. I think, coming into ICL, we probably should have been much more aware of the financial situation in STC when we did that merger. Because we were a bit, open-ended when that didn't work out, and I had to rights issue and all the management changes from there. And we were probably slow in terms of, of then, trying to get the benefits out of the bigger merger. Because we were a bit gun shy. And then in BT, we've talked about it in the context of MCI. I mean looking back on it, you know, was it, did we do better than WorldCom? Yes because Bernie Ebbers is still in jail, and WorldCom in bankrupt, so I did better than that. But it was a disappointment that we couldn't pull that off, and that sort of set too much of a scenario that we couldn't expand internationally when in fact we could have done. And probably should have done.

[1:14:47]
Looking at, I mean, what's happened to IBM over the last 20 years or so, and indeed the BUNCH, the group of its competitors at the time, do you think ICL could ever have been a world player, a world success as it were?

No, not as a stand-alone business. No. In the end it was too small. And that's… When we were linked with Fujitsu and we thought that we could re-list, because, Fujitsu really didn't want to stump up all the money to buy ICL, they didn't mind investing in us but they really thought that we could get some, some funding externally if we re-listed, I think in, looking back, that was probably, a step too far, unrealistic at that point in time. We were probably too subscale. And the marketplace here is still pretty, risk-averse for tech companies. Different from the US. So I think that, that as ICL was a British company with a lot of its operations here, I think it would have been, probably too far a step to, to say that we could get full support from a, from an open marketplace.

[1:16:03]
OK Since you left BT, what have you been doing?

Stayed in the tech business, and stayed international. So I'm currently the Chairman of NXP Semiconductors, which is the largest semiconductor business in Europe, the fifth largest in the world, market cap's about $30 billion, and we've got 42,000 people around the world. So, stayed in the semiconductor business. So…

What kind of semiconductors does it make?

Oh, all sorts. But mostly automotive. And, secure communications chips. So a lot of… We think we're well positioned for driverless cars and secure communications and that sort of thing. So, I do that. I'm still on the board of TSMC, with my mentor Dr Morris Chang. I'm on the board of Mentor Graphics, which is an electronics design automation company in Oregon. And I chair another software company that's based in San Jose, and they do essentially outsourced R&D software for the likes of Google and Microsoft and these sort of things. I'm doing a couple of consulting things. I mentor younger managers, and I am the Chairman of my old university.

Mm.

And in between I go skiing.

[laughs] Well, what, as a mentor, what advice do you have for these younger managers

Well it depends on what sort of things they're doing. So, one of the guys I spent quite a lot of time with is Olaf Swantee, who did the EE business from, he was put in when EE was obviously running up from being owned by Orange and T Mobile. And that was interesting, because, worked with him on getting the 4G stuff off and running. He's now moved to be the, the Chief Executive of Sunrise in, sorry, Swisscom in Switzerland. And, yeah, I suppose over the years I've mentored, 25 different sort of folks. I do it with a group, originally started in Brussels, but now is over quite a lot of the European major economies. And, and I find it interesting. So it keeps my network young, because otherwise my network stays up. And of course, you know, being involved with the university is, keeps you young. But, the main thing I decided to do when I left my, you know, full-time job, was to stay in technology and stay

international, and try and stay in the technologies that reinforce things. Because what I've found, and I keep telling people now, is, don't get obsolete. I've seen a lot of my friends, they've sort of quasi retired, go on a board of a company that they know something about, because they read the *Financial Times* or something, and think that everything they do is then translatable to that business. And within two years that is, probably not true. Whereas all that I do now is essentially interrelated, so it's EDA, development, making stuff, semiconductors themselves. I just stood down from Sony where we were in the end user equipment, and in Ericsson, I was on their boards for a long time. So, I sort of, could see it from start to finish as it were. And that keeps you very relevant. So I tell everybody, you know, focus on what you think you're going to be, you could be good at for a long time, and then stay relevant. And keep moving and, make a few mistakes along the way.

Mm.

Take a few risks.

[1:20:00]
Mm. Mentioning EE has just reminded me, I should have asked about the 3G licence fees. Are they justified, was that a…?

Oh, no, looking back, we paid far too much, but, it was one of the…

Was there any alternative?

Yeah, there was no alternative. Because the, it was very clear… Well, there was one school of thought that said, well don't bid for the licence, just stay with 2G. And I said, well what's the value of a business which has only got a 2G licence? I mean it's clearly no value. So we were stuck between a rock and a hard place, that you had to bid for the licence, because, the way that the licence operation was structured, a lot of people were going to come in, and they were going to pay a lot of money, so they were going to jack it up. So, yes, we paid too much for it, but there was no alternative. And that led us then to thinking that if the regulator wouldn't allow us to do any synergies with BT, that we might as well spin it off, and get the money off our

balance sheet and put it on their balance sheet and see what would happen. Which again was controversial. I remember when we were going through it with Philip, because Philip was pretty grateful, this would be a very…

Sorry. Philip…?

Philip Hampton.

Philip Hampton.

Sorry, Sir Philip Hampton. And he was my finance director. And he said, 'Yeah, this is pretty logical Pete. Yeah, you can't do it. There's no synergies allowed, so why keep it?' The balance sheet is, is pumped up because, you know, their business. If we spin it off, and we do believe that there's going to be consolidation as we call it, then it might be better for the shareholders to do that. At the time very controversial, but obviously looking back was a good decision. Now BT have bought it back at half the price. And I think without any regularly constraints. So, not a bad diversion I wouldn't think.

[1:21:46]
Indeed. What sort of honours have you had, honours and recognitions, awards, have you had through your career? Obviously you've got the knighthood with…

Yeah, I've got my knighthood. That was due to services for the computer industry, and the information society. In the late Eighties, early Nineties, there was a big push across Europe to try and establish Europe as a leader in the information society, and it was a big push by Commissioner Martin Bangemann. And I was, I was involved with that with the steering group there. So I think that was part of the reason why I got my knighthood. So, that was just at the end of my ICL period, before I joined BT.

Yes. Yes.

I got a CBE in 1984 – sorry, '88, sorry. So four years after I had become the Managing Director of ICL, I got a CBE. So that was, very interesting. Because at

that stage, I was, 44. And I got my knighthood when I was 51, so I guess I must have been, doing it early. And, I am a Commander of the Order of the Lion of Finland, which is an interesting one.

Mm.

And that relates back to when we were trying to drive ICL more international. We bought the computer business from Ericsson, and the computer business from Nokia, and combined them into a new, Nordic thrust for ICL and Fujitsu. And as a result I used to spend a lot of time in Finland, and we put a lot of effort into the education of younger engineers, and so I became an Order of the Lion of Finland, so, I'm very proud of that.

Good for the skiing as well.

I got honorary degrees from eleven universities, started with the one that I attended, so that's a big plus. I've got an Honorary Citizen of the City of Dallas, Freeman of the City of London, and, yeah, that's sort of stuff. Interesting.

[1:24:02]
Pretty good. Looking back to the very beginning of your career, could you have foreseen the way the industry has developed?

Not at all. No. It was just impossible. I mean I'll give you a couple of examples.

Mm.

When I started, as I said, we were making two-inch wafers. At that stage it was widely held by most of the research people that you couldn't grow a silicon wafer more than six inches across, because the gravity wouldn't allow you to do it. And so, the idea that you could grow one, you know, this big, would just, it's impossible. And, now it isn't, because you can grow them a lot bigger than that. So that's changed. The other thing was that, the line width when you were designing these things, I mean, we used to, so we started out making drawings of them, but, then it

moved on to shrinking a lot more than that. but I remember sitting through a presentation of the R&D people with Texas Instruments in maybe, the early Seventies, and there was a very well-known guy there, and he said that the minimum line width that you would ever be able to get to is 500 nanometres. And that was it. That will be the theoretical possibility. Because, the wavelength of light is under 98, you know, so… TSMC is now working on five nanometre stuff. So, you know, a lot of these things, it's just in the realm… If you would have said five nanometres in the Seventies, you would have been laughed at. I mean, it would have been, totally impossible.

Yes.

So I think what I've learnt in this business is that, nothing seems totally impossible. And the learning curve of where you can get with technology is, pretty driven. So when Apple came out with the, with the first iPhone in 2007/8, at that stage it was a complete revolution. I don't think anybody really understood the implications of what you could do if you had a computer in your phone. Because it wasn't actually a very good phone, if you remember. Because…

It wasn't a very good phone. [laughs]

The computer would interrupt your telephone calls.

Yes.

And if you were a telephone engineer, that was a horrible thing to do. And nobody then had a clear view of, of what you could then do with it, you know, of apps and everything else. So… And certainly the Ericsson people and Nokia people didn't think it would be too much of a competition at all.

Mm.

And that's not, you know, that's less than ten years ago. So, this industry is, it's just, it makes your mind boggle I think, and I think it continually will do.

Mm. Are you optimistic about the future in IT?

Oh sure. Yeah. I mean, I think the, the revolution now will be less… I mean, the hardware is going to continue to evolve, but I think, we're not going to see sort of, the revolutions of the technology, you know, of what happens when you go from 25 nanometres to five nanometres, say, you know, it goes faster and uses less battery, and that's… I think that is, is mostly on a path that you can foresee. What is difficult to foresee is then, the applications that you can use it for, and what they will then drive. So, you know, who thought that, the explosion of apps for instance?

Mm.

I mean when we did the first plug-in app on my TI-59, I didn't realise that there would be a million apps. [laughter] I mean so that whole concept is different. But we're now moving into a situation where, because of the, of the young people now growing up in this environment, they take it as, as standard. And what they're going to be thinking about going forward is going to be, totally different. And so we've got to solve the security issue, the communications issues, what happens when, you know, the Internet of Things really does take off. I've got no idea what that means. I mean I don't think anybody really has got an idea of what it means. But it's clearly going to, once you've got everything connected into everything, then, what can you do with it? What can big data do? So I always say, you know, the bandwidth, big data, Internet of Things, and the whole idea that all of the population is just intuitive of how they use it, I think there's just going to be another revolution.

[1:28:37]
OK. Peter, we've covered a lot of ground in this interview. Is there anything that I haven't asked that you think's important?

Well, is this mostly aimed at people within the UK, or, or any…?

It's international. I mean we expect this archive to be…

Because I think the, the thing that, when I look back on where I've sort of changed, and had this, I think it's an immense privilege actually, that I was sent to the US with TI, at a young age, just when the whole thing was taking off. As they used to say, if you couldn't make a success in TI at that stage, you must be really stupid. [laughter] Because it's just grown and grown and grown. And at that stage, everybody went west. And, this was before Silicon Valley, because, you know, and then, Silicon Valley took off. I think over the next ten years the big implication is, east. You know, what really happens when 1.2 billion Chinese and 1.2 billion Indians take off? They're producing more engineers than we or the US are every year by about a factor of five I think.

It's huge, yes.

Once you get that going, and you get out of the mentality that, that all they do is copy stuff, because that is clearly not the case, then what is that going to do into the, the power of where the technology drivers are going to come from geographically? I think that's going to be fascinating.

Mm. Sir Peter Bonfield, thank you very much.

Thank you Alan.

[End of Interview]