Frank Land

Interviewed by

Paul Jagger

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Today is the 21st of May 2018. My name is Paul Jagger, Director of Operations with Archives of IT. I'm currently in the Information Technologists' Hall in London with Professor Frank Land. Frank, if you'd like to just perhaps give me a little bit of background about your early upbringing, and, through to your formative education years.

[00:27]
Right. I was born in Berlin, Germany. My parents were relatively affluent, and for the early part of my life I existed in comfort. I have to say, I have an identical twin brother, so, sometimes I slip into 'we', but that's because of my relationship to my brother and my, contact with, constant contact with him.

[00:58]
What was your father's occupation in Berlin?

My father's occupation was a manufacturer. The company… The family he came from actually lit Berlin. They were the company which did the gas lighting for Berlin, and they invented the distant lighting, so that you switch it on and off from the centre.

OK. And your mother?

My mother was born in Vienna. She was not born in Vienna, she lived in Vienna. And she was an artist. She was university educated, and, cultured. My father, less so. He was a businessman. He ran a manufacturing company, manufacturing air compressors. And, until the rise of Hitler, my guess is… I was born in 1928, so, so a little bit before then. My guess is, we were reasonably comfortably off, though obviously the family had been hit by the inflation and economic problems in Germany, but we were hardly aware of that.

So, would you categorise it a comfortable middle-class existence?

It was an affluent…

OK.

My grandfather had actually ridden with the Kaiser, so he was in that sort of, class. The family was large, there were six brothers and one sister. As I say, w existed comfortably, and then, Hitler came. And, we were a Jewish family, not very observant. One of the, in Berlin particularly, many assimilating Jewish families, who were assimilating to, and becoming part of the ordinary nation there, the idea of pogroms wouldn't have been, they wouldn't have thought of pogroms or anything like that. Then Hitler came, and of course everything changed. But my father was an optimist, and thought this would blow over, this can't last. However, things got steadily worse, and finally his business was expropriated for, a pittance. One of his brothers was one of the earliest people to be sent to Dachau concentration camp. Now that was, that brother had been in the First World War, he had been in the observer balloons. He was one of the first people to survive when the balloon was shot down by, by, parachuting down. And got an Iron Cross for that. So, he was a war hero. Nevertheless, he was one of the first to go into concentration camps. He was again released, but by that time it became clear that, we couldn't continue in Germany, it was getting worse and worse. And the final straw was Kristallnacht. You have heard of Kristallnacht?

I have, yes.

Yes, yes. And I vividly remember Kristallnacht, because, the morning after we, we were children, six, seven years old, there was glass everywhere. The Hitler Youth were arrogant. And then, then there were all the curious dispensations. We had to add new names, we had to have, add names to ourselves, to indicate our Jewishness, wear a Jewish Star. When we went to the park, we couldn't sit on the ordinary park benches, we had separate ones. This was all very visible.
[05:04]
So, my parents applied to leave Germany, as did so many Jews, and, my father had a branch of his business in England, in London. He had a love for England, because he had been a commercial apprentice in England in the early 1900s. So, it was very natural for us to apply to go to England, and, we did get visas. And we finally left Germany in April 1939, arriving in England in April '39. You know, caricatures show refugees, Jewish refuge children with overcoats and, and looking funny. We all

had those, because we thought that's how the English dressed. So we came in knickerbockers, because we thought the English wore knickerbockers. And of course, when we were walking in the streets in, in London, the kids jeered at us, because we looked so funny.

[06:14]

Anyway, my brother and I went to the local elementary school, in Kilburn, Essendene elementary school. And, in September, when the war started, we were evacuated, and we were evacuated to a small village, Bedmond, near Abbots Langley in Hertfordshire, only a few miles out of London, quite near.

Very near to where I live.

Mm?

Very near to where I live.

Very…?

It's very near to where I live.

Very near… [laughs]

Yes.

Yes yes, so you know it. Abbots Langley, Kings Langley and all that. Actually, it was quite amusing. All the children who were evacuated from the school went into the village hall, and the families which had agreed to take evacuees, came and picked children from the hall. And guess who was left? Two little Germany-speaking boys, who didn't seem to fit.

Yes.

And there were a few others who didn't seem to fit. So, that little group was then taken down to other people who had agreed to take evacuees or were thinking about

it. And, we came to a house. We were seen by the lady there. And she immediately took pity on us, and said we could stay overnight, see what her husband thought. We stayed there for years. They became our foster parents, our second parents. We were deeply fond of them. They had a younger son. We are still friendly with them, we still see them regularly. So, for us, the evacuation worked out extremely well. Other people of course had different experiences.

Yes, quite.

We were lucky. We were lucky.

[08:13]

*OK. Thank you very much for that. that's very helpful. Are there any particular…
You've already mentioned your, obviously your parents, and brothers. Are there any
other characters from your early life, either in Germany or in the early years of
coming to England, that were very formative and influential in your development?*

In… Yes. I don't remember so many in, in Germany. There was a, there was somebody when we went to a kindergarten, and the headmistress of that kindergarten, who were very close to our parents, and they subsequently came to England as well, and we renewed that relationship. But that's really very minor. No, much more interesting is, the school, the elementary school, the teacher in whose class we were was extremely sensitive to, to us, and made sure that we were assimilated into a group, and she assigned us to a particular boy to look after us, had to teach us English, and so on. I still remember his name. I have tried to contact him, but I've never been able to. His name is, was John Wilson, which is not an easy, easy person to find.

I'm sure there's quite a few of those.

[09:30]

But that's one particular person I remember. But mostly we remember of course the foster parents, and the, and the house. He was a builder. He was a, what would have been a yeoman, all-rounder. He was a carpenter by trade. He could do everything.

He could turn his hands to everything. In particular, field craft, he was an excellent shot.

OK.

And we learnt, we went shooting, those things. And we really loved to be there, with them, in this sort of, country style life.

So, the father of the household, was he too old for military service, or…?

He was too old for military service, yes. Yes. He had been in military service in the First World War. No. I, I have to think again. [pause] No, he was… That's right. He was working for de Havilland.

Ah, right. Yes, OK.

A reserved occupation.

Yes, that would be… And, of course very, very close by as well.

Yes, very close by. Yes, yes. yes. That's why he was a reserved occupation.

OK.

[10:38]
Other things I remember? Well, as I say, he was a, a great poacher, and we learnt that sort of skill.

A great poacher. [laughs]

Yes. Yes. He was an excellent shot, and he would do a lot of poaching. He did a lot of poaching.

And there are quite a few substantial estates in that…

Yes. Yes, that's right. We were very near… Maybe you remember the Ovaltine dairy farm?

I'm, I'm aware of it, but, I've never been there.

We went there to work there every Saturday, cleaning up the stables and things like that. But we had great fun in the countryside.
[11:15]
But the school was an elementary school, and, at fourteen we were kicked out. Kicked out is an exaggeration. But the headmaster said, we were bright boys, and he advised our parents that, the best occupation for us probably, to make a start in life, was to join the Post Office, as, first as messenger boys and so on. [pause]
[11:41]
Go back a little bit. My father was interned on the Isle of Man. My mother had to look after herself during the Blitz.

So your father was interned.

My father was interned.

On what…

As an enemy alien.

Because of his nationality?

Because of his nationality.

OK.

As…

I was well aware that Italians were interned.

No. No, all, all, all the German refugees were evacuated.

OK.

The authorities, again, tried to be sensitive to an extent, in segregating the real Germans from the refugees, but they didn't always succeed.

Yes.

In the case of my father it was all right, but I know others where they were brought together with, with the actual real Nazis, and had a very tough time indeed. And the worst of all were those who were sent to Canada, some of them had an atrocious time. But in the case of our family, we were lucky. My father was evacuated in a highly cultured environment of Jewish refugees; the Amadeus String Quartet came from there, and things like that.

[12:55]
Were you able to maintain correspondence during that time with the parents?

To an extent. We… Because we were so near London, and we were able to cycle to London, and see our, see our mother. But she had a tough time, because she had to make a living, and she was bombed out twice, yah, twice, and, survived it. She was a survivor, and she was a very tough woman. And she started making a living manufacturing handbags out of felt. And later that turned into manufacturing dolls' clothing, and it became the principal supplier of dolls' clothing to Woolworths. And when my father returned from, when he was released from internment, he joined the company, he set up a proper manufacturing company, called the East Surrey Engineering Company, making dolls' clothing. It was a shell company he bought. Anyway, they made quite a success of that.
[14:13]
But after the, after we were kicked out of school, we returned to London. Our mother refused to accept the idea that we wouldn't go on to higher school, and she went

round the various schools, talked to headmasters, and finally got us into what was Willesden County Grammar School.

OK.

And, there, we were put first of all into a year below our age range, into the B stream, but we quickly went into the A stream and our proper age, and really quite thrived there. Joined the grammar school, went to sixth form, and, then applied for university.

[15:01]
Were there any particular extracurricular activities, hobbies, interests, passions, that you had at that stage in your life at the, the high school stage?

Yes. Photography, and, we went cycling everywhere. Went cycling from London to Land's End, to the Lake District.

Good heavens, you did well.

Those days one could do those things.

Yes.

And, we were part of a fairly narrow group of friends who did everything together. So, yes, that, they were, for, for us, fairly good times. Much harder for my parents who had to actually make a living.

Yes.

But, having been to sixth form, we applied to university, we applied to the LSE, and sat their scholarship exam. But, actually, didn't get through to the scholarship, and were accepted by Exeter, which was then a university college. We applied for deferment, but were not awarded deferment. And then, the administration discovered that we were not actually eligible to join National Service. There was a short window

between my father's nationalisation, so we weren't actually eligible, we weren't allowed to join the National Service. And at that time, LSE, looking back over their records, saw that we were, we didn't get the scholarship, and were nearly, high up, and took us on. So we went to the LSE. So in 1947 we joined the LSE. We took International Trade and Transport. You see the 'we' all the time.

It's… I, I was about to say. So you're, you and your brother are still mirroring each other's progression.

17:00]
Exactly. Exactly. Exactly. We graduated quite well. And then, in 1950 we graduated. We first of all joined the Economics Research Division. In fact I started working for a PhD. But after time, we thought, well, we ought to try to explore what the real world looks like, and, we started applying for jobs. And in 1950… late 1951, I applied to J Lyons and Company, and was offered a job there as a clerk in their statistics office.

[17:46]
How closely related were your academic studies to the first commercial employment?

Not really at all. Not at all.

OK.

In no way at all. [pause] In a sense we were very naïve about what it would be like working in a real business. One of the interesting things I found, which perhaps surprises you, when you were talking about how I, my experience, is, I worked as a clerk in a group doing the accounts for certain of the Lyons businesses, for some of their business units. The work was on a time and motion study basis.

OK.

But I found that one could actually do a whole week's job pretty easily in three days. In fact everybody could do it in three days. But everybody eked out their job to take

the full week. [PJ laughs] And that's typical. Anyway, after a time, the Lyons management, they had already their LEO project, about which I knew nothing, that had started a little bit earlier. I knew nothing about that. But, the Lyons people thought that, they should recruit people from their own business to join the LEO group. Most of the people at that time had actually come from LEO – from within LEO – from within Lyons.

OK.

And so they organised what was really an aptitude test, they called it an appreciation course, which lasted a whole week. And, I found it very tough. And, I found the homework very tough. But, I took it home. By that time I was living with a colleague at the LSE, who was also a research assistant. But she was a good mathematician. And, with her help I managed to struggle through this appreciation course, and as a result of that, was taken on to LEO.

[20:08]
Have you any sense of how Lyons shaped and defined the knowledge, skills, behaviours, characteristics that they were looking for, in people that were going to be involved in something that was a first of a kind and didn't already exist?

Yes. They were, they were looking for people… It was quite clear. A little bit of history. Lyons had recruited high level people already in the Twenties, of which of course John Simmons is the epitome. He was a first-class mathematician from Cambridge, a Wrangler. He was taken on by Lyons, with the brief of, trying to see how one can keep the business modernised. When one talks about, Caminer and reinventing business, that brief was, that was his brief. So was to reinvent the business. And he was innovative, he introduced innovations, and in, early 1930s, he set up an office called a Systems Research Office. I don't think any other business had that kind of thing. And they worked on trying to be as smart as they possibly could. He took many of his ideas actually from, from Frederick Taylor, scientific management. But, he developed the ideas that, new ways must be found of improving the efficiency and effectiveness of the business, and of providing the management with the kind of information they needed to run the business, and to provide that

information as speedily as possible. So Lyons' managers got their feedback on what had happened in the week on the Friday of that week. The "white book" was published every Friday, which gave the history of what had happened in the previous week, in the previous two days.

That must be really quite phenomenal for the era, to have a management information system that has such a short cadence cycle to it.

Exactly. Exactly.

I mean this is a…

Yes.

I wasn't aware of this, but, frankly you're…

No. No, I was a part of that system. You see, I was in the statistics office, preparing the information which was going into the "white book" which was going to the management.
[22:39]
And the main things we were looking at was, how did the, what actually was carried out, how did that correspond to the plans which had been in the production plans and the sales plans, and to the standards that came from Frederick Taylor, the standards. So they had a standard costing system and a planning system, and they were all the time comparing the variances. And one of the interesting things in our jobs was try to see, why were there differences? So this was, this was very early on. So, we had, Lyons had a business which really was very smart, and had very little fat on it. And people were looking always for ways of reducing that fat.
[23:30]
And so, in 1947 Simmons sent two of his lieutenants to America to see what new things had been occurring, what] new business ideas had cropped up during the war in America. And they saw very little which was better than anything Lyons had. But thy discovered computers. And, they had the idea, a man called Thompson had the idea that, computers, which were then used purely for technical calculations, could

solve some of Lyons' problems. Mass data, simple calculations, but a huge amount of data, of low value activities, and which needed to be, would say, somehow had to cope with. And, the old-fashioned ways of pen and paper wouldn't do it. The new old-fashioned things of punch cards were too rigid. They didn't allow enough flexibility. And computers seemed to bridge that gap. Well, the kind of things they started looking for then were people who had a logical, systematic approach to things. They weren't looking for mathematicians, though mathematicians very often had those characteristics, but they were prepared to look for anybody who had those characteristics. And in a sense it resembles the early days of Bletchley, where they didn't just recruit cartographers, they recruited people who had the kind of abilities which cartographers might need.

[25:16]
That makes perfect sense. Leads me into the next, one of the questions is, what persuaded you to choose a career in information technology, but actually, you didn't… choose it you fell into it. It was serendipity.

Purely serendipity. Again, one of the lessons, serendipity is so important for…

One might almost say that, you were creating the career of information technology.

Yes. Yes. Yes.

[25:41]
Serendipity. Was there any, any formal training or knowledge transfer that Lyons were offering at that stage to upskill this cohort of, of…?

It was very much an apprentice kind of thing, in those early years. I… There were about four or five people before me. And we were second generation. The first generation were my mentors.

Yes.

So I worked for a guy called Hemy, Derek Hemy. He became quite, quite well-known. He was one of the people behind the EMIDEC, at a later stage. But he was my mentor. And he was probably the best programmer I have ever known, have ever seen. And I had to follow them. Now, Lyons were very well aware that this was new, that it had to be done properly. You couldn't just jump into it. There was… And one had to be meticulous the way one did it. And, the high cost item was the machine. So one couldn't go on the machine until one was pretty certain that one had a program which worked. And so every program was checked by a second person before it could go on the machine, it had to be signed off. And, what I did… My mentor wrote programs, and I had to check them. That was a huge learning experience. At first barely understanding them, then one gradually got to know…

Yes.

And, everything was, happened very quickly. One quickly became a mentor oneself for the next generation. And, the number of things which we did in those early years, and the level of ambition, was incredible. One of the things which, coming back to Simmons, was that, if you were going to do something new, it had to make a difference, and it could only make a difference if your level of ambition was high.

[27:51]
So, what successes do you recall from that early stage of your commercial career for you to, to be…   Any highlights that you would say stand out.

My… Highlights were, my, I suppose my first major job in which I was in charge, and that was the tea blending job. This was a job to keep control over all the tea which Lyons purchased, or made. They had their own, their own tea plantations, they bought at Mincing Lane, which was tea auctions

The street of tea.

Yes. Yah. And they, and they had their bonded warehouses. And we had to keep control of each chest of tea, which was each chest of tea and so forth. That one. And, the tea then had to be blended, so it was tea blending. And it had to be blended to

taste and cost. So one had to choose the teas, which the computer did not do, but, the computer kept the record of where all the tea, all the individual tea chests were, and their value, and their movements, from bonded warehouse to factory to, to sales, to packaging and sales.

What we might call supply chain management.

Supply chain… Supply chain management. Yah. Yah, supply chain management. Exactly. And that on our tiny computer wasn't that straightforward.

[29:29]
What would you say were the, the key events in that, that journey that set you on the road to success?

[pause] I think, probably, the mentors I had, both in terms of, sheer teaching the intellectual side, but also the human side of it.

Mhm. And who amongst them were, would you call out as being the most influential?

Probably David Caminer. Caminer was the head of the programming group. And, some say he is the man who invented, software engineering. Many inventors, I would say, but he was certainly very instrumental in making sure that we did it right. He was very influential. And he made sure that we wrote properly, that everything was properly documented. And, if you wrote something, and he couldn't understand it, or he thought that the people for whom it was intended would not understand it, he'd throw things at you. He was fierce.

You learn quickly.

One learnt quickly, yes. Yes. And with a certain amount of trepidation. But, later on we, in later life we became very friendly. But he, he was regarded as a hard boss, but, he provided so much in terms of learning that people appreciated what he did.

[31:17]

What are your proudest achievements or moments from that, that time?

I was saying, we did a lot of things. So, there aren't… There are many. There are many. I suppose, one thing is, the actual achievement of promotion, from going up and doing more and more, for having more responsibility. I became, finally, what was called, we called our salesmen consultants, because, we were consultants. We had the arrogance of thinking that we knew better than our customers. Didn't always stand us in good stead. But we had that arrogance. And, one took, one's pride in being able to do things on the computer, and doing them right. I sometimes think of, when one sees all the failures, for example Santander recently – no, it wasn't Santander, no, the, Trustee Savings Bank.

Yes, TSB.

Yes. How could that have happened? I don't think David Caminer, if David Caminer had been there, it would have been inconceivable.

Well… Well I found it amazing that they managed to ascribe that to an algorithmic error. Who programs these algorithms?

The fact that they congratulated themselves for mission accomplished, makes them a particular joke. But that's… Yah.

[33:01]
So… And again, this s a very big question in the context of your background, but, are there things that you wish you had done differently, or things that perhaps could have been done better, from that era, that, that you would reflect on now?

Oh there's a, there's a particular, LEO foible, which came down from the senior management, from, Thompson and Caminer and so on, that we, for a long time, avoided, just didn't think that random access was necessary. We didn't think that alphabet printing was necessary, because we could do everything through code numbers. I mean, we got into all those in the end, but, we were held back by the fact that, there was a notion, these things aren't necessary. We could do things better, the

other way. Incidentally, talking about what one was proud of, I was proud that I felt I could do better job description and job design for an NCR computer than the NCR people. And I think it was true. And that's true generally of the, of LEO people, it's part of their arrogance. And that's why when we joined English Electric our arrogance, against their, very different kind of engineering side, just clashed. We felt, we felt that they didn't have the, the subtlety, the nuance that we had, in terms of doing things. They were prepared… The important thing was to get the sale. To us, the impotent thing was to get the job right. Which is not necessarily a good business proposition.

Well, yes. Yes, that's a… Just one anecdote from me. I remember very early on in my career reading a biography of Lou Gerstner, who was the CEO at the time I joined the company, in the 1980s, said that, so many times he would go into IBM manufacturing plants and, his view was that, products escaped from the IBM manufacturing plant that never actually got to market.

Yes.

His view was, sooner is better than perfect.

Yes. Yes yes. And that's again one of the things I remember very well, is, going to companies, and, seeing, in a sense, how hopeless they were. And contrast very much with similar German companies. I remember going to one of the best, which was the most successful, toolmaking companies, toolmaker, and talking to the managing director. He knew everything about toolmaking and their next best product. But he had no idea how the factory worked. The factory had a system where they didn't have a proper feedback loop. So, things were going adrift in the factory all the time. But he didn't know. And, you go to a German company, and the equivalent person would have a very great idea, would know exactly what was happening there.

Hm.

And that I found…

[36:33]

So I see you, you then returned to academic life.

Yes.

And what was the, the transition that led to you returning to LSE?

Well the first thing was that, I had been headhunted by CEIR, the consultancy, Scicon, Scicon [silent first c], it later became. CEIR. And, they offered me a major job. And I told the, my people about this, and they matched the salary, not quite matched the salary but gave me, offered me sufficient for me to be the… So I, so that was fine. But the fact that I had been offered another job, in a sense, loosened the ties. But then the main thing is, and my wife was still an academic, and she was offered a sabbatical in Wisconsin. And, the University of Wisconsin offered me a place as well. So I asked my management, could I have a sabbatical? It seemed very reasonable to me that one could, that what worked in academia, sabbaticals, would also be a useful thing in business. But they refused. And so, again that was another loosening of the ties. In the end the Wisconsin thing fell through because, my wife's mother was, was ill, and we couldn't go. But I would have gone there. But then the NCC, National Computing Centre, decided that OEA, information systems, was really not studied in academia at all. There was a certain amount in the polytechnics, at a very practical level, and very good, but there wasn't anything at university level. And we decided to give two grants of £30,000 a piece at two universities. And the two universities who applied for the scholarships and got them, were Imperial College, [inaud], and, the London School of Economics. At that time, they had a statistics professor called Gordon Foster, who had actually worked at Bletchley, which I found out, I didn't I didn't realise till much later, because he didn't ever talk about it.

Quite.

But, who had already felt that the business side of computing was important, information systems were important, had actually supervised probably the first PhD in the area, by a guy called Lusty, and applied for the grant. And, he, he got the grant, and I had to sort of, tick all the boxes for what he was looking for.

[39:28]

So again, you're, you're in at the beginning of a new, in this case academic…

That's right. So, at that time, because the grant was limited, I had, I ran the computer department, the computer group, computing for the system, in fact I set up Computer Services, for fifty per cent of my time, and the other fifty per cent a senior fellow in management. But, as soon as I could I got out of running the thing, set that up, and, went into full-time academia, became a lecturer, a senior lecturer, and then professor.

And what was, what was the computing platform that was in use?

[laughs] A fourteen… Well, there were two. There was the 1440, which was done for, used for local work, an IBM 1440. But the main thing was, the University of London computer.

OK.

Which of course was an Atlas. Or, later became an Atlas at… Though it wasn't an Atlas at that time. Later on it became, a CDC machine.

[40:37]
As you progressed from the commercial world back into academia and were, were you involved in any of the embryonic moves around BCS, the formation of the professional body?

Not, not very much. I knew about that, I knew Stanley Gill and so forth, but I wasn't actually very heavily involved in at all. At a later stage, I was chair of one of their specialist groups, the Business Information Specialist Group. I did work with them also on the curriculum, the minimum curriculum, and I worked with a guy called Peter Clute, on the business side on their curriculum. It was early on. I was much more involved with IFIP.

Oh that's still going.

That's still going. I have still involvement. And I was very much involved with…

Yes, I shouldn't have said that with a surprised tone. [both laugh]

Yah. No, IFIP had a technical committee, eight which dealt with business information systems, and they had two, two working groups there, 8.1, 8.2. 8.1 very much concerned with the theory, and 8.2 concerned with, much more with the practicalities of that. And I became chairman, chair of that for a time.   And that, that, that was also influential at the time, because that's at the time when I met so many other academics from all over the world.

[42:24]
I've neglected to ask you, your wife was an academic as well.

Yes.

At what point in time did you meet your wife?

Sorry?

At what point in time did you meet your wife?

Well we were both research assistants, and, when we were, when we were both pounding machines in our research, the statistical machine room…

Yah.

Yes. And of course, there were three of us. There was my wife, there was myself, and there was my brother. He was also there.

So, your careers were still mirrored at this stage?

Still, yes, yes, that's right. Our degrees, when I think about, were a handful of marks apart, different solutions. No, he subsequently joined me at LEO. I had been at LEO for some, a year or so, a year and a half, and then, he joined Lyons. He asked me first what is like Lyons; I said, OK. He joined me at Lyons. He was, you remember I talked about the tiered management, the way information was transferred from, to the senior management.

Yes.

He was the manager responsible for the tea shops, for providing the information, the weekly information, to the tea shop management. But he then, when the tea shops job came along or big jobs, he joined LEO as well. And, his particular career took him to mine in the sense he became head of the London bureau, then he became head of, LEO, the LEO effort, export business. So he was in France, in Germany, and later on, East Europe. And, his story is also interesting.

Is he still with us?

Yes, he's still with us. And he, he has got a, got a CBE for that. OBE first and then a CBE, for his work there. And, it's worth looking at it as a story. There is a good, good paper by him in the *Communications of the AIS* a couple of years ago. But, sadly… Well I'd better not say that. [laughs]

[44:55]
OK. So, what I'd like to do is, move a little bit towards the, the future, not quite yet, but, but, make that transition. And perhaps if you could give me a synopsis of the, the, the subsequent trajectory of your academic career, if I can put it that way.

Right. My trajectory is, I established that group. We were very successful. There were lots of people wanting to come onto business computing then, and there were, employers were looking for people, consultants were. And our first breakthrough was that the Civil Service College sent people to us, sent us their top people, for systems analysis courses, first a diploma, then a master's degree. And, so we had each year a cohort of civil servants to join the other students. Of course the Civil Service were

taking a huge risk, because many of the people, once they had been trained by us, got jobs outside. Inevitably.

There's nothing new there. [laughs]

There's nothing new there. [laughs] That's why I say, they took a big risk, conscious risk. But some of them stayed, and, did very well. Anyway, we set up a PhD programme, a very successful PhD programme, and some of the leading academics in the United States and here came through this PhD programme.

[46:32]
How did that overtly technical discipline, albeit studied from an academic perspective, sit within the culture of LSE? Because it's not the sort of programme that one would normally associate with that institution.

That is in fact a very good question, because, that proved to be a difficulty and is still a difficulty now.

Mm.

It's never been totally overcome. And the other thing is, there was a view among some of the others that, it's bound to be a very mathematical subject. And so they kept on looking for mathematicians, where I was looking for, quite different kind of people.

Mhm.

But, when I say different. I was perfectly happy with mathematicians as well, but I didn't want to make mathematics the centre of it.

Yes, yes, quite. Well, weighing out the ingredients for cakes at Joe Lyons is still based upon mathematics, but...

[laughs] That's right. Anyway, I worked very closely with a person, you remember I mentioned Gordon Foster.

Yes.

When he left, he had been Professor of Computational Methods. And when he left LS to go to Trinity College, he was replaced by Sandy Douglas. I don't know whether you've come across the name?

Not a name that's familiar to me.

Sandy Douglas. He did his PhD at Cambridge in computing. He subsequently became Professor of Computing at Leeds, and set up, probably the first proper computer service at a British university. And, established courses for teaching computing to the people at the university, for, to use their computer. Well he was then hired by the LSE to replace Gordon Foster. And so, on the one hand there was me, already established, slightly, and then Sandy Douglas, who came as, as my line manager. And, we really had very different mindsets. We worked really well together in some ways, but we also had different mindsets. I owe him a great deal, in terms of my own career progression. But there was always that, kind of tension between us, in the way we, we worked. Probably more on my side than on his. He wasn't the kind of person to feel tensions. [PJ laughs] So…
[49:08]
I got a chair there in '82. And, you were talking about this, how did this fit in to LSE. Well I had a very good colleague, who was also a PhD student of mine, Rudy Hirschheim Does the name mean anything? He's quite a well-established, well a very senior, professor in the States in the IS area, information systems area. And, he was, typically of an American academic, extremely busy. So he was writing a lot. When he went up for tenure, this went to a committee of, of the academic board, not, not including myself as head of the group, not including myself, and they rejected him. And, they rejected him, because they thought he had written too much. Can't have been true. Can't have been right. In fact he was really hard working. And, he already had a reputation outside the LSE. But, as a result of that, he left, and I decided, that was too much for me, and I resigned.

It seems rather ridiculous that the professor doth profess too much. [laughs]

Yes. Yes yes yes. And I resigned from the LSE. And very shortly afterwards was offered a job as Professor of Information Management at the London Business School. And I stayed at the London Business School for the next five years. And retired by the time I was, ready for retirement. And, was taken back by the LSE, first as a visiting professor, and then as an emeritus professor. Which is very unusual. Because an emeritus professor is usually the retired professor of the institution he was at.

Yes.

But there… But, anyway.

[51:00]
So, what's kept you occupied and interested since formal retirement?

Since then, I have been very much involved, I was, for the first few years I was very much involved with research at the LSE, in my department. I was still acknowledged by that department as, as somebody who had something to say.

Mm.

But, gradually it fizzed out from that, and became much more interested in, particularly the history of, of information systems, and the history of LEO in particular, I was very much involved with that. Which is why I'm here today. That's one of the reasons why I'm here today.

[51:43]
And, is there any… This, something that struck me researching the LEO Computer Society, and the Computer Conservation Society...

Yes.

Is there any reason why those two entities have grown independently, whereas one would assume that…?

Well, partly because the Computer Conservation Society doesn't focus on any particular machine. It originally, with Tony Sale focussed on Colossus

Quite. And I met him just about three months before he passed away. Very very…

Yes. Yes. You know of course, and Colossus was his, his beast.

Yes.

Yes. And, they looked across the whole range of computing. We were interested in the computer conservation broadly.

Mm.

So they would take the EDSAC, they would take the IBM, they would take the, the DECATRON of course is the…

Yes.

…one of the famous systems and so forth. So they went broadly. The LEO Society formed quite a different way. It formed exclusively, at the beginning, a reunion of people, a social club. At the same time, David Caminer wanted to do more about making LEO remembered, to try to, try to… LEO at that time, really was a footnote. Who knew about LEO? Nobody in America. Impossible. So he set up the LEO Foundation, to, first of all write the major book about this, and he recruited me and John Aris and Peter Hermon, and we wrote this book between us, called, which was published, first of all as *User-Driven Innovation: the Story of Leo*, and then renamed for the American edition, *The Incredible Story of Leo*. [both laugh]

The Hollywood title.

Exactly. So, the two versions, published by McGraw-Hill. And used the revenue from that for the foundation, to further the history of LEO, to do research into LEO history. And, in particular, to establish, after 50 years of LEO, we had a major conference at the Guildhall, with very prominent people, prominent academics and so on invited. And this was a very successful conference at the Guildhall. And, subsequently, when David Caminer died, we merged the LEO Foundation into the LEO Computer Society, and, took on this new mantel of looking at LEO history, taking it to, rather than just being a social club, it became much more, much more. And I became chair of their history subcommittee. And I've been very active on that ever since, with oral histories, with, you've seen Leopedia. These sorts of things.

Yes, yes. Absolutely.

Which is, entirely something I've, I've been working on for years now. Every time something comes up, it goes into Leopedia. Yah.
[55:16]
So, the other thing is, I've always been interested in politics, and, even my early LEO days, I still was a candidate for the GLC at one time. And, my brother had been a member of the GLC. But, it didn't work out at the time, and I'm glad it didn't. But that's, that's my view. But, when I, when we moved to, locally, here – sorry, not here, to Totnes – not to Totnes, to Ivybridge, to a small village outside Ivybridge, I was prevailed upon to become chair of their local authority. And so for twelve years I headed the local authority there . So that was… Mind you, we were at the very bottom of the local authority ladder, the smallest possible type of local authority. Called a meeting, there was a meeting, and everybody in the village was entitled to come to the meeting.

Akin to a parish council?

Akin to a parish council, but, a lower level. And whereas a parish council has got to elect the councillors, we didn't. Everybody came to the meeting. The whole village. Great fun. [laughs]

[56:39]

OK, and so, now, turn that lens to the future.

Yes.

What do you think are some of the biggest challenges and opportunities that lie ahead for society at large, particularly as it's impacted by technology?

I think we, we are beginning to learn now, that the dark side, how dominant the dark side can be. And this hasn't been recognised, it hasn't been recognised in my field, information systems. They, the business school view, still is, is dominant, that, yes, IT is always good, it's always good for progress in a company. And, they forget that there is a totally different side, which exploits IT for all the wrong reasons. And it ranges from the grey areas, pornography, and it's indeed interesting to see the innovations in, in the use of the Internet, which came from pornography. Many innovations, for example payments and, things like that.

So I understand, one of the most successful business models.

Exactly. So… And, the dark side, the exploiters, tend to be ahead of the doers, of the makers, of the designers. And partly that's because designers are not taught to look for, where are their weaknesses, and how might the exploitation occur. What kind of mindset will exploit this idea? If you look at Sir Tim Berners-Lee, he invented the, the World Wide Web, he, it had to be open, and because of, it had to be open, it was also weak. As we can see, social media, the way it's exploited. I have asked him to give a talk to the LEO Society in the light of the latest revelations of Facebook and the, Cambridge Analytica and so on. I haven't, he hasn't responded yet.

[58:56]
This is fascinating. You, you remind me of a, a talk that Google's former CEO Eric Schmidt gave at the Science Museum, and he offered… There was three questions that he would take from the audience.

Yes.

One of the questions that was asked was, were there things that you didn't anticipate?

Yes.

And one of those was that, we never realised that criminals would want to use the Internet as well.

That's, that's, that's exactly what I am saying Yes. But, we don't teach it, we don't, we don't study. As part of information systems, we should study, how do, how do criminals behave?

Mm.

What happens? So we don't look at where the exploitation comes. And, I remember sitting, not that long ago, sitting next to a banker, and talking to him about the way scams work. And he said, 'We receive these all the time.' At that time he said, 'It takes us six months to get over that scam.'

Mm.

I imagine they're much faster now. But, there, there is lacuna, there, there is a, there is a missing link. There are now of course specialists in that area. But these specialists are not in the IS, they are not amongst the IS people. The information systems people. They're beginning to accept it. But they don't, it isn't… They don't look at it in the same way as they look at, shareholder value. Shareholder value is, is as I say… It's not to say, but what about the other people, who don't have shares and work in a different way?

Yes, yes, quite.

Yes. What are their values? How do they, how do they realise those values?

[1:00:40]

So are there… Now that's a very… It's an, it's an omnipresent, it's a very contemporary challenge, I think it's one that we will take, at least a generation to, to fully embrace, the implications of it.

Yes. Yes.

Are there any opportunities that arise from this for society's use of technology?

[pause] Yes, there are, of course, opportunities. In… [pause] Let me make this, say something first. I'm particularly poor at forecast.

[laughs] Never make predictions about the future.

Yah. Never, never make predictions. Everything I said that would happen, hasn't. But, except the dark side. There I have been right, and I have been saying that for a long time, that we have to look at that dark side, and we have to dig through that in our, in our study. But looking at the future, I leave that to Kurzweil and to people like that, really. Yes, one can think of making things smarter all the time. I'm not sure where all the smarter gets us. I'm amazed that I can write a letter to, send an email to somebody in Australia, and, start a conversation in which the person in Australia replies the day before, the actual day before.

Mm. [laughs]

That's what that was. I, I wonder at the amazing things which we can do. But much poorer at saying, well, what might the next one of these ideas be? How, what next? I am no Tim Berners-Lee. Or Eric Schmidt.

[1:02:29]
So, what advice might you give to someone who is considering entering the IT industry or profession today, that, if they were to draw a few gems of wisdom from your career and experiences, what might they be?

One of them is that, innovation requires a certain amount of experiment. Because you've got uncertainty. That's one of the lessons I have learnt from Lyons, from LEO, from my early LEO days. If you are going to do something new, you had better make sure that you know what you are doing, and what the effect is. Vividly remember particular things. We developed a mark sense reader. Now, that's a tech… technology quite, quite a simple one. But, putting that out into the field, what kind of… This was sent out of the, we sent our bakery salesman, who went to the local corner shops selling stuff, and they had to mark on their form exactly the quantity which was ordered by the shop. What kind of paper? What kind of pen? What kind of mark? How do you…

Greasy fingers.

How do you… Yes. How do you ensure that the mark goes in the right place? What kind of guidance should you get? There are a vast range of things which are totally unknown, until you try them.

Mm.

And to try them under real systems. So, it's not, it's not a deterministic, designing a system can never be deterministic, it always has to be, have an experimental element.

Mm.

And, that's, that's one of the important things I would, teach.

[1:04:15]
What have you most enjoyed about your, career in the broadest sense?

That, it never ceased to be exciting. It never ceased to be interesting. It's interesting in the sense of looking forward, in the sense of what is happening, but it's also interesting in the sense of looking back. I look at, if you look now, we see a tapestry of where we are at the moment, and it's a complicated tapestry. If you are doing history, try to un-weave that tapestry. Try to see where the threads come from. See

where the threads are broken. See how many different threads actually lead to that picture there, and, rather than, what happens to be very typically in research, you look at one aspect of it, and you look at it in this way, when in fact it's, it's a tapestry with many many threads. That's, that's, that's exciting. This is what I keep being excited about, unpicking those things. You sometimes get things really wrong in unpicking, but of course, but that's, that's, that's inevitable.

[1:05:31]
Good. Well, that's all the formal questions that I wanted to ask. Is there anything that you think I've missed that's pertinent?

Well, yah. You, you asked me what are the things which I learnt. There are one or two others.

Please.

One of them is, continued, break, gap, between academia and practice. And this is partly language. Academia keeps looking, it divides itself into fragments, and each fragment develops its own language. So the, I ask people, develop their language. And if you imagine a practitioner walking into, into a discussion and seminar, on information systems, talking about materiality, talking about certain fundamental principles, they're, "what's he on about?" "He has no idea". And that gap still exists. And academia isn't helping itself, the way it's developing. And I think that's a serious part of, failure in our education system.

From what I understand, it was also to some extent one of the causes of the failure of the concept of the expert system is, you could not get experts to agree on a common language and taxonomy for what they were experts about.

That's… That's right. Yah. Yes, yes. But, we, we've exacerbated that in a sense. A computer scientist, a theoretical computer scientist, talking to a software engineer, they talk a different language.

Mm.

Yet they should be, they're talking about the same topic. And, more and more they can't understand each other. That, they have no basis for understanding, so the poor practitioner, he can't.

[1:07:34]

There is also the wide difference between, what is the German kind of thing, which has always been where the academia exists to help the practitioner, and I don't think we have that in the American/Anglo system quite so much. Of course it exists, but not, not to the same extent. I know at the LSE, my own department, now, they keep searching for under, underpinning theory. Yes you must do that, but you must do it in the way which, which has dramatic outcomes, where you could see dramatic outcomes. So that's one of the things I, I wanted to, to say. [pause]

[1:08:31]

Yah, that, that probably is the, the most important, most important lessons.

Good. Well thank you very much. I'm going to stop the recording now.

OK.

[End of Interview]