David Southward

Interviewed by

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Welcome to the Archives of Information Technology. It is Wednesday the 17th of April 2019. The Archives capture the past and inspire the future, and we are in the London headquarters of the British Computer Society, just off the Strand. I'm Richard Sharpe and I have been covering the IT sector and researching it and writing about it since the early 1970s. But before that, in fact a decade before that, a phenomena began to be perceived in and around the University of Cambridge, and one of the reasons why perceived then, and a marker was put down, was the formation of an organisation called Cambridge Consultants by a number of young graduates who wanted to bring the academic expertise out of the university, this was in 1960, and apply it to industry and the public and private sector, 59 years ago. Now one of the co-founders of that Cambridge Consultants is with us today, David Southward. And, David was, has a background as a mechanical engineer, and has a Scottish background I understand, David. You were born in Scotland.

Yes, I was born in Skye, in 1936, when the, shortly before the war. My father was the local GP in a Scottish village. He was called up of course in the war, and we moved down to London. Later I suppose we, my education consisted of, I went to school at Rugby.

[01:52]
Before that, primary school was where?

Primary school was a place called The Old Hall in Wellington. We were actually, during the… When the war broke out, we moved, my mother moved to Abersoch in North Wales, and we met there the, a person who subsequently turned out to be the headmaster of this prep school, which was an independent one, and it was, it was great fun, and I, I had a lot of experience of explosives they probably weren't keen to find out now.

Not quite on the curriculum though.

Not quite on the curriculum. I remember walking on school walks with my best friend, and we used to make, we had acetylene generated in one of my pockets by putting calcium carbide with water and pumping it through silver nitrate to make

silver acetylide, which we subsequently spread around the place, and this was a, a contact explosive that was, quite alarming really. [laughs] But anyway, school was, was fun.

Were you athletic?

I was… I was good at swimming. And I was good at long-distance running. And, in fact, we all won, my brothers, I've got three brothers, and, one of them for example won, broke the record for the, the swimming records that stood for 40 years at the school. But anyway, it was a good, yes it was good fun at school.

You were the oldest of your four brothers.

I was the eldest of four brothers, yes.

What do you think you got from your parents? Apart from your life.

[laughs] Well, so I didn't see too much of my father. The rest of the family said I'm exactly like my father, fairly slow of, of speech, and calm. But my father was extremely successful as a, as a doctor. He did provide me with the opportunity of doing what I wanted to do.

Did your brothers take the Eleven Plus?

We didn't have the Eleven Plus then.

Right.

Because it was… I was in the sort of, private sector all the time.

Yes. You went to Rugby.

I went to Rugby. Well I, I was good at, I was good at running, which is, I used to run for the school. Yes, I had, I had an enjoyable time at Rugby. It was… In one of the,

on one of the playing fields, they were storing engines that were radial engines for aircraft, and somehow a friend and I dismantled one of these engines, [laughs] which was probably distinctly verboten. But I still have the piston [laughing] from one of these engines at home now. But yes, Rugby had a very good workshop, and so I learnt… I was always keen on making things. I built hi-fi sets there, and I built big radiograms there, which, well it all stood me in good stead later.

[06:11]
That didn't come from your father, or your mother.

No. No it didn't. My father was, his main interest in life was just, was fishing actually, fishing and doctoring. [laughs]

Where do you think this mechanical bent came from?

Well I've always been interested. And I used to make model aeroplanes, I used to make micro models and things, which they don't have these days, I don't think. It was… No, I don't know. I've always liked to find out how things worked, and, yes, and, [laughs] put them back together again.

After blowing them up.

After… Yes. Yes.

[07:10]
You got seven O Levels.

[hesitates] Yes, I… I really can't remember all the ones I got, but I, I think I… I mean, [laughs] I certainly failed my divinity ones, scripture ones, but, all my science ones, I was, very good at.

Right.

And, at Rugby they had an outstanding chemistry teacher, and an outstanding physics teacher, and they were really inspiring. The chemistry teacher supposedly was responsible for the dip in Clare College Bridge where it crosses the Cam, has a sink which was an explosion that he caused when he was up there some years before teaching. I think I left slightly early to go to the Ministry of Supply. It was…

Was it your National Service?

There was… It was the time of National Service, and I had the option of going for National Service or of going to the Ministry of Supply. And the Ministry of Supply was a good deal, because, it was an apprenticeship scheme where, I mean, you spent a year at the bench filing your set of tools and learning how to machine everything and welding and, bill writing and so forth. But, you, you were learning. And, they also subsequently paid for your further education, which in my case was, was Cambridge. The exams for the Ministry of Supply was, there was an entrance of 750 or something like that, and, the person who came top in this was actually Tim Eiloart, who was, I think I was fourth or something, but, anyway, we were working together at Woolwich Arsenal for that year, and…

What was his background?

His background was, in a way similar. His mother was a doctor. His father had divorced him. But, he and I would cycle, because that was often the quickest way from, in his case Battersea, in my case Harley Street, to Woolwich Arsenal every day. He was also keen to do chemical engineering rather than mechanical engineering. It was the fashion then. I mean they were regarded as being in short supply, working for an oil company or… So my training is actually in chemical engineering rather than mechanical engineering.

[10:45]
The people who you left, who left Rugby in 1953, your year, when you left, they would have gone into the Civil Service, into the Army, into the Church, into banking, and into their family, their family company.

Yes.

You went into the Ministry of Supply, to do engineering.

Yes.

Very unusual.

Yes, well, during that time in the year when I was in Woolwich Arsenal, I was very, I was still very keen on making things, and things that I had been making had progressed from a, you know, planes and things that one used to make, to a fourteen-foot speedboat, which I had built on the top floor of our Harley Street house. Which was a major undertaking to remove it, because I had to take all the doors off upstairs, take it, wrap the boat up in, in carpets, lower it over the side of the house, in through a consulting room, and then out through the front door. Yes, I was very… And, we spent many, many holiday… The whole family used to holiday in the south of France, camping. Used to water ski, at a time when nobody water skied. In fact you couldn't buy water skis, that I was aware of, so I had to make all those. And, I didn't know quite how you started water skiing, so for example, when I tried myself, my father thought he'd take it slowly, which is of course exactly what you are not meant to do, [laughs] and I nearly had my arms pulled off. But, I enjoyed that, and those holidays

[13:17]
So the Ministry of Supply offered you this assumed apprenticeship.

Yes.

You worked in Woolwich for a while.

Worked in Woolwich for a year.

And then they wanted you to go to university.

Yes.

Which they would pay for.

Yes. I had actually previously I think been accepted by Trinity Hall when I was at Rugby. They had, in those days, had an exam which, you know, I had to, had to pass.

So you transferred to Cambridge in 1955…

Yes.

…to study natural sciences and chemical engineering.

Yes. So, the first two years were natural sciences, standard, the standard course. Then there's a two-year chemical engineering course after that, in premises that were hardly more than Nissen huts then, and now they're quite grand. There's the Shell buildings and things, but, there weren't then.

[14:31]
Did you meet a computer during that period?

I don't think so.

No.

I don't think… No, I don't think…

There was no use of computers in the late Fifties in those disciplines really, as far as you know?

Not as far as I was aware of, no. I mean, when I worked in industry, the first computer I came across was a, was a PDP-11, the big sort of, DEC things.

Digital Equipment Corporation.

Yes.

One of the most successful minicomputers as it was called, but still big.

Yes. Yes. [laughs] Yes, it was big. No knowledge at all of computers.

[15:27]
So you, you graduated.

Yes.

And your friend Tim graduated.

Well he had a rather more complex life, because, in his… His father wanted to cross the Atlantic in a balloon, there were four of them, there was another couple and Tim and his, his father. So he had to miss a year at, he, he sort of got out of phase with, with me. But in, in the vacations, when we were at Cambridge, we actually had to go back to explosives factories, and there were sundry ones down in, in South Wales, which were lovely places, because, of course there can be no… I mean when you're in the middle of a factory, you might think you're in the middle of a forest, because you can't see any buildings, because all the buildings themselves have to be recessed behind mounds, so that if there's an explosion, it goes up, rather than sideways. It was while we were at one of those that, I was with Tim, he was making a lot of the equipment that was used in the, cross-Atlantic balloon trip, making it out of stainless steel and aluminium, and smuggling it out through the doors at night. [laughs]

[17:30]
1960 you graduate.

I… After, after I had finished my apprenticeship scheme, actually my father thought it would be a good idea to have a, a business, some knowhow. So I actually spent a year in a chartered accountant's office in the City, and was studying the standard chartered accountancy.

Did you enjoy that?

No, I thought it was absolutely appalling. It was terrible. [laughs] So, anyway, I, at some stage I rang Tim and, and said, you know, 'I can't stand this. I'm looking for something else.' And he said, 'Oh, do come and join me.' He was working for the Psychology Laboratory at the time, although he had just started, he had started Cambridge Consultants, which was started really just as a translation agency. And, as I said, Tim was working for the Psychology Laboratory, and he said, 'Come on, I'll give you a job.' So, I went up and joined him. And, after, you know, I was, you know, he gave me a letter of appointment and, you know, details about pay and, and holiday entitlement and things like that. His, Tim's boss, Richard Gregory, was away at the time. [laughs] When he came back, he was appalled that this junior chap had offered somebody… So, he said, 'Look, this won't do' So, that's when Tim and I thought, start a workshop, which is a, you know, thing that I, I knew about. And, so, he provided a bit of money, and my dad provided a bit of money, and we formed the Cambridge Consultants in the back of a, a printing works, which was run by Rodney Dale.

[20:30]
According to a seminal report published in 1985 about the Cambridge phenomena, Cambridge Consultants Limited, CCL, it says, 'provides a fascinating example of an indigenous Cambridge company launched in 1960 by a group of newly graduated scientists and engineers, that went through a long period of operational success but financial uncertainty, and after near disaster has developed into one of the country's leading R&D contractors in the physical science.'

[hesitates] [laughs] Well, Cambridge Consultants is colossal now, I mean it's 1,000 people strong, something like that. But it has gone through quite a number of changes. We were always… We started by, as I say, formed the workshop, and we started this by taking on work from the Psychology Laboratory and other laboratories, and industries within Cambridge. We employed three or four instrument makers, they were from the Cambridge Instrument Company, who had a very good apprenticeship scheme. And so they were very skilled workers. But we were always looking for

something to make a, a proper living as it were. As I say, we, the firm started with the translation. The technical translation, which was very difficult, as you had to not only find somebody who understood, Polish or whatever, but was a specialist in, cheese or something, you know, that knew the technical and scientific background. So that, that work gradually petered out, thank goodness.

[22:52]
Cambridge Instruments is an interesting company. You went on to work for them.

Yes.

But they were actually a spinoff from the university in 1881.

Yes. Were making instruments of all kinds, for the university primarily.

For Cavendish.

Yes. And, it was a very… It was one… It was Wedgwood Benn's great scheme to marry Metals Research which was actually the, a successful local firm that specialised in, in growing single metal crystals, and had Quantimet, analysis of crystal structures; they wanted, Benn wanted them to take over Cambridge Instrument Company. And subsequently Metals Research, the name, was dropped and it became Cambridge Instruments. It was a difficult business to run profitably, and it was a, a major loss I think to the country that electron microscopes, which was their, I mean they were right in there at the start, but we failed to capitalise on that, and it was just taken over by all the Japanese.

[24:39]
Equally in the nineteenth century, just to go back again, just to put some of these modern phenomena into some degree of context, in 1896 a man called Pye, who had worked in the Physics Laboratory, and for Cambridge Instruments, broke away and found his own company, Pye, p-y-e.

Yes. There was a lot of electronic industries associated with, with Pye.

Yes.

There was Labgear, and Newmarket Transistors, and Pye TVT. And that provided a training ground for many of the people that we took on, like, Gordon Edge, Peter Rayner, and… Yes, that's why I've always thought that, to say that… In 1960, right, there was change. There was change in technology, because electronics was getting ever more powerful, and very much smaller, but there was an awful lot of industry within Cambridge, including the Pye group. I mean that was probably one of the bigger ones.

[26:03]
When you co-founded Cambridge Consultants in 1960, the high level programming language COBOL was run for the first time on a computer. Digital Equipment Corporation, which had been founded in 1957, launched their first minicomputer, the PDP-1. And in the world there were 5,500 computers.

[laughs] Yes.

Of which 4,400 were in the United States.

Yes. [laughs] It's amazing.

Not many.

Yes. Well, I do remember… I mean we took somebody on who was working at… There was Pace, which was an analogue computer in Cambridge, and, I went into the, the computer labs there, and they had Elliott computers, you know enormous, racks upon racks upon racks, which was, [laughs] probably the equivalent of a, a mini-Sinclair computer or something. Yes, there was a lot of change. I mean, the first, some of the jobs we did for example, we made a machine to tweet 'bee's knees', which sounds a ridiculous thing, but, a professor at Oxford wanted to characterise the force characteristics of leg muscles, both under high pressure and at growing frequencies. So we built an enormous stainless steel machine. And, all the

electronics for waggling the, the leg muscle up and down, that all, was all valve controlled then. So, [laughs] it was, quite an engineering feat to make the electronics.

[28:24]
I understand that at Cambridge Consultants in the early days people pursued basically whatever they wanted to do, rather than what was commercially the best thing for the company.

I don't think that's necessarily the case. No. I mean people had a, had an expectation, were required to work a certain number, or expected to work a certain number of paid hours a week, but if somebody had a… I mean we were always looking for a money-spinning idea that we could capitalise on, but it was always a little bit away. Part of the Pye group, and we mentioned Pye, was Newmarket Transistors, and, they used to give us transistors by the bucket-load, just to try and get them put in equipment, spend that way. So, there was a lot of change to the way things were done, which was miniaturising electronics.

[29:49]
Right. Did you feel, and did other companies about the same time feel constrained, physically constrained within Cambridge? Because there had been a report in 1954 which said that Cambridge should really keep its character as a university town, and not expand hugely. There was even an application by IBM to establish its European research laboratory in Cambridge, and the local authorities said, no, that would be too intrusive; it would change the nature of Cambridge. Do you feel confined?

Well, I wasn't aware of that I must admit. We were a very small organisation in 69 Histon Road to start with. Our next move, in '68, was premises that we had built at Bar Hill, opened by the venerable George Brown, I think probably thanks to Robert Maxwell, who took a punt on the company right at the beginning.

What, your company, Cambridge Consultants?

Yes.

He put money into it?

Yes he did, via his adviser Panmure Gordon, Michael Richardson.

It was Robert Maxwell who had Pergamon Press as a publisher; later on the Mirror Group.

Yes.

Later on, disappeared off his yacht.

That's, [laughs] right.

Later on it was found that he had raided pension funds.

Yes. He was…

Did you ever work with him?

We used at one stage to have board meetings at Fitzroy Square. He wouldn't… He would wait until we had finished a meeting, and then, come in and say, 'Right, what's been going on?' We'd tell him. And then he would try and change the course of everything. He was actually an tremendously impressive character. I don't think I've ever met anybody quite like him. I mean I know that, in many ways [laughs] he was a crook. In some of the meetings actually he would, you know, have his lawyer there, and they would draw up heads of agreement at the meeting itself, it would all be signed off. It was very very swift working compared to everybody else that I've ever come across.

[32:38]
And interesting that you say, in 1967 you had new premises built just outside Cambridge.

Yes.

Now… '68, excuse me. '67, there had been a subcommittee report called the Mott Report at the University of Cambridge. Mott had argued against these physical restrictions, and the university, the Senate of the university, it was a subcommittee of the Senate, decided really to loosen the strings and persuade the County Council that Cambridge could really become a real hub. And therefore you got permission to build at Bar Hill.

I think Bar Hill was the first science park to make that. We didn't actually have very much contact with the university, not as the name might imply, in general because, we found that the people within the university weren't quite the engineers that, that… Well most of the problems that we had to face weren't ones that they were necessarily good at solving.

[34:01]
You said that the most memorable achievement in your days at Cambridge Consultants, which was from 1960 to 1972, twelve years there, was the design of a multi-coloured carpet, computer-controlled carpet loom.

Yes. Well that was a fun, a fun project. The idea was to… Well we did it in two stages. First of all we had to make a, we made a spooling machine in a multi-coloured carpet. The wool was picked out. It was a very very slow process to program the computer with Jacquard type looms, and, the approach that I thought of was to bring all the colours of wool, eight colours typically, into one rotary head, and to, with a puff of air, to pull on one or other of these strands to shear off the bit of wool that is puffed out, and then to transfer that pneumatically to a glue surface. And, this was, worked quite well. It didn't actually… I mean, a yard-wide machine was, was built, finally. It was done in conjunction with Durham Carpets, who were, you know, trying to move away from the, the conventional Wilton or Axminster approach. The normal cheap carpets are just made, are tufted carpets, where you have the, the wool is just, if there's a pattern on it, it's just printed afterwards, and it's not very satisfactory. Axminster and Wilton processes are just very slow, because, they were dating back to, you know, the 1800s or something. And so we were trying to look for a process that would be fast and computer linked.

So this was… What computer did you use?

Well we didn't actually… I don't remember I'm afraid. I don't think we used a computer then. I left Cambridge Consultants in about '72 I think.

[37:07]
Yes, '72, and went to be Managing Director of Lexon Audio.

Yes.

Why did you leave?

Oh, well, I mean it was very simple. They… It went up in, in smoke, Cambridge Consultants. I mean, we had an enormous number of companies. We had Cambridge Audio, AIM bioSciences, AIM Electronics, AIM Physical Sciences, DraftMaster systems, Dercam Carpets. And all these were struggling for money, especially I think the Cambridge Audio one, and, we had, we tried to put a sort of, all-embracing company above these things, which was AIM Associates, with the concept that if one of the satellites failed, it wouldn't pull everything else down. But of course it didn't work like that, at all, because everything was, was cross-guaranteed, and, the bank just finally, had had enough. I mean we had got, we had been expanding quite rapidly, we, we got to a sort of break even turnover, and an overdraft which was, I think £30,000 or something. And, the bank said, 'Look, I'm afraid that's, that's it.' And, they were paid back immediately, but by then of course the group was, was sold off.

It was sold off to Arthur D Little.

Yes.

A Boston-based consulting company.

Yes, it was.

And that was '71. And you left in '72. Those things are connected are they?

No, I think I left in '71 actually.

OK.

Yes, I, I… Actually prior to '71, we had got this, the big mill building at St Ives, and, Clive Sinclair was in that building, and he had been generating a lot of money. And he, he bought into the company and tried to take it, you know, tried to help. That's, I moved to try and sort out the problems at Cambridge Audio, which I, I enjoyed, but they were pretty intractable. We won all sorts of awards for the Cambridge amplifier, but it was a production engineer that… I mean what one didn't realise at the time was the difference between a prototype and something that's in volume production, and indeed every time we sort of increased the manufacture, increased the quantity of manufacture by a factor of ten, there's a major redesign change really. But we had got something that Gordon Edge had conceived the circuit of. We had had rave reviews. He was [laughs] not about to let anybody change anything in the design, to make it easier to make, but it was a pig of a problem. It was… And it was unreliable in that, some of the contacts, some of the boards, if the contact was slightly dodgy, you would be blowing your output transistors. So I moved over there to try and redesign things, which I, I did get the thing much better. And I quite liked the world. And, and that is why, when we did have to call on a receiver for the group, I went into Cambridge – into Lexon Audio, because, as a result of the Cambridge Audio experience, we had met a very good circuit designer, a chap called Bob Stewart, who was the circuit whiz on, at Lexon Audio.

And this, these audio amplifiers, they were audio technology in them, not digital?

Oh yes.

Yes.

Yes.

[42:20]
OK. You then moved to Cambridge Instrument.

Yes, I did. I… Lexon Audio had reached the stage where, well, it was backed by banker, and it was backed in a very unsatisfactory way. It was my fault really. Instead of putting in, in money for his shareholding, he just guaranteed an overdraft, and it was at a time when interest rates were going up. His guarantee was going down like that. So, he had to sell out and move away, and, he had to get his money out. So, there was a banker in the City who took over Lexon, and, that's when I moved to Cambridge Instrument Company.

Right. In Melbourne.

In Melbourne, yes. What the technical director at Cambridge Instrument Company, who was a chap called Colin Fisher who was an incredibly bright chap, and he was actually one of the consultants we used to use right from square one at Cambridge, and what we were working on was this machine to analyse blood. And it would take a, you'd feed it vials of, of blood, which you would shake, and it would sample, and it would make slides of the concentrate of, of just white cells, then under a microscope it would analyse the distribution of white cells. And you would get, from this clever machine, a complete analysis of, of the cell types, and so forth. It had to be trained then, because, a lot of the cells, I mean even experienced operators could often hardly tell whether it was, you know, what kind of cell it actually was. So that was, it was a big machine, and a lot of people working on it.

Who was the client?

Well it was done in-house, but Addenbrooke's, it was tried at Addenbrooke's. No, it was something that they were doing on their own.

A success?

In the event, no, I don't think so. I'm not sure why. I mean it was, it's very difficult to separate the red cells from the white cells and not introduce a slight bias in the distribution of, of white cells.

[45:24]
You moved from there to Cambridge Research as Technical Director for nine years from 1977. And in 1977, as you move, just to put this into context, in California Apple Computer was founded; Tandy launched a famous TRS-80, which was a little personal computer pre the IBM personal computer; and, the relational database was coming along, because, Oracle was founded as a company called SDL. And Clive Sinclair had been active in Cambridge for many years now, in '77, and you became Technical Director of Sinclair Research.

Yes. He was backed by the… Well, Sinclair Radionics, which was into calculators and hi-fi, that was sponsored I think by the NRDC and the NAB, and there was tremendous rows going on. But what Clive wanted to do actually was to come out with the personal television. He had got the NRDC just about on board, and I, it was my job to work on this, and get the thing off the ground, which was a, it was a tremendous job.

He always has this drive.

Sorry?

He always has this drive, and this, willingness to take quite large leaps into the unknown, it seems to me. Is that, would that characterise him?

Absolutely, yes.

And huge self-belief.

Yes.

Warranted?

No, not necessarily. [laughs] I mean, he… Well, I understand where he is coming from. He always says that when there's something new, you can't really ask outsiders, because they can't visualise how it's going to change their life. I mean, nobody would think for example back then that today everybody in London's got their own phone, and walks around with it all the time. You just, would think that as, you know, pie in the sky. But he would be believing that that was possible.

What was it like to work with him?

Very good indeed actually. He was, in early stages, prone to, [laughs] to lose his temper a lot. But, I don't think, I never had a problem working with him. And in fact, he has been, you know, if you have a problem with two people who, if they have a problem together, he will get both of them together, and it will be knocked on the head then and there, rather than independently trying to sort each one out. He had got very strong ideas about the size of the television, or the size of the, the tube, which in many cases just wasn't, wasn't practical. I mean he hadn't allowed for a lot of the detailed engineering, the connections and so forth. Yes, I mean, I enjoyed life a lot at Sinclair's. I think it was partly the, the change in working for a company where, I mean there was a prodigious turnover per employee. I mean we were doing a million pounds per employee then, it was very successful. So you could, I won't say you could order what you like, and do what you like, but…

Was it wasteful of resources do you think in hindsight?

No, I don't think so. I think it was, it was very effective.

[50:16]
You designed a flat cathode-ray tube?

Yes I did. That was, a, a great, well, yeah, that was a great project.

And you took that through pilot production. But in full-scale production…

Went up to…

Timex.

Timex, yes.

In Dundee.

Yes. But we had our own engineer up there permanently. That was a, those days, I mean we had our own aeroplane, and there would be several people once a week going up to Timex, and back. And really, you could do it in, in an hour, so at nine o'clock you were working in Dundee.

What was it like working with Timex?

Well they were desperate to change, but they, they didn't… They worked to different methods. I mean we'd say, 'Please order such and such a thing,' and they wouldn't order that; they would send out the request to lots of people to quote for that thing, get it back, and then they'd, eventually, you know, a couple of weeks later, you'd work out that they were getting that. Whereas our approach had been, look, we're convinced that this is what you want, and it would be ordered that afternoon. So there was a, a different [laughs] method of, of working.

He often used Timex for assembly and manufacture, did he not?

Well, when we first went up there, they were making mechanical watches. There were halls that were, would have 400 automatic lathes and things, and, probably about three people looking after all this thing. They were chuntering these gears and things away. And the whole thing was for assembly of watches that nobody wants, wind-up watches. Because the electronic watches, which were so much more accurate, [laughs] never needed attention, were, were just coming in. So we'd got, you know, there was a big change that was necessary, and they were looking for, looking for change. So they made all the Spectrum computers and, and things there, and, I think they did a good job.

[53:06]
Right. You designed a Microdrive for Sinclair computers.

Yes. That… Yes, it was an endless loop of VHS tape. I don't know how much it recorded, it was something like 100K or something. Yes, it was appropriate to, the, the QL which was the next generation after the…

81.

Yes.

And you designed the printer for the 81, did you?

Yes. Yes, that was a…

You were responsible for that.

[laughs] Well, it was… Yes, it was a metalised paper printer, which, well it produced a record of your program, which was what it was meant to do. But, of course the quality was not particularly brilliant.

[54:04]
And as part of this process, Cambridge phenomena of course, your people were working with Sinclair, the ZX81, and Spectrum and so on, and then breaking away from Sinclair and forming Acorn for example, Hermann Hauser and Chris Curry, and then meeting….

Well they were… Yes, they were before. They were, yes, with Sinclair Radionics.

Yes.

Yes.

And '81 was a very important year, because IBM enters the market with its standard-making IBM personal computer.

Yes. And then, the battle between that and Apple, yes.

Yes.

Yes.

That really was the machine which crushed this phenomena of the British micro industry, which had been very vibrant.

Well it was… Yes, it was a different sort of, scale of, of expenditure, and, so forth.

And advertising for instance.

Yes.

It was Charlie Chaplin who introduced it.

Yes. Well I think, Apple did a pretty good job as well.

[55:20]
They did. That's true, that's true. So you're there nine years.

Mhm.

You then move on to Harlow. You're outside Cambridge now, 1986 to '89, three years as the Technical Director and co-founder of Image Displays.

That was… Well it was actually a display that we were considering using at Sinclair's, but it was, I think… I mean Sinclair sold his business to Amstrad, the computer side, and so there was really very little left. And, I was following up this beautiful quality display that STC had been working on. Yes, it did have the defect

that it required a high voltage drive, but it had a memory. And I had always envisaged it to be something like the Kindle, which of course is, I mean that was a different voltage technology that's been hugely successful. But, yes, we got off making demonstrators. Very difficult to get something like an LCD manufacturing plant off the ground, because it, it's very capital-intensive, and, you have a certain pot of money, and unless you're working really hard and you meet all the targets along the way, I mean the natural thing is to sort of slow things down, because you can see the money is going to stop. And if you don't… Yes, it's very difficult to get it off the ground. So we never got it off. What we were hoping to do was to… The next generation that STC had been working on was the type of panel that we wanted to actually have, which you could you could use for television, you know, it was very fast. It was an alternative to the current displays that are used in all TVs – in all laptops and things now. But the, you know, technology changes so rapidly that one didn't think that the TFT approach would actually succeed.

[58:25]
And you left in '89, became a sole trader of the David Southward Consultancy.

Yes.

Thirty or so years. When you look back, what is your personal opinion behind the success of the Cambridge phenomena?

I think, we had a lot of people through our hands, very clever people. They have seen that, actually, it's quite easy to set up and run your own business. And, I think that's the way it's been, it spawned.

[59:04]
There was a particular note, both in the '85 report and also in the Cambridge phenomena book, this century, in the role of Barclays. Barclays seems to have been quite a, a proactive investor in it. Did you come across them?

Yes, but not, not entirely happily.

Go on.

I mean Barclays were our main, main bank.

At Cambridge Consultants.

Yes, at Cambridge Consultants.

So they were the ones who said…

They were the ones..

…no more overdraft.

Yeah, exactly. And we had been… Well, we had been expanding and expanding, and, you know, it had been growing like nobody's business, but, never quite in profit. Always a little, you know, growing at the expense of profit. Which I think is, in retrospect is, you know, a very bad thing really. One of the major problems we had was, we had so many little satellite companies, and they all used to inter-trade, but we were all sharing the same overheads and you never really quite know how much… I mean you would say, Cambridge Consultants are making a lot of money, but that's assuming that wholly-owned companies are going to pay their appropriate rate for the engineer, which they're not. So, that was, that was a difficulty.

[1:00:55]
Why did Oxford not, were not able to match Cambridge? Because it really is the Cambridge phenomena isn't it.

Well to tell you the truth, I don't know quite what's… I mean Oxford is much more, the industry is, is a lot more spread out isn't it.

Mm.

It's… It's got all the car industry et cetera hasn't it. Yeah, I think, Cambridge has got a small, a satellite.

[1:01:27]
There has many places that have been called Silicon, so, Cambridge was called Silicon Fen.

Yes.

There was Silicon Glen in Scotland. Interestingly though, that was the subsidiaries of mostly American companies using local development funds to establish there, like IBM and NCR. There was Silicon Roundabout, which is really nothing to do with silicon but about software games development. And, Silicon Fen. Of the, of those, including the M4 corridor, I don't know that that's a silicon corridor or whatever, only Cambridge is really indigenous and quite broadly-based in IT. That's quite a phenomena, isn't it.

Yes. And of course, now it's, it's really expanded enormously, all the bio, all the bio stuff, by Addenbrooke's and things. Enormous number of companies.

What's your opinion of the fact that two of the big leading companies out of the silicon phenomena, Silicon Fen phenomena, ARM and Autonomy, are now foreign owned?

Well if we're a breeder of successful companies like both of those, then that's fine isn't it? I mean they both went for quite a large sum of money.

You're not worried that these are national assets or national jewels?

I don't think so. I don't think Autonomy is a national asset.

Right.

I mean I do appreciate that, the Huawei business.

[1:03:24]
A personal question. What's the biggest mistake you have made in your career? So that those listening to this can not make it.

[laughs] Well, I… I think, I should have insisted on a growth that was slower and more profitable, rather than go for expansion at the expense of profits.

Like Cambridge Consultants.

Yes.

Right.

I think that was our major problem.

And you think, is that advice that you would pass on to people who are starting up? Don't jeopardise it for rush for growth, with rush for growth?

I think, yes. They always say it takes seven years to grow a business, and I think that's probably true.

Thank you for that advice. Thank you for the advice which you've given as well to the Archives. Thank you very much David Southward.

Pleasure.

[End of Interview]