



# Ernest Morris

Interviewed by

**Jonathan Sinfield**

9 November 2017

At the

**WCIT Hall,**

32a Bartholomew Close, London, EC1A 7JN

Kindly provided by The Worshipful Company of Information Technologists

Copyright

**Archives of IT**

(Registered Charity 1164198)

*Welcome to the Archives of Information Technology. It is the 9<sup>th</sup> of November 2017, and we're in London, at the Livery Hall of the Worshipful Company of Information Technologists. I am Jonathan Sinfield, an IT professional, and an interviewer with Archives of IT.*

*Today I'll be talking to Ernest Morris. During Ernest's career he served a number of blue chip organisations based primarily in the City of London. Companies such as the British Tabulating Machine Company, CT Bowring, Cooper Brothers, now part of PWC, and the Prudential Corporation. In the mid-Seventies Ernest became the third President of the Computing Services Association, then known as CSA. In 1987 Ernest was elected President of the BCS, the British Computer Society. Ernest is a past Chairman of the Computer Preservation Society.*

Conservation Society.

*I beg your pardon. Conservation Society. Between 1993 and 1997 Ernest was Chairman of UKERNA, the body responsible for the academic and research network of JANET. He is an Honorary Fellow of Swansea University, formerly the University of Wales, and is a recipient of the Territorial Decoration. Welcome Ernest.*

Thank you.

[01:31]

*Ernest, perhaps I could take you back a few years, and you could explain to our listeners where and when you were born.*

I was, I was born on the 7<sup>th</sup> of May 1932 in Porth, which is at the beginning of the Rhondda Valley in Glamorgan, South Wales. My, my father was a railwayman My grandparents, like most of the other people in the Rhondda Valley, were working with or down in the mines.

*And, at that, at that time did you go to school locally?*

Yes. I lived in the Rhondda until I left to go to university at the age of seventeen. For the first ten years or so of my life, my father was a guard in the, the Rhondda Fach part of the, of the Great Western Railway, based on Maerdy, which is at the top of the, the Rhondda Fach, which is the, Fach is small, it's the, there are two Rhonddas, the Rhondda Fawr, which is the large Rhondda, and the Rhondda Fach, which is the small one. So I started off in, in the schooling at, at the boys' junior or primary school in Maerdy, and then subsequently went to the county school for the whole of the Rhondda, which, a county school was a state school but somewhat, somewhat, more, more akin to a grammar school as it subsequently became than a secondary school of which there were several in the Rhondda. And from there I went to university at Swansea.

[03:18]

*Mhm. So if I can take you to, back to Rhondda county school. There you took your O Levels, which, probably today's equivalent of GCSE.*

It was School Certificate at the time.

*School Certificate. And, what subjects did you take at O and A Level?*

We, we... As far as the School Certificate was concerned, there was, there was a core of subjects which, which related to the Oxford and Cambridge matriculation examination curriculum, plus a few options. So, there were essentially the five, five subjects, English language and literature, Latin, another language, which was French, history, and then, mathematics plus physics and chemistry. That was the core. And then there were a couple of choices, like, it was, at one time it was either Latin or, or Spanish, or physics and geography. And, and also, the possibility of taking Welsh, but I didn't do that at all. Because very few people, if any, in the Rhondda spoke Welsh. It was very much an English community, as a result of all the migration of, of people into the mining area after the middle of the nineteenth century.

*Mhm. And for A Level, you...?*

And then for Higher... I mean it was a, then, then it was a question of taking, either, either a scientific or an arts set. And so, I could do maths and phys but not chemistry. I didn't like chemistry. So I took history, English and French.

*Mm. And of those subjects, at school, which did you, were you most successful in, and which did you most enjoy?*

Both, both more successful and, and enjoyed most, was French.

*Oh right.*

But, when, when I went to a couple of universities... I wanted, really wanted to go to Oxbridge, but I was only, I was only seventeen and a couple of months, and Oxbridge refused to accept me until I had done my National Service first, which would have meant staying in school for another twelve months and then taking up National Service and then, then going to university. And I didn't want to do that. So I ended up by applying to two or three redbrick universities, including the University of Wales, not Cardiff because I didn't want to live at home and commute to Cardiff every day. So I tried Swansea. And what I was told in more than one of these universities was that if the only language that I spoke was French, then that wasn't enough to follow an Honours degree course, because their Honours degree courses were in modern languages. Now that was not the case in Oxbridge, but it was the case in redbrick universities. So, I, I didn't read, I didn't have an opportunity to read French, so I, I took up history. Which, I'm very glad that I did, in the sense that, although I would have loved to have carried on with, with French, history is a wonderful means of training the mind. So I'm very happy to have studied history.

[06:38]

*And just, again, for our listeners, and of course at the time you went to the University of Wales in 1949, of course we were in the midst, we've got National Service then. How long was National Service at that juncture in time?*

When I went in, in September 1952, and I think for some few years before that, the National Service was strictly speaking two parts. It was two years with the Colours,

which was full-time, and then three and a half years on the reserve, in the Territorial Army. And so that's what I did. Now, it had varied since, since since the end of the war in 1945; like my brother went in in about 1946 and did eighteen months.

*Right, yeah, OK.*

But... And then, it might have varied again and again, I don't know, but that's, that's what I was, was required to do.

*Yes. And of course we're talking about, the war had ended in '45, so... So, it must have been very difficult times at that period.*

Well, the main, the main role of the, of the British Army, I'm just talking about the British Army, during, during the late, the late Forties and early Fifties, was Korea. And, and had I, had I gone into the Army a year before I did, I would probably have been sent to Korea. But, but I actually went in in September 1952. The requirement was that you, that you needed to do six months before you were eligible to be, to be sent to Korea, and by that time Korea was winding down, and in fact came to a halt in the middle of 1953. So, so what the British Army was essentially doing was sort of, just, just training National Servicemen generally, and very few of them went overseas. I mean some went to the BAOR in Germany, and some went to the Middle East, but, but only, very much in a, an administrative role, rather than a fighting role.

[09:02]

*Yes. Thinking about your period in education at that juncture in time, were there any particular events that shaped you during your education?*

I suppose, there's only, there's only one real one, and that is, to recognise the, the very great difference between being in school and being in university. Although Swansea, like most redbrick universities, did not have the tutorial system that applies in, in Oxbridge.

*Mhm.*

Then, then, it was a very different sort of, intellectual environment in a university from, from that of school, which is, which is exemplified in, in two ways really. I mean the first time I went to a lecture in the university on a French subject, it was entirely in French. Now, now to speak French at school was like a one per cent or, or very little more, of the total emphasis. It was all on translation, from English into French, from French into English, in books, or writing about a subject, but in French, but writing, not speaking.

*Mhm.*

So, that was, that was a main thing that sort of struck me. And then, going along with that, the, the emphasis on thinking for yourself and finding out for yourself, and criticising, and, and making the point in, in both writing and orally, that what you thought about something was this, or that, or the other, and developing that. Now, that's, that's a substantial and significant aspect of education.

[10:55]

*Mm. And, do you... How, how important do you believe your educational achievements were to your career?*

Other than, other than what I've already mentioned, which is, which is the training of the mind, the... At that time, and what it's like now I've no idea, but at that time, really the, the achievement of, of a degree was, was simply the means of getting into your first job. Now the, the appointments that I applied for towards the end of my military service, we're talking about trainee management roles, and focusing particularly on, on people who had a degree of one kind or another as a recognition that, that at the higher, the higher degree, the further education, had something in it which was worthwhile. Beyond that, I mean it, it doesn't really much matter. It's a question of how you get on with the job that you've gone into that matters.

*So, I mean I notice that you... Obviously, particularly in your earlier studies, a keen interest in, in language, and I'm just wondering whether you feel any aspects of your studies effectively related to, would help you in your work further on.*

Not in relation to French.

*No.*

Nor history as such. But, in as much as the, the education at school included English language, language as well as literature, and in as much as the, the experience in university was, featured quite heavily putting on paper what one thought, then, then that aspect of education, which is, which is the ability to think through and write up subsequently the thoughts, was important all the time, right the way through. I mean that, that came out particularly at each one of the, the stages of my career, you know, when I went to, not so much, not so much when I was with British Tab, because, because that was, that was very much a, a question of applying the knowledge that I had been trained to have in the punch card equipment, but when I went to, to Bowering's, and, and then particularly when I became a consultant, the ability to, to write meaningfully and, and to influence, either the board, in reports to the board, or to clients, was of paramount significance.

*Yes.*

It didn't matter what else you did, if you couldn't, if you couldn't express the right kind of, of thoughts, the right kind of conclusions, the right kind of recommendations, in ways that the recipient, who might not know anything about what you are talking about, without that, that ability, you wouldn't get anywhere.

*Really we're talking about the art of communication.*

The art of communication. Very much. I mean the same, the same thing applies to, to some extent, of course about oral communication.

*Mhm.*

Whether that's getting up on your hind legs and talking to audiences, or on a one-to-one basis with, with, with a manager or a director who, who might become a customer or a client.

*Yes. So, after University of Wales, started your National Service, and, you were there for, from 1949 to '52. So, which regiment were you attached to?*

The Royal Artillery.

*The Royal Artillery.*

Recognising that, it's a corps, the Royal... It's called the Royal Regiment of Artillery, but it was as, in the war it was as big as the Navy.

*Right, OK. Mm.*

And, and so, there are regiments within the Royal Regiment of Artillery, whereas if you, if you go to infantry, you join a battalion and not a regiment.

*Right.*

The regiment is the, is the group which is like the, the Duke of York's, Duke of Lancaster, Sherwood Foresters, Black Watch. And they have several battalions, or, they used to. Whereas in, in the Royal Regiment of Artillery, there were regiments, some of them were, were field regiments, some were heavy ack-ack regiments, and some were light ack-ack regiments.

*Mhm.*

And, and I went to a light ack-ack regiment, and a field regiment during the course of my service career.

*Mhm. And, what type of work were you engaged with, engaged in, during that time?*

[pause] I started... I... After training I started off as a clerk.

*Right, OK.*



Which was straightforwardly the, the production of papers that were to do with the administration of the regiment.

*Mhm.*

And then I became an officer. And, and that didn't mean any administration whatsoever. Because at the time we were only training. I mean we were based in this country, we were not, we were not fighting at all. Then, then the role was, was really just, just taking forward the kind of, the kind of training exercises which were put forward, or put together I should say, by the, by the more senior officers in the unit.

*Mhm.*

So, I don't know how to describe it. [laughs]

*No no. Would you say you... I'm guessing by the tone of your voice, you actually enjoyed that period of time.*

Very much. I didn't enjoy not being an officer, but very much enjoyed being an officer.

[16:57]

*Right, OK. And it's something that, actually perhaps we can, we can touch now. You left the Army in September 1952.*

Yes.

*But you carried on in a, in the Territorial capacity.*

Yes. Yes. The... The requirement, the requirement was, as I mentioned, three and a half years in the reserve, as a National Serviceman. That requirement was strictly speaking only to attend a practice camp for two weeks once a year, plus about four weekends. But, but the first time that I went to a weekend with, with the regiment to

which I was posted, the colonel said, 'Right, which of you lot,' i.e. the junior officers, 'are not volunteers?' Volunteer. Which I did. And, and so I stayed in the, in the TA as a volunteer, as an officer, for the next, nine or ten years. And, and that was, that was great. That was enjoyable, both from a, from a, a professional point of view and from a social point of view.

*Good.*

I mean the great, the great... The great combination of things for me, and undoubtedly for many others, which, which comes from the combination of university and, and the Army, is that, in university, although the, the theme of university is *universitas*, which is society...

*Mhm.*

So you learn about things by being part of a group of people who are intellectually doing a similar thing, and maybe doing other things as well, but, but in the Army, you, you meet all kinds of other people. And when you become an officer, you have the requirement to lead those other people. Now, one of the stark differences when I went into the Army for instance, I went in as a group of about 20 or 30 people, like me, who came straight out of university.

*Mhm.*

And I was put into a, into a barrack room, as a billet for sleeping, with, with only about six or eight of, of those, those people. And the rest of the group was, were, the rest of the barrack room was filled up with the lowest of the low in terms of the Army assessment of their intellectual and other capabilities. And, and I spent several hours during the, like, two months I was there, actually writing letters, and reading correspondence, for those people, who might have come from the north of Scotland in a farm, and had never, never learnt to read or write.

*Mm.*

So, that experience of, first of all getting to know a much wider cross-section of, of the country socially, and then having the responsibility of, of leading people, not just people like that but people of, all kinds of, of background and status in, status in the Army I mean, then, then that's a tremendous plus in terms of the development of a career and an individual.

*Yes. And put you in good stead for the rest of your career in effect.*

Yah. Yah. And, and you know, being a member of a Territorial Army unit, sort of, you know, just, just multiplied that aspect.

*Yes. So enhancing your ability to, to relate to people from all, from all...*

To relate to people. Yah.

*Relate to, from all walks of life.*

Yup.

*And as you say, intellectual ability. And also...*

Management.

[20:28]

*...managing. Yes. Which is, great skills to have. So in September '52, time to, for you to leave the Army. And, you joined, as you say, British Tab, or, to give its full name, British Tabulating Machine Company Limited. No longer around today. We can perhaps talk about what happened to British Tab in a little while, but, how did you get involved with British Tab?*

Straightforwardly. I saw an advertisement in the *Daily Telegraph* for, for people to become, what I became, a trainee technical serviceman, whatever that was. And it simply asked for, graduates, or, people with some kind of education. That's all I remember from the advert. Interestingly, it so happened that my, my brother, who is

four years older than me, already worked for that company. And, and so, I, I said to him, 'Well, they have asked for people like me, but I am not like you, because you've got a degree in mathematics out of Imperial College, and I've got a degree in history.' 'Oh,' he said, 'that shouldn't make any difference.' So I applied, and it didn't make any difference. Although I still had a mathematical turn of mind.

*Mhm.*

Yes? Not, not in any, in any sense worthy of any [laughs] kind of academic achievement, but still, a mathematical turn of mind.

*Mhm.*

And, and I very much enjoyed the, the experience.

[22:00]

*Mm. How aware were you at that juncture in time in what your work would be?*

None, nothing at all. None at all.

*Nothing at all.*

No.

*So, we couldn't say at that stage you were aware you were going into, or choosing a career in information technology.*

No.

*That would be... No no.*

No.

*So were you aware, for example aware that, or had any awareness before accepting the job, of punch card technology, or...?*

No. Nor indeed of any, of any other aspect of business. You know, my, my, my education... I subsequently discovered that the, that the, that the mission of the grammar school type education in Wales was to train, if that's the right word, educate if that's the right word, youngsters, young people, either to become teachers, lots and lots and lots of Welsh people became teachers, or, or to, to go into the executive branch of the Civil Service.

*Mhm.*

Right? So, there was no instruction, no introduction to any profession, or any part of industry or commerce, in my county school for boys.

*Mhm.*

So I had no knowledge of anything. So, I applied to companies who advertised for, such as me, a graduate, to go into a trainee management position, organisations like Marks and Spencer's for instance. And, and the British Tab job came up. So I went into it. Not knowing anything at all about what I might be doing except that, well if my brother was working for them, it couldn't have been all that bad.

[23:46]

*Right, OK. Now, a question that I'll ask you, and then, go into your career. You were there, what, six years, through to '58, but, I'm curious, because of, I'm aware of, or, well the public now are aware of British Tab, and your involvement with the Army, were you aware of what British Tab were involved with during the Second World War, in terms of Bletchley Park?*

Not at all, no.

*No.*

No, and indeed, I, I wasn't aware of that until, relatively recently, I mean a few years ago.

*Yes. No.*

I mean, and it's still, it's still not the case that people are entirely, completely aware of what British Tab did in the war.

*Right. Yes. No. Fully understand that. And I, I rather anticipated the answer, but I thought, well, your time in the Army, so there was no conscious decision to...*

No, no conscious...

*No.*

No, not at all.

[24:49]

*So let's talk about your, your time at British Tab. You mention training.*

Yes.

*How long was that training, and what did that involve?*

It was... It was al... It was, it was almost a year. And it consisted of, of several periods of instruction in each one of the machines which British Tab produced. So, one started with the, with the initial task of creating the punch cards, and then, went on to the processing of those punch cards in this way or that way or the other way. And so, one had a period of, I don't know, a few days or a few weeks learning about the, the, the machine, this machine or that machine or the other machine. Took some kind of test to make sure that you understood what was going on. And, and then the whole, the whole period of twelve months or so was broken down into three, shall I call them terms, which, which were classroom-based, being instructed into one or another machine, and, like, maybe four or six or, or so weeks, out in, quote 'the field'

unquote, in a, in a branch office, helping the people in that office to do things that they thought were appropriate for a trainee to do. So, for instance, I went to Wolverhampton for, I think six weeks or so, and, and I, I spent some time with, with this company or that company, Universal Grinding Wheels, Lotus is another name that comes to mind. And I was just, part of their operational environment. Sorting cards, or, or, or doing something with cards, that, that were part of their normal punch card process.

[26:40]

*Mhm. Actually, that might be an opportune moment if you could, for my benefit and the benefit of all our listeners as well, is to describe something about punch card technology. I'm conscious, dare I say, in my career I have of course come across punch card, but, perhaps some of our listeners won't have come across those, so perhaps you could spend a couple of minutes explaining a little bit about punch card technology.*

Gosh. [laughs] It, it would need more than a couple of minutes really.

*Yes.*

But, but I, I'll try. If we're talking about business data processing, which is, other than entirely manual, people writing, writing in ledgers, or, or writing letters, or writing out invoices, or writing out statements of account, or any other kind of thing, back in the 1940s and 1950s there were only two ways of, of replacing that manual intervention. One was with the assistance of adding machines, multiplying machines, like comptometers as they were called, and the other was with more sophisticated machines which were called accounting machines, provided by organisations like Burroughs, Olivetti, National Cash, that, that enabled you to type onto documents with some kind of processing capability, like addition and maybe multiplication. As well as that, from the early, the early part of, well, the late part of the nineteenth century really, punch cards began to, to become competitors to the, to the accounting machine kind of process, whereby, whatever the, whatever the process might have been, whatever the, the requirement for accounting or something else might have been, and it was usually to do with accounting processes rather than any other

process, then, the starting point was to, was to put into a, quote 'punch card' unquote, in a coded form, the information which you wanted to, to appear eventually in the accounting documents, records, whether those were invoices or ledgers or statements or whatever they were.

[29:00]

And so, the first operation was, was for somebody, a punch card operator, to, to take details from a hand-printed or, or typed document, create a punch card, which was a series, really a series of just codes to represent letters and numbers, and then the piles of those cards, which were collected in some kind of meaningful way like, like, like by product or by client or by customer, they were put through a series of machines, first of all to order them in the right way in which they could, they could be related to, say, a customer, if we're talking about a customer invoice, or a customer ledger, and then put through another machine which did the necessary addition of the items on an invoice, and produce both the total invoice value and the, the printed invoice itself. Now that's a typical kind of application of punch card machinery, which involved a punching and a verifying stage. And then a sorting stage for the cards to put them in the right kind of order. And then a tabulating machine, which, which took those cards and put them through a process that resulted in both the addition, or even the multiplication in some cases, of, of the necessary figures, and then printed them. That in a nutshell was the punch card processing.

*Yes.*

And in this country, in the 1950s when, when I joined, there were really only two suppliers of that kind of technology that had had existed since the beginning of the century, or, or even earlier, the British Tabulating Machine Company and the Powers Machine Company.

*Right.*

With different technologies, in competition one with the other.

[31:04]



*And BTM, they worked... They based their work on, is it the Hollerith electronic computer.*

Yes. Yes.

*HEC, yeah.*

The basis was, was produced by Dr Herman Hollerith for the US Census, I don't know, 1860, 1870, 1880, that sort of period, and was eventually taken up on a, on a, a rather more general business-related scale, in America particularly, in this country, and in Germany, and maybe in France as well. And it gradually, through the back end of the nineteenth century and into the twenty, early twentieth century, and then into the middle of the twentieth century, developed into a series of machines which began to be used in, in commerce and industry for scientific arithmetic calculation kinds of processes, and the kind of business process which I've just mentioned.

[32:10]

*Yes. And your role. So, we've talked about the, what by today's standards most people would consider a generous introduction to, to the world you were going to work in, i.e. a year's, almost a year's training.*

Yup.

*That's something that, I doubt if many of our listeners would enjoy today. But, you, you then became what was called a technical serviceman, perhaps again a term that's not, people won't be familiar with, but in today's language, what would you say would be the, the closest name of a role for...?*

A combination of systems analysis and programming.

*Right, OK.*

Programming didn't exist in 1952. Didn't really... I mean, in a commercial environment it didn't... It didn't start to exist until, the end of the 1950s. So, so the

role, the role that the technical serviceman had was, was to produce, with the aid of the particular machines that British Tab sold; the, the ability to process information, i.e. information systems; to, to produce from original documents the documents that the accounting function, particularly the accounting function, needed for accounting work. And so, after the salesman had sold the idea to a potential customer, then, then the technical serviceman had the responsibility of working with the salesman to identify the system requirements that used the machinery, and then, put together the instructions to the user customer as to how to use the machines to further that system in the way that they, they needed it to produce whatever they needed. And, and as well as accounting machines, and accounting systems, the same machines produce, or were used in a variety of other kinds of systems, like stock control and production control, and, and I don't know what else.

*Yes. So, all the time you were working with, with equipment that by today's standard will be, would almost be severe limitations.*

Oh very severe limitations. The main, the main limitations were, were the ability to handle text, and the ability to store.

*Mhm.*

Yes? Because, the text capability on a punch card machine was a maximum of 22 characters on a card. So if you imagine, if you can imagine in an accounting application, the requirement to, to produce an invoice, or a statement which has a name and address, and, and then, lines of, of sales by, there's this product, and then there's, they cost this amount to buy, and so on and so on, well, the punch card machinery was only, only capable of, of a 22-character description of, of the name or the address or the product description. That's the first, the first limitation.

*Mhm.*

And so, text processing didn't exist, word processing didn't exist, on punch card equipment, nor on, nor in the early computers. And then the second limitation, which

began to be overcome with the early computers, was the ability to store, and to process in complicated addition and multiplication and division terms.

[36:11]

*When we're talking about store, listeners today are very familiar, they store data on their local hard disk or on network drives.*

Yes.

*Or in the cloud.*

Yes.

*So, you talked about, for example, you talked about raising an invoice system, effectively what we called a, a sales ledger or...*

Yes.

*After you process those invoices, you create the, presumably a sales ledger where you say that, Mr X owes Y £5 whatever it was. Where, where would that be stored at the end of the day? Within a system, or off the system?*

Offline. With punch cards, the equipment. The most that you, you could do, would be to carry out certain additions, or even multiplications, on some of the equipment. There were, there were machines capable of multiplying, and separately machines capable of adding and printing. So as a result of, of one or the other of those, plus another one which was capable of reading and, and punching, then, then you could, you could end up with not only a, a printed copy of, say, an invoice, but the collection of punch cards which produced that invoice could, could be kept for a subsequent operation, to produce a sales ledger for instance, or to be analysed to produce some kind of sales analysis, for instance.

*Mhm.*

But the, but the essential storage mechanism was the punch card itself, which had to be kept separate, in a particular order. And you could sort it then into different orders, by client or by sales category or by product number, or whatever it was, to produce statistical analysis, subsequent to the, to the creation originally.

*Mhm.*

Now when we get on to, on to computers as such, the computers themselves had a storage mechanism, a very tiny one, [laughs] almost insignificant by comparison with today's capabilities.

*Yes.*

So that, so that some part of the storage for the future could, could be maintained within, within the computer. Now that was hardly possible with the first generation of computers. But by the time of the third generation of computers, which was, the middle Sixties, then, then that became possible on a medium which, which was either magnetic tape or magnetic disk. And the magnetic disk has probably more affinities with what goes on now than, than anything else.

[39:03]

*Mhm. Thank you for that. When you... So after your year's training, what type of clients were you dealing with in the subsequent five years at British Tab?*

Well it was subsequent four years actually.

*Four years.*

Well, I mean, all very much focus on the City of London. There were, there were three, there were three branches of British Tab in London, the City District, the West End District, and then the Government Region, which looked after all of the, all of the applications in Government departments, and, and other Civil Service organisations, like, like the Army, or, the agricultural ministry and that sort of thing. So, in the City of London, the emphasis was very much, insurance, shipping, Stock Exchange, with

some others who happened to be sited in the City of London for maybe head office. So, I was involved for example with Wyman's, the stationery; with Ilford, the photography people; with a wine and spirits supplier, whose name I've forgotten; and also with P&O and Orient, and, and insurance companies like, like Bowring's, and, as a broker, and, and one or two other brokers. And not that I personally had much to do with them, but, but a major focus of the City District was the Stock Exchange, brokers and stockbrokers.

[40:38]

*Mhm. And, if I can take...*

Jobbers. Jobbers and stockbrokers.

*Jobbers. Right, yes. If I can take you back to that time. British Tab, can you tell us about some of the successes you had there, or, or perhaps one success that you had there that perhaps you're proud of.*

Well the main, the, the main thing that, that I did, which, which I'm proud of, was, was to advise, to build, to assist in putting in place, implementing, the accounting systems for the Orion Insurance, right from scratch. This was the first punch card installation which they had, and, and I was the man who did it.

*Right. So, so how did you go about achieving that success?*

Well it, well it's... Thinking about both the punch cards period, and indeed any subsequent period for that... I mean the first thing that needs to be done with, with any kind of, of mechanised or electronic system is to find out what's wanted. In the case of, of British Tab and the punch card machine companies, and indeed computer companies in the time we're talking about, the first requirement was for somebody to, to talk to the people in the company, in the user company, about what they wanted, what they, what, what they did at the moment. And then for the salesman, with some kind of knowledge of what the machinery could do for that process, to say, 'Well this what we can do for you.' So, design a system in other words. Now, the, the salespeople had a certain knowledge of what the equipment could do, but which was

not sufficiently detailed to put it into practice. So as far as a technical serviceman was concerned, then, then, they had to work with, with both the salespeople and the customer management to say, 'Well what exactly do you want as an accounting system?' for example, and what can we do with our equipment to make that possible? And then, with the agreement of the customer as to how that would satisfy their business requirement, and to satisfy yourself as to what the machinery could do to help that, then to put it into practice. And so, as far as the, the typical user of a, a *new* user this is, of punch card equipment, nobody existed in that company with the knowledge to do that implementation. So the job of a technical serviceman was to do it.

*Mhm.*

Right? So the equivalent today would be, systems analysis people, O&M or, or computer systems analysis people, handing over the systems design to a set of programmers, who would then implement the system.

*Yes. So, it was very much a hands-on role.*

Very much a hands-on role, yes.

*Right. And were you working in teams at that stage, or would you be going into Orion by yourself, or would you be taking...?*

No. No. Very much, very much on your own.

*Very much on your own.*

Yes. Very much on your own. I mean you could... You... The City District itself had, had three or four salesmen, they were called investigators as it happened, but three or four salesmen, with whom one worked at times to help them to design systems. And then, you probably had about ten, fifteen, 20 technical servicemen, some of whom are more senior and experienced than others. So, there was the possibility of, of an individual like me going to somebody else and saying, 'I've got a

problem here. How do I, how do I get over this?' But essentially having, having sorted out any kind of problem, with or without advice, then you were on your own. In the customer environment that is. And maybe the customer had somebody like you, who was going to take over the work, or maybe you were just going to say, 'This is how you do it, get on with it,' and maybe there was a manager with some kind of knowledge who would enable you, who would enable you to get a fuller appreciation than the systems salesman had done, as to what was exactly required.

[45:20]

*Mhm. I'm curious how this worked commercially actually. Had the system been sold, by the time you had come in?*

Yes.

*So... [both laugh] So, so you... Yes, well... That's interesting. So, sold. And then, your job was to make it...*

Make it work.

*...work.*

That's right.

*Presumably within fixed budgets as well, whatever had been agreed as a...*

With a, with... Not... With not only a fixed budget, but, but a fixed set of equipment, right?

*Mhm.*

Now, I think I made, I made the point in the notes that I provided before the interview that, that this was a challenge, that, that it was a real challenge to get the machinery to work in the way that was expected for it to work. And very often one found, when

one went into the detailed systems implementation, or even design, that the machinery was just not big enough.

*Mhm.*

Now for instance, in relation to, to Bowring's, Bowring's had had a punch card installation from 1950 onwards. They started with one machine, I think they had four or five by the end of the, the 1950s, and they were essentially producing what you would be familiar with, the, the accounting information based on the underwriting slips which the brokers had taken round Lloyd's and, and got the underwriters to sign. And, and the first, the first, the main operation of the computer which Bowring's had bought before I became involved with it, was the, the then sole commercial computer offered by British Tab, which was the 1201 computer.

*Mhm.*

It wasn't big enough. When I, when I joined Bowring's, to put this machine into operation, I quickly determined that there were two limitations with, with the set of equipment that had already been bought, bought in a, they were all rented in those days, not, not actually bought outright.

*Right.*

But, but essentially, this was the system that had been accepted by Bowring's that this was going to do the work that they wanted it to do. Frankly, it wouldn't. But fortunately, the, the 1201 computer was replaced before we installed it by the 1202 computer, which had a much bigger mechanism, a drum, for storing information, right? Even so, it wasn't... The whole... The whole combination wasn't enough for us to, to do it in the way that it was envisaged, without a lot of head scratching changes to the way in which we were going to work it out, which I can go into if you want me to, but, I don't have to. [laughs]

[48:25]



*Right. So... So, a few things there. You mentioned notes that you've kindly written and we'll publish alongside the interview. One phrase that I was particularly taken by was the word 'shoehorning'.*

Yes.

*Your word there.*

That's right.

*So... And I think that's what you are very eloquently describing. Saying, right, we've got, we've got to make it work one way...*

That's right. That's right. That's right.

[48:55]

*And, and referred to shoehorning. You also mentioned drum memory. So I asked you about punch cards. Again, that might not be familiar to all our, our listeners.*

Right, OK. The first generation computers, second generation computers, there were two or, there were two or three, certainly two that I remember, means of storing information within the computer. Punch cards are a means of storing computer, storing information outside the computer. Inside the computer there were, there were drums, and there were mercury delay lines. One or another manufacturer, like Leo, like English Electric I think, used mercury delay lines. British Tab used the drum. That really worked in ways that I, I cannot now explain.

*Mhm.*

But, but what it, what it enabled one to do was to store on the surface of a, of a drum, which, which as that implies, went round and round and round, at a certain frequency, store electronically, or electrically, representations of numbers, digital numbers, zeros and ones in other words, just zeros and ones, on the drum, in, in ways that you could, you could not only keep them but then access them by other parts of the, of the

machine, the central processor part of the machine. So the combination of a central processor and the drum together meant that you could input punch cards into the, into the machine; store information on the drum; access it through a processing unit for addition and subtraction and totalling; put them back on the drum, and keep that information, and also print it out.

*Mhm.*

So the drum storage, initially very small, I mean, the, the 1201 drum had a capacity for storing quote 'words' unquote, 1024 words, a word being eight digits long. The 1202 had a capacity for four times that number. Four items? Yes, four times that number, I think. Maybe twice that number. I don't remember. And, and that, that was, as far as Bowring's was concerned, and the system that we wanted to put in place, that was sufficient to enable us to do the calculations that we wanted.

[51:30]

*Mhm. Thank you for that explanation. We've moved on to, to Bowring's, a company that you joined in September 1958.*

No. Sorry. Bow... Bowring. I left Bowring's in '58 to join Cooper's.

*Oh right. My apologies.*

I joined Bowring... Sorry, I beg your pardon. You're quite right. I joined...

[laughs] I joined Bowring's in '58. Quite right.

*Right, OK.*

Sorry about that.

*What prompted you to move on from, from British Tab?*

Well it was a... Well it was a, it was really two things. Bowring's was the, the first commercial computer customer for the City branch. There were two others, British

Petroleum and, and either Shell or Esso. But that was a very minor relationship. The first real customer was, was Bowring's. And so, because I had been sent, the only one to have been sent from the district on a programming course, then I, I knew about computers.

*Mhm.*

So, I, I was, I was allocated to Bowring's as their technical serviceman to, to start talking about the introduction of their computer, which was due in 1959 or something like that. And, and I got so involved with them, I mean that was virtually my full-time occupation for a year, I got so involved with them that they, that they, they wanted me to, to join them. And at the same time, as it happened, British Tab announced a merger with Power's, which didn't appeal to me at all. So I, so I, not entirely happily, because I liked being a part of British Tab, but, but the possibility of, of joining and taking responsibility for the, the implementation in Bowring's was, was attractive.

[53:28]

*And you mentioned, you had been on a programming course.*

Yes.

*So, in today's terms, what type, what program course, how would you describe that?*

Well, the only, the only programming courses which, which were then available, were run by each of the, the companies which had a computer as their product.

*Yes.*

And, and the language that, that was used, gosh, these days it wouldn't mean a thing.

*Right, OK.*

It was, what we call, we call a two-address or a three-address language.

*Right, OK.*

Which, which meant that there was a limited number of actions that could take place, each one of which was, was given a code number, and, and a limited number of places on the, in the storage mechanism, which could be accessed by the, by the function to determine the action needed for that piece of data. And one learnt what the functions were, and how to produce a set of instructions, one after the other, which were, for instance, take this, find this information, take it, put it somewhere. Bring it back again. Add it to another one. Store that information. Bring it out of storage. Print it. Those kinds of functions, which are all coded, and one had to learn what those functions were, what the codes were, how to prepare a program of instructions that would enable that set of functions to do whatever you wanted with them.

*And, supplier specific.*

Supplier specific.

*Yes.*

Yes.

[55:20]

*So, at Bowring's, what was our title there, or, what was your role?*

I... I was employed as the leader of a computer study team.

*Mhm.*

[laughs] That... And that strictly speaking was what it, what it was. The study team was two people. So I, I was the, the person who knew about the computer within that team, and one of them we trained as a programmer, and the other one was a, a user business man, who knew what was wanted from the system. So, the three of us, you know, he knew what was wanted, and I could work out how to put that into the

computer, and then, a young lady, who had been a comptometer operator, with an applicability to programming, did the coding. OK?

*Mm.*

So, I started off as the leader of that computer study team. When the, when the second computer came in, the first computer was an adjunct to the punch card installation, which carried on going for the next two years, but then when we replaced that, that 1202 computer with the Honeywell 400, that replaced not only the 1202 computer but the whole of the punch card equipment as well. So, then I was, I was given the title of, of EDP Manager, electronic data processing manager, which was common throughout industry. At the same time, because of the text processing limitations of, of computers, and the requirement among various of the departments within Bowring's to produce documents, I put forward a number of, a number of systems to produce whatever documents were required as a result of an organisation and methods set of studies and systems processes. So I became the EDP and O&M Manager.

[57:24]

*Right, OK. And you mentioned the Honeywell 400. And we talked very briefly about programs before. But, was that a system using COBOL, or...?*

The Honeywell 400, to start with had its, had its, its own, its own coding system.

*Mhm.*

Let me take you back just, just a, a brief way. I mentioned, I mentioned the, the existence of a programming language which was a one-address or two-address or three-address programming language, which had a very small, restricted set of functions capabilities. By the time that, that we, we got into the Honeywell 400 second and third generation stage, there were a number of functions which became common to any kind of, of computer system, which, which could be expressed in a language that was being developed at the time, that was independent of a supplier computer restriction.

*Mhm. Yup.*

So, there were several that were coming in which we, which were started to be called wither subroutines or library routines.

*Mhm.*

Right? So, instead of, instead of writing all the instructions that one had to do for the first-generation computer, one could write some instructions which called into effect from the storage mechanism one of these subroutines or library functions that would enable some data handling to take place.

*Mm.*

Now at the same time as that kind of programming language capability was being developed, there were other developments taking place in the languages, three of which come particularly to mind, two were scientific, ALGOL and FORTRAN, and the other was COBOL, the common business-oriented language. Which was, I suppose, very much developed, initially in the United States, and, and became available for the third generation, or second-generation computers generally, and I decided, with the Honeywell 400 being installed, that that was the program language that we were going to use.

*Right.*

So that was my decision.

*Mhm.*

Based on what I, what I could see it being used for in, in installations in the States by, by Honeywell and IBM and maybe by others.

[59:55]

*Right, OK. Again, at that stage, was it working in small teams as well, or was it expanding?*

Oh yes. Yes. For the, for the 1202 we had just that, that group of three of us, right?

*Mhm.*

For the Honeywell 400, because, because we were taking over the, the whole of the punch card system, and indeed two other systems which existed in the group, then, then we had to expand the team. So, so I recruited, like, three systems analysts, and computer systems/O&M analysts. And, and set up groups of people within user departments to, to put together statements of requirement. And then, and set up, and recruited a team of programmers, probably half a dozen of them.

[1:00:50]

*Mhm. And, how would you develop those people you were recruiting at that juncture in time?*

The hope was that, that these people, the systems people, were experienced previously in designing systems for one or another company, not necessarily an insurance broker, and I don't know that, I don't think any of them had insurance broking experience, but they had a systems background that would enable them to, to interface with users of this kind or that kind or the other kind of, of commerce.

*Mhm.*

And then programmers. They, they were trained, either trained from scratch for us, or trained previously, in another context, simply in the programming language that, that was going to be used, that would enable them to take the statement of requirements produced by a systems analyst and, and write the coded instructions to make that possible with a particular computer.

*Mhm.*

And we didn't, we didn't train them. Well, we did, we trained, we did train them in, in the particular language.

[1:02:10]

*Yes. In terms of financial impact of the work you were doing, was that quantified at the time, or...? I suppose, what I'm really after is that, was the financial outcome of moving to these systems quantified?*

I don't... Frankly I don't know that it, that it, it was, to any, any kind of rigorous extent. I mean certainly not to the extent that it would subsequently be.

*Mhm.*

Because, the driving force, coming from the business, talking about Bowring's particularly for instance, the driving, the driving force was, was the, the, the basic broking operation of getting underwriters to agree to, to underwrite commercial risks, marine, non-marine, whatever they were. And, and the driving force for the introduction of, of any kind of equipment, was that, we need something better to do this system, OK?

*Mhm.*

And that was achieved. So, the first, the first achievement in relation to the lifeblood of the company was then rolled over into something else which was made probably mainly in, in terms of, of Bowring's, an accounting set of functions, which was based on that first implementation. But again, I'm not conscious of a cost benefit analysis ever, ever being done. But I wouldn't have been, because, because that was not my job.

*No.*

Right?

*OK.*



I mean, in, in the... When I get in, when I got into, into the consultancy business, or into the Prudential, that was certainly my job.

*Yes.*

But not at that time. That was, that was the responsibility of the man to whom I reported, who was the financial controller in CT Bowring and Company Insurance Limited, yeah?

*Yes.*

Now, what he did, frankly, I don't know.

[1:04:28]

*No. OK. And, it would seem to me, and let me know if you're comfortable with this phrase, but, you were really at the cutting edge of...*

Very much.

*Yes, very much.*

Very much.

*And, the management at Bowring's, were they supportive of...?*

They were generally supportive. Before I, I joined, presumably before the decision was taken to, to purchase this, this computer, there was a steering committee set up which, which involved, the person who became my boss, the financial controller, but he was really just the secretary of the steering committee. The steering committee consisted of two or three of the senior executives of the company, chaired by the man who eventually became chairman of the company, Ian Skilling[sp?]. And, they took the decision to, to go this route, to go down the computer route. When we installed the 1202, I reported to that steering committee regularly, to enable, to, to give them a,

the feeling that things were going the way that they wanted them to go. Of course, with that first generation computer, there were hiccups, you know. Its reliability was not anything like as good as you would expect today, for example. So there were, there were limitations, there were hiccups, which led to the subsequent replacement by a much bigger, better, more capable et cetera et cetera, machine in the Honeywell 400. In that period, going from, probably 1958 through to the late Sixties, the knowledge about what we were doing with computers in the minds of the, the management, was virtually nil. But I think I mentioned in one of the notes, on one day, after we had installed the Honeywell 400, so I'm talking now about 1966 probably, the then deputy chairman of the, of the company, Edgar R H Bowring, to distinguish him from his, his uncle Edgar Bowring, who was a solicitor by profession, and had gone into the insurance broking company, because it was a family concern, he was part of the family, he stopped me one day and said, 'One of the things that disturbs me, Ernest, is, that we the owners, the family owners and managers of this company, rely, have to rely, on people like you, who are not yet 30 years old, or just about 30 years old, to do something which is essential to us as a business, and we know nothing about it. We rely entirely on you.' And he said, 'And you will understand that I, I don't like that.'

*[laughs]*

Right? But he and others were very supportive of what we did. Now you could, you could say, about that period, about that group of managers, what I said over the, over the decades about all kinds of levels of managers, they needed to get hands-on knowledge and interest and experience of what was going on with these systems. Unfortunately, the only people who, whoever generally, and I, and I generalise, generally became, not interested, but somewhat capable of doing that, were finance directors.

*Yes.*

Because, all of, all of these, these computer developments were regarded in the Fifties, Sixties, Seventies, Eighties, Nineties, maybe even more recently, as accounting, finance machines. Not business machines. Now it's very different today.

[1:08:24]

*Indeed, yes. And... So, you were talking about '66 there as well. But, at the end of that year, the start of, following on, you joined a management consultancy firm.*

Yes. Yes.

*Of the accountants Cooper Brothers.*

Yes.

*As we've already said, part of PWC today. So, what was the, what, what made you decide to go, join them?*

Very, very simple. The... The company, CT Bowring Insurance, had a year or two prior to that brought in a finance director.

*Mhm.*

The, the financial side previously had been, been sort of, done by a combination of my boss, who was the financial controller, and the secretary of the company who was also a Fellow of the Institute of Chartered Accountants. And so, they, they, if anybody was responsible for the financial side of the, of the business, it was those two together. But then, in, I don't know, 1956, '57, '58, no, whatever it was, the... '66, '66, '67, '68, the company decided they needed a more, a more general financial director, and they brought somebody in from outside.

*Right.*

And so I reported to him, for about a year or two. And that was fine. But, in that, in that late 1966 period, the family member I've already mentioned, Edgar R H Bowring, decided that he wanted to get much more closely involved in these business systems, which were, which were gradually being developed generally. But he

wanted to be in charge of the, the non-computer systems, which were, which were the, the results of my O&M introductions, yeah?

*Mm.*

He did not want to be responsible for the computer systems. So he gave me the choice, I could either report to him as the O&M manager, or report to the finance director as the EDP manager. Whereas I was at the time EDP and O&M manager, right? Being proud that I had introduced O&M-based systems, non-computer-based systems, as well as computer-based systems. And I couldn't accept that, because I thought it was, it was the wrong decision for the company, as for me. So I resigned.

[1:11:05]

*You resigned. And, you, I know you subsequently rose to the position of Director at Cooper's, but, how did, how did you actually joining them come about?*

Well, I wrote to, I wrote to the, the two, the two management consultancy firms of, of which I had some knowledge, and that was Urwick Orr and PA. And, and then I also wrote to, to Cooper's. Because, when I had been working with the Orion Insurance, they were being advised by Cooper's. Now, I'm going, I'm going back to the late Fifties and early, early Sixties – no, late Fifties, when all Cooper's did was to advise, OK?

*Mhm.*

And so, I was only aware of the existence of Cooper's as, as a company that had given some kind of advice to the Orion Insurance Company about the choice of, of equipment, yeah? So I wrote to Cooper's. And, and they hired me.

*Mm. And so what was the, the nature of your work there, what type of clients were you dealing with, or, and situations at...?*

The management consultancy firms, and the chartered accountancy firms which had consulting offshoots, at that period did advice.

*Mhm.*

They, they didn't do, quote 'assistance' unquote, in any hands-on kind of way. They, they did studies, which resulted in recommendations. The recommendations might have been to do something new, or to make improvements to what already existed. But they were essentially studies with recommendations. And then, we walked away from them, OK?

*Mhm.*

So, that's what I did. I, I went in to a number of companies, with, with existing systems, or possibly not existing systems, to advise them on, on how to move forward. And those companies included, insurance companies, and, various non-insurance companies, across the whole of the UK. Because this was, although it was based in the City, I mean this was, this was a, a national practice, and in theory, the invitations to, to provide advice could come from any of the branch offices.

*Mhm.*

Now in fact, very few did, because the audit partners were, were, for their own reasons, not necessarily productive of opportunities to, to provide computer consultancy.

*Mhm.,*

Very, very much involved in accountancy consultancy, but not in computer consultancy. So we also had introductions as a result of the general standing of Cooper's. So I, I was involved for instance in two or three or four local authority engagements.

[1:14:22]

*So, would that be carrying on your, say, your analysis work from your past?*

Very much analysis.

*And then, looking at... And then your knowledge of the industry as it stood at that juncture.*

Yes.

*Coming up with recommendation.*

Yup.

*Then potentially assisting a, a local authority with vendor selection also, or...*

With vendor selection; with, with systems design; with, cost benefit decisions, by now cost benefit decisions were, were becoming evident; and, and maybe to do with the management of the function, be that in terms of efficiency or recruitment or setting up an installation. I did all of those.

[1:15:12]

*Yes. OK. And, at the time you're with Cooper's, in the mid-Seventies, you became the third President of an organisation called the Computing Services Association.*

Yes.

*Which as you, you advised me earlier, I know doesn't exist today, but, perhaps you can say a little bit about your role in that organisation and exactly what that organisation was doing at that juncture in time.*

OK. Let me, let me go, enter a wider background than, than the Computing Services Association itself. I mentioned that, already, that, that organisations like, like Cooper's, in the Fifties, and into the Sixties, provided only advice. And, the advice was essentially system-based, rather than technology-based. But because of the way that technology was coming in, it became technology-based, right? But again it was, it was advice. It wasn't, it wasn't help. Now at that time the only help that related to

the use of either punch card equipment initially and then the early computers, was provided by the suppliers of the equipment.

*Mhm.*

So, those, those suppliers had already had experience of using those computers in some other contexts, so they knew what their computers were capable of. So, they had people who would design systems using their computers, and then help people to put them in, by giving advice. And gradually, those suppliers provided program assistance as well as advice on how to use the systems.

*Mhm.*

Also, back in the, back in the punch card days, certainly British Tab, had its own punched card bureau that is creating punch cards which customers asked them to create, for example if they wanted to set up a new system, and they had an enormous amount of data which they wanted captured on punch cards. And it was a new system to them, so they didn't have the capability to, to produce those cards, so they asked the provider of the equipment to do it for them.

*Mhm.*

Now, by the time we get into the early Sixties, the bureau kind of application, which had started with the equipment suppliers, had moved sideways into independent bureau organisations. And then, at the back end of the Fifties, well, more in, more into the Sixties rather than the Fifties, a similar kind of thing happened with, with some entrepreneurs seeing that there was an opportunity to go in to programming capabilities. So, with those two aspects, for example, Bryan Mills and several others who established the Computer Management Group, CMG, created a bureau, and Barney Gibbens and Alex d'Agapeyeff, who were chartered accountants with whatever firm it was, left the firm to establish Computer Analysts and Programmers in the Sixties.

*Mhm.*

And they were just examples of a general trend. So, I don't know exactly when, but at some time prior to my involvement, the commercial bureau set up a trade association called Computer Service Bureau, Computer Services and Bureau Association, and CAP and various others, formed the Software Houses Association. By the time that I got involved, in the beginning of the 1970s, companies like mine, which were offshoots of a chartered accountancy practice, had recognised, begun to recognise, that, users of computers, managers in user computer companies, were beginning to establish a preference for technical assistance, which my kind of company in Cooper's did not provide

*Mhm.*

Which led eventually to Cooper's and others creating programming groups, but, as far as Cooper's were concerned, in the early Seventies, led them only to get involved in the association. Which was not Software Houses Association, because we didn't have software programming capability, but we were a service, a computer-oriented service.

*Right, OK.*

So we joined COSBA.

*Mhm.*

Right? And, for example, PA joined Software Houses Association, because they were beginning to establish a programming capability. And, and after two or three years, or maybe a bit more than that, I don't remember, the general discussions in the industry generally and in the two associations, led to the point where we could see either the advantage or the need to bring these two together.

*Mhm.*

So we did. And we formed the Computing Services Association in, when was it, 1975, '76?



[1:20:45]

*Right. And, you became President, as you say, of...*

Yah. I started as the Secretary. I mean, there were three of us who, we really put the whole thing together, Bryan Mills who was the, who was Director of CMG, who was the Chairman of COSBA; Barney Gibbens, who was a director and part-owner of CAP, and as President of Software Houses Association; and I was the Vice-Chairman of COSBA. So, so I did the, the secretarial, legal kind of, kind of work, set up the company, the Computer Services Association, quote 'company' unquote. I was the, the secretary at the beginning. Barney was the President for six months; Bryan took over for a year; and I took over from Bryan.

*Mm. And, and whilst you were President, is there anything that you particularly remember in your year of being President?*

Well not so much in my, in my year of being President, but I mean the whole, the whole period saw, I mean, while I was involved until, until I left Cooper's, so I was no longer part of the service industry, which was in 1981, I mean through that period there was, there was a lot of cohesion-building within, within the, the whole of the service industry, both, both software and, and systems generally, and, and computers. Which, I mean the most significant aspect of that was, was the recognition a year or two years after the CSA had been formed that we really needed a chief executive full-time. And Alan Benjamin joined us as the Director-General of the CSA.

*Right.*

And, and really then began, began, *he* began very much to sort of, push the importance of the whole, the whole business, computing services of one kind or another or another, throughout the market, and with Government.

[1:22:57]

*You work at Cooper's for a period, almost for fourteen years. If you could do anything differently during the fourteen years, i.e. with the benefit of hindsight, is there something you would have approached in a different way? And why.*

Well there were two, there were two aspects which I would certainly have liked to have done. One was to try to make it more evident in, in the business marketplace generally, that companies like Cooper's, Price Waterhouse, Peat Marwick's, those more than any other, Deloitte's, were not, were not simply chartered accountancy auditing businesses with a taxation capability as well, but were much more significant than that, because of a consultancy. And because that consultancy included the kind of management consultancy, technical consultancy, which had hitherto been the province of the management consultants like, like Urwick's and, and PE and PA on the one side, and then the growing ranks of software services companies like, like CAP and Logica and Scicon on the other side. So I would have liked to have done something within the industry generally to have increased that profile. And that was one of the main, main influences on forming CSA and getting organisations like Price Waterhouse and Peat Marwick to join.

*Yes.*

OK? So, however we might have done that, and perhaps we could not have done it, however we might have done that, I would like to have done it. Because that would have meant more opportunities for the likes of me, who until that point had been more tinged with a chartered accountancy kind of flavour, and I'm not a chartered accountant anyway, than, than having that broader capability into the technology aspect. So I would have preferred that, if we could have done it. And the other thing which, if we could have done it, was to really, improve the organisation within Cooper's.

*Mhm.*

Because, we on the, on the computing side, were, lesser mortals than the, than the, the chartered accountancy, accountancy qualified groups of people. And the same thing applies with the other aspects of, of Cooper's organisation and services. They had

production services, engineering kinds of consultants, and marketing consultants, and, economic consultants. And none of us had the right kind of overall clout which we could have had.

*So, I wouldn't wish to put words in your mouth, but almost like, the poor relation of, of the...*

Yes. Yes. Of the accountancy...

*...principal...*

That's right.

*Yup.*

Yup.

[1:26:17]

*So you chose to move on from Cooper's in April 1981. And you joined Prudential. So, back into the world of insurance. May I ask what prompted that?*

Well... Oh there were, there were several influences on, on the decision to, to join them. I mean the Prudential is, is the biggest insurance company in this country. It was a significant user of computing technology. It, it was attractive from that point of view. I had a small knowledge of the Prudential. So I, I was, was happy to join the Prudential as such. I had had involvement with the insurance world in this country, not only Bowring's, but, but I had significant clients in, in Guardian Royal Exchange and Legal and General. So I had a good knowledge of insurance, and, I mean computing systems within insurance.

*Yes.*

And, and so, you know, I knew what I was getting into from that point of view. And that was attractive. And, and the position offered by Prudential as one of the senior

management team was, was more, more significant than the position I had within Cooper's. And I, and that meant that, some of the dissatisfaction that I had about my position within Cooper's could be chucked out the window.

[1:27:58]

*Mhm. And at Prudential you were, you were appointed Group General Manager of the Management Services Department.*

That, that happened eventually.

*Right.*

The two, the two things that happened within, within the Prudential of significance, both in terms of title and, and career. When I joined, the board was entirely non-executive. The management structure had, as managers, either general managers or assistant general managers. There were only three or, three or four general managers, the chief general manager and then a general manager for the UK and a general manager for overseas business, and a chief actuary. That was all. Those were the general manager level. And then, then there were people with departmental responsibilities, like management services, who were at the assistant general management level. So when I joined, I joined as Assistant General Manager, Management Services. Within, within two years of that, the chief general manager retired. His replacement changed the organisation structure to put more emphasis on the Prudential corporation with subsidiaries that, that were Prudential Assurance and portfolio managers for the investment side, and on the, on the stocks and shares side, and another one for the property, and another one for general insurance separate from life assurance. And so, at that point, I was made a General Manager.

*Mhm.*

OK? And then, two years later, the then chief executive decided he was going to split the whole of the organisation further into separate business units, with a director in charge, a, a director, a person on the board as a director, rather than as a manager, in charge of the various activities that the, the UK insurance, the overseas insurance, the

property management, the portfolio management, the, the pensions capability. And, and each one of those wanted their own computer installation.

*Mhm.*

So whereas my, my responsibility had been for all of those, it was bust up, and separate installations were begun to be, to be created in the various business units across the corporation. And the chief executive said, 'But I want you Ernest and the, the HR man, to continue to report to me.'

*Mhm.*

So I, that's when I became Group General Manager, with no direct management responsibility for the production of, of computer systems.

*Right. So would you call that, like a federal approach, would you?*

Yes.

*Yes.*

Yes.

[loud drilling/machinery sounds]

[1:31:15]

*And at your time at the Prudential, what were the key decisions, positive and negative, you made, and what difference did they make?*

[pause] I suppose that I rather than anybody else had a great influence on the expansion into business activities of what the computer technology was doing. And that, that sort of coincided with the gradual development of microcomputing technology. So that, it went more and more out into the various departments or

branches of the company than hitherto. And I suppose, if I hadn't done it, it might not have happened.

*Mhm.*

So I... So, I did that. And, and I also put emphasis on involving the senior managers in the business units into the implementation, the design and implementation of business-oriented systems, whereas hitherto it had probably been very much an administrative kind of support services to the business, rather than entering into the heart of the, the business operation.

*So you were partnering effectively areas of the business.*

Yah. Yah.

*Rather than dictating things.*

Yup.

*And, and hopefully achieving buy-in at the same juncture of time.*

Yes. Yes.

[1:33:00]

*I asked you a question before about, when you previously employed, but with Prudential, can you think of a, the financial outcomes of any of your work, or...?*

I wouldn't have known about the, the overall financial calculations for the corporation.

*Mhm.*

Right? Because, because that's, that's a pretty complicated set of, set of aspects of, of accountancy.

*Mm.*

My, my area was, was really, relating to some kind of a budget by one or another of the, of the business units as it, as they eventually became, with, with a general requirement to do more for less.

*Mhm.*

Right? So, one had two kinds of decision that were in front of one. The first was, are we dealing with, with a requirement for more and more and more, more work, more, more, more transactions, or, or more different kinds of work, and how does, how that affect the established capability? Do we need to have more capability? So, there was a that kind of, of, of requirement to pursue the, the need for more, to put more information through the, through the computers, with a cost associated with it which had to be accepted.

*Mhm.*

And then, and then, as it were, corollary to that, there was the occasional requirement to do more for less. Which means looking at the budget and saying, what are we, what are we going to do, which is, which is better and cheaper?

*Mhm.*

Right? So, I mean as an example, here's a chart which, which shows the, the use of the computers from 1985 to 1990. Right?

*Yes. Yah.*

And in those, those ways. And the main increase was in production. So that meant that from that point to that point, we, when I was in charge, we were doing a heck of a lot more with the technology than we had hitherto. So, how much was that costing? That was my responsibility to determine and, and to reduce.

*Yup.*

Right? But in terms of the acceptability of the cost, then, then that was not my decision, that was the decision for business management.

*Yes.*

Yes?

*Yup.*

Which, which merged into all kinds of other considerations that became non-transparent.

*Mhm.*

Yes?

*Yes, yeah.*

So you can see that, you know, as a, a major increase in the, in the amount of express in terms of computer use.

*Yes. Yes. So... Yes, I mean, as you said about, in key decisions, it was, effectively, evangelising...*

Yes. Yes, that's right.

*...computerisation...*

That's right. That's right.

*...is the right word.*



That's right.

[1:36:43]

*And, would you say that was your proudest achievement at the Prudential, or...?*

Yes, I would think so. I mean, well, and, and making this possible.

*Mhm.*

Yes. I mean, making that possible. And at the same time as, in this, this period, from, from like, '88, '89, into '90, this, this area which is called ender user computing, was beginning to grow, and then kept on growing.

*Yes.*

Because, that's the point where, where separate systems were being installed, maybe microcomputer-based, maybe, maybe business unit-based.

*Mhm.*

Right? So as well as achieving that, I was instrumental in, in not controlling details, but enabling that to happen.

[1:37:40]

*Yes. I appreciate listeners can't see the graph that I'm looking at, so, with Ernest's permission perhaps we will include that on, on the website.*

Sure. Yes. yes

*Which is a graph showing online processing between 1985 and 1990. And breaks down lists between production and user computing system development and operating, showing a dramatic, dynamic rise in, in terms of production during that period.*

*And, whilst you were at the Prudential, that was also the, you were heavily involved with the BCS as well.*

Heavily from the point of view of BCS, not heavily from the point of view of what I was doing overall. Because it was a part-time activity. [laughs]

*Indeed. Yes. So you became President of the British Computer Society in 1987.*

Yup.

*You had been a member of that organisation for some years I believe.*

Since 1958.

[1:38:52]

*Yes. Yup. I know, having spoken to, had the pleasure of speaking to past BCS chairmen, often they had a theme for their year. Do you have a particular theme or something you wish to have, you wish to achieve?*

Well, my, my permanent theme in the, in the BCS, and in, and in any career position that I had, was, was always the same, which was to, somehow to increase the standing status of computer professionals.

*Mhm.*

Yes. Which is still in, still a need in existence. It may be different from and less than it was, but, but both the, with, with the BCS at the time that I was an officer, then, then the total size of the BCS was a lot less than it is now. And, and we were always struggling to, to get individuals in various parts of the industry, be those, be that the supply industry or various companies in the, in the user industry, to recognise that, that we were professionals, with a professional capability, of status, rather than, than subordinate to anything, anything that might otherwise be, be thought of as having some kind of status, be that accountancy or marketing or engineering or, or whatever. And, that was my theme. Only, only partially achieved.

*Partially achieved. Still continuing today perhaps.*

Perhaps,

[1:40:48]

*Perhaps, yes. And, one of the, one of the things you did during your time at the BCS... The... We talked about the Computer Conservation Society as well.*

Yes.

*And you supported that during your time at the...*

That... That's a specialist group.

*Yes.*

And, and it was set up, oh, I don't know, in the Eighties I think, as, as a group of, of enthusiastic retired engineers from this or that or the other manufacturing company, that wanted to preserve, and that, that probably meant either rebuilding or building computers that were current n years ago, computer, computer conservation. Yes?

*Yup.*

And the, the tradition was that a past president should be chairman.

*Right,*

So, so I became Chairman for three years. And it was in that period that, that I began to have any kind of knowledge of what was going on at Bletchley Park, because, because the Computer Conservation Society was responsible for the redoing of the Bombe and Colossus.

*Yes. And, the BCS made a significant contribution to the, the Bombe project, the rebuilding of...*

Very much.

*Yes.*

Very much.

*Yeah. And, in a way, a type of circle there, because British Tab obviously were involved with...*

Yes.

*...with Bletchley Park and...*

Yes.

*Station X as well.*

[1:42:42]

*Thinking about, bringing you up to date. You retired, was it, from the Prudential in '91.*

Early.

*Yes.*

Sad, sadly.

*Right, OK.*

I was appointed, as I mentioned, as the Group General Manager, in a way that was at the time being referred to as the Chief Information Officer

*Mhm.*

Which had another, another slang meaning, career is over.

*Ah. I have to say, I've never heard that before, but...*

Right. Well, it's, it was...

*Yes.*

It was current at the time. And I was appointed into that position with no, with no direct responsibility for staff, production staff, which I had had up to that point, on the basis that the chief exec, the then chief executive, wanted me to be with him, to have, as you put it, a sort of, federal, federal remit. And, and then he retired, and was replaced by a director who had been responsible for one of the business units. And, and he was a decentralist. And after a couple of years he didn't want me any longer.

*Right. Yes. Mm. Yes, well I'll remember the term CIO as well, the way you describe it, because I think the average life of a, I was reading the other day, I think it was, CIO is probably between two to three years at best.*

Yeah, that's right.

*And... But, well the good thing is that you were at the Prudential for ten years, so...*

Yes. Yes.

[1:44:20]

*I'm sure you, you must have been doing something right there. But, subsequent to, to your retirement, you became Chair of UKERNA.*

Yes.

*Which is the body responsible for, for JANET, the research and educational network.*

Yes. That was, that was a group of people, I don't how many, 30, 40, 50 people, who had been paid for and sponsored by the Higher Education Funding Council, to provide the network, to computer network, communications, computing communication network, for universities, for research purposes. And, and for whatever reason, the decision was taken to move it out from the Higher Education Funding Council, Civil Service kind of atmosphere, into a separate, sort of private, still funded but sort of private, organisation.

*Yes.*

Which, which had its own life as it were. And, and I was asked to be the, the, the Chairman who set it up, who took it out of the Civil Service into a separate existence.

*Right.*

And, and I, I did that until I hit the age of 65, after three years or so, and I thought, rather than carry on for another three years, I preferred just, just to retire into the background.

[1:46:00]

*Retire. Mm. And now you can, I say, take a back seat if that's the, the correct word, what do you think are the biggest challenges and opportunities of the IT industry for the next ten years?*

Now?

*Yes.*

[pause] Well the opportunity is to continue to infiltrate every, every organisation and function with an increasing useful, valuable type of equipment, IT facility, service, whatever you might like to use as the right word. That opportunity would change enormously, as it has changed in the last decade at least. The challenge, well to make,

will be, to make that happen in, in a valuable way, and, and what do you mean by value? I mean, I mean value to all the, all the user communities of one kind or another as, as separate and conjoined together. And that's a, that's a big challenge for technology, the organisation of technology, and at the moment, very evidently, from a security point of view. Because the information that, that could be, should be private, is not necessarily private in the way that the technology's opportunities are being used.

*Mhm.*

So, the challenges of the introduction of technology, the development of technology, the implementation of technology, the, the management of technology, and related not only to the technology itself but to the business and social environments in which it is, it is used, those are big opportunities and challenges.

[1:47:58]

*Mhm. And if you were advising someone entering the IT industry today, what advice would you give to them?*

I'm not really in a good position to answer that question, because, I've been retired for 20-odd years, and, a lot of, a lot of the technology that exists now is both beyond my experience and frankly understanding. So, that being the case, I don't really know enough, if anything, about career opportunities as such, right?

*Mhm.*

I mean some, some kind of familiarity, knowledge, capability, to make use of, to make good use of, various kinds of technology, is, is more and more evident. So anybody, any young, young person wanting any kind of career in, in business, or in Government, social, academic, whatever kind of, kind of, of aspect of life, is going to have available technology as a, as a service, which they need to know something about.

*Mhm.*

What the career opportunities are within, within that knowledge base, frankly, I don't know.

[1:49:30]

*No. Thank you Ernest. I'm also conscious you were involved with vocational training and standards in the past. Could you say a little, something about that, and your involvement?*

Yes. I was, I was asked to be the chairman of the committee within BTEC that, that had very much a sort of, influencing, auditing, proving kind of role, with regard to courses held by polytechnics, and to some extent technical colleges but mainly polytechnics, leading to the National Vocational Qualifications of one sort or another. And, and there was certainly more than one sort that related to information technology. And, the role that, that BTEC had, and the committee that, that I chaired had, was to, was to identify the, the significant aspects of courses that should be carried out to produce the right kind of student, successful student, in gaining a National Vocational Qualification. And then having, having set the standards, to go out into, into the, the country, with, with kind of, auditing visits to various polytechnics, to see to what extent their courses gave them the facility satisfactorily to meet the standard for an NVQ of one kind or another in information technology, looking while we did that at the courses themselves, the curricula, the way they were arrived out, the academic structure behind that, and also the links with local business community which, which input into the design of their courses, and influenced the, the possible careers of the people who came out of those polytechnics with those NVQ qualifications.

*Mhm. And certainly, reading in the press, and listening to news today, it seems that, vocational courses are, are in the news, and the need and the benefit that can be obtained from such courses is very much a topic of conversation at the present time.*

It seems to be, which I, I think is very good, because, there's, there's been, not enough emphasis in this country for many years on the, on the depth of technical training which, for example in a country like Germany has had a great deal more emphasis for



a very long time than we have given in this country. And, and I, and I have a sense, but only from the, beyond the sidelines, that the importance of, of NVQs had sort of diminished, and now seems to be, to be back up with, with a, with a feeling of significance, as, as an ability to, to prove that people are capable of, of being in, in the valuable positions within industry, industry more than anything else perhaps, but in industry, with the amount of technology that is being used by industry these days.

*Mm. Well thank you, and, thank you Ernest for our time today, for taking us through your career, through your life, from, from the Rhondda Valley to the Gower Peninsular, and your time at, at Swansea, to...*

The City of London. [laughs]

*To the City of London. Yes. So thank you very much for sharing your thoughts, and we wish you well for the future. Thank you.*

Thank you.

[End of Interview]