Control Data Australia
A Stroll Down Memory Lane
(Part 2)
The Tom Misa Interviews
From the Archives of The Charles Babbage Institute
In November 2013, Charles Babbage Institute director Tom Misa conducted a series of eleven oral history interviews with thirteen former employees of Control Data Australia (1963-89) including the details of each person’s career before and after working for Control Data.

The objective of the exercise was to establish the significant historical contribution we in Control Data Australia made to the fortunes and otherwise of Control Data Corporation.

Topics that are common to many of the interviews include Trevor Robinson’s key role in organizing Control Data Australia; the early computer sales in Australia to the Bureau of Census and Statistics, Department of Defence, P.M.G., Commonwealth Scientific and Industrial Research Organisation (CSIRO), Bureau of Meteorology, and several prominent Australian universities, plus the services provided to Broken Hill Proprietary (BHP), Telecom, and others.

A distinctive emphasis is the work in developing computer systems for race-track betting for the Victorian Totalisator Agency Board (TAB) as well as for other Australian states and New Zealand. Other topics include relations with Control Data’s headquarters in Minneapolis, business data processing, data centers (the consistent spelling throughout the transcripts), database management, networking and Cybernet, and projects done in several Far East countries.

Another recurring theme - although it possibly won’t be part of any "official" 'history - was Misa’s fascination with the lunch he attended and most of the interviews at some point are subtly directed towards the regular gatherings of friends and workmates of 30, 40 and in some cases, of 50 years ago as an example of the working environment in which Control Data Australia thrived.

Interviews were conducted with Richard Bament, John Baxter, Ron G. Bird, Tony Blackmore, Lyle Bowden, Marcel Dayan, Ian Downie, Julie James, George Karoly, John O’Neil, Garry Pearce, Rob Robertson, and Bruce Wilson, a cross-section which in retrospect covered the gamut of CDA’s activities with the possible exceptions of Manufacturing and Control Data Institute, neither of whom are represented at Third Friday lunches or the biennial reunions.

The transcripts are presented in the order in which they appear on the above web page.

At first, I didn’t think they were in any particular order, but looking again, they are sequenced by name, with the given name taking precedence.

This probably doesn’t make any difference to anyone except perhaps Ron Bird - being a Bird, he got 001 position when Trevor Robinson initiated the employee numbering scheme way back in 1963, but being a Ron in Tom Misa’s system puts him at 013 and firmly in last place! One more numbering system and he may drop out of the charts completely.

Following the transcript of the interviews, I also trawled through the CBI archives and extracted a dozen or so that had an indirect bearing on Control Data Corporation, but there are around 70 other interviews under the CDC heading which I leave for those sufficiently interested to access at their leisure.

Those that contributed to the interviews were apparently notified of the site’s existence in August, 2014, but I was only made aware of it in May, 2015 courtesy of Julie James after the release of the final draft of the CDA History.

There has never been any mention of the results of the interviews on the ex-CDA website, but as Geoff Hipwell was not one of those interviewed, he was probably as much in the dark as to the existence of the transcripts as I was.

You may also enjoy the companion Volume to The Tom Misa Interviews: Control Data Australia : A Stroll Down Memory Lane

www.ozsportshistory.com/cda/Daily Life at Control Data.pdf

OR

www.ozsportshistory.com/cda/downloads.html
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Misa: My name is Tom Misa. I’m here in Melbourne, Australia; it’s 19 November 2013. I’m talking with Bruce Wilson, who worked for Control Data Australia, especially in the personnel and training division of CDA. Bruce, to start with, could you tell us how you came to CDA, and your industry background and education in HR or computing?

Wilson: I came to CDA by a referral from a colleague. I had been building a career in personnel and training, especially training and development. I was working for another company at the time and my colleague in Sydney knew the personnel manager personally, and he knew there was a vacancy in Melbourne for a training specialist and suggested I apply, which I did. And after a long sorting process, I finally had the job. My knowledge of IT or data processing, it was probably called then, was fairly minimal. I didn’t even know the difference between software and hardware. So my area was in terms of developing people. I took on the role of mainly employee development, and organization development consultant, which was an internal consultant role, and basically provided a service of training, guiding, mentoring, and coaching to the operational people. Misa: And what year did you come to CDA?

Wilson: I joined CDA in 1977, and I left in 1984. So, seven years. And they were probably the best seven years of my working life. Misa: We’ll have a chance to talk about that later — but just coming to CDA from your previous background. Wilson: From my previous background, I found it very challenging, and I mean that in a positive way because I think part of its culture was to encourage people to perform and to be innovative. So I found I had more opportunity to do new and exciting things in CDA than I’d ever had done before. I think it was a business that was in a very new industry; it was exciting and we were all in our early thirties then, and it was just an exciting place to work. 5 Misa: How did the CDA management or your supervisor end up encouraging that sense of being innovative and encouraging you to do different things?

Wilson: Well, I think that was part of the culture. To me, it was setting quite stretching goals; it was giving me the opportunity to experiment and do new and different things; and a sort of sense that once a plan was agreed, I could self-reliantly go and implement it. Misa: So you agree with your supervisor, but had a lot of latitude in terms of implementing and working out the details. Wilson: Yes. And I think one of the strengths that made the company strong in Australia was that I think Australians are probably good implementers. We relied a lot on the corporation for some of the groundwork, or, if you like, the theoretical work. They had a personnel research department, from which — if it had 15 or 20 people in it — people with PhDs in psychology who were producing human resource tools. But we found that the success that we had came from implementing them properly, as different from just importing them. I think one of these I found about some American training, from an Australian perspective, was that it was quite procedural. Here’s one step, now you do this, and then you do that. So it sort of worried us that it taught people what to do, but not necessarily how to do it. So for a lot of things like work planning, and employee development, and performance appraisal, we would deconstruct a lot of that and rewrite it, in the same context but including training in how it should be applied, rather than just what should be applied. Misa: Could you give me an example about that shift from what to do, to how to do it? Wilson: Yes. For example, we implemented a process called work planning. And work planning and review was a really important and effective process for planning people’s jobs. Everyone in the company had to create a work plan, in a relevant period of time. That work plan described things like the tasks they were to perform, what objectives they would accomplish, by when, and so on. And I think that was an important part of Control Data’s culture because it meant that we had a very unambiguous sort of culture as to what was expected of people. It was clearly defined and people would perform to that or not perform to that. So it wasn’t a large amount of subjectivity or politics in the organization. It was pretty...
clear cut. Here is sort of the contract I had as to what I was meant to accomplish. And everyone had one of those. The American manual on how to implement work planning was really just a series of steps; you know, at the beginning of the year you do this, then you do that, then you do this, then you do that. Misa: A kind of schematic. Wilson: Yes, a schematic, and I’ll call it procedural. But what we ended up doing was people amended the process in a way that we would, in our training, we would include case studies, and worked examples, and we would have role plays, and we were building; coaching and mentoring on discussions and how to [handle] grievance with your people, and how to handle disputes. And I think we ended up with a really strong implementation of those things. Misa: And so Australian habits about how you talk to people, that couldn’t come from the [center], it needed to be developed here. Wilson: I think so. I think there are some cultural differences between Australia and America. Many of the people I’ve talked to would say Australia is very like America. Some very strong similarities but there’re also some significant differences, I think. One is Australians tend to be more casual. Secondly, we have less respect for authority than I think Americans have. You might take the word of a vice president and respect it because it because it was a vice president speaking. We look at whether he’s a good guy first, and then we’ll respect it. So there’s the little parts like that we needed to work out locally. One of the reasons — I was thinking over the weekend — one of the reasons why I think Control Data was quite successful in Australia is because there is a relatively strong similarity between Australian culture and American culture and what worked in the States generally worked here. Far more, say, than maybe in France, or Korea, or Greece. I got some experience in working in those countries while I was at Control Data. Misa: What would the similarities be? You accentuated some of the differences, but what would you say some of the similarities would be? Wilson: I think a preparedness for pay-for-performance. A preparedness to accept individual results. I think an understanding that Australian customers would probably buy in a similar way to American companies, which would be very different in other parts of the world; they have different buying criteria, or different political criteria. So I think there’s a fair match between Australia and the States. Misa: I appreciate your comments because when we were doing a background one of the things we were trying to figure out; why was Australia seemingly a notable and consistent success? Some places made a lot of money and then lost the money, but CDA had a sustained record of solid profits across years and years. It really stands out of all the overseas divisions. Wilson: I think we might’ve had some good management, as well. I think that probably contributed. Misa: You had an interesting position, then, because you had contact with people coming in, but then did you also have contact with people each year, if they did a review or something like that? Wilson: Absolutely. I would’ve known every person in the company above supervisor level, and every salesman; salesperson. Misa: And can you give me just a general sense about how many people that was? Wilson: There was 600-and-something people in the company; I think 620 or 600, roundabout. Probably would’ve been familiar with maybe a couple hundred of them. Misa: Couple hundred. Wilson: Yes. And they would’ve been right across the business. Not so much in wagering projects, but in engineering, analysts, sales, Control Data Institute, across the whole board. Misa: Did you see any significant differences, then, between Canberra, Melbourne, Sydney, Perth was another place. Wilson: There were a few but they tended to be local differences. For example, because Canberra’s a government center; just consider Washington, D.C. to Canberra; it was mainly government sales so there was a strong government bias there, where in other cities like Melbourne and Sydney, not so much commercial because Control Data was never into commercial computing like some of the other companies in the industry. I think it was more of an education focus, or a wagering focus; or in some cases, it would be a manufacturing focus. So that would be the difference. In terms of ability or in terms of style, I think it was fairly homogenous. Misa: Fairly homogenous. Wilson: Yes. Misa: People have told me that Australia doesn’t have the strong regional differences that a country like the U.S. has. People in the U.S. that get transferred, for instance, from whatever, the Northeast to the South, or to the Far West, they experience quite significant cultural differences. That wouldn’t be the case so much in Australia. Wilson: Oh, subtly, but not overly. Misa: Not dramatically? Wilson: No, not dramatically. No. Misa: In terms of your working in Australia, how did you communicate with people in Minneapolis? Wilson: I probably got to Minneapolis four times, I think, out of my seven-year time with Control Data. I found out very early the importance of networking, and my boss was pretty supporting about that. Misa: Your supervisor was? Wilson: My supervisor was the Personnel Manager for...
Misa: And his name would be? Wilson: Brian Donnelly, D-O-double N-O-double L-E-Y. He’s really also one of the reasons why personnel was successful. He had a strong, driving style. He made sure that personnel was a central part of the organization and not a peripheral part to be overlooked, and a pretty core part. He controlled; well we, as personnel, controlled areas like compensation very heavily, and recruitment. So the gateway into the company, and then, you know, the mechanism for rewarding people was pretty much controlled by personnel. Personnel had more influence in Control Data than I’ve ever seen in any other Australian company. Misa: Controlling who’s coming in and who’s getting compensated are both important functions, for sure. Wilson: Well, yes, but it wasn’t only that. It was actually serve as a department that had a positive offering, and resources to offer, rather just a service department. Misa: You mentioned the importance of networking; what types of activities?

Wilson: So when I would go to the States, I would build up a list of people in different disciplines or departments that I wanted to go and see. And I would try and spend an hour with someone. I might spend an hour with a manager for international compensation; that wasn’t my area but it was usually the person we were talking to. Or the people doing international training; or the people doing sales training; or the people in personnel research; or the people who were developing PLATO software. I would go and spend time with them, and sit down and talk with them about what they were doing, what their goals were, what their plans were; and mainly, not only understanding where they were going, but also just to build a personal relationship because I found that I could call them and say hey, I’m wondering whether you could help me with this, and they would know who I was. Misa: Were you ever posted in Minneapolis? Or were these just periodic visits? Wilson: I was half offered a job in my later years, in Minneapolis, but I decided not to take it. Misa: So you were in the U.S., you said, what, four trips. Wilson: Yes. Two or three weeks at a time.

Misa: Two or three weeks. Wilson: Think the first one might’ve been five. Misa: Besides this important informal networking, were there formal trainings that you also went through? Wilson: I attended a number of training programs, but not because of any requirements, just because I was interested in attending to see how they worked. Misa: Would it be a good time to review a couple of documents that you brought in? Wilson: Yes. I brought our training program, for the beginning and the end of my time, virtually, because it evolved; and I wanted to just say that we actually had a structured development curriculum. Misa: I just want to identify this; do you want to do this 1979 version first? Wilson: I’ll leave that as background. Let’s start with the 1983 one. Misa: Control Data’s Human Resource Development Program 1983, to just identify the document. Wilson: One of the distinctions between me and other countries was that I also had responsibility for sales training . . . Misa: Sales training. Wilson: . . . as well as management training. So we had a curriculum of training programs, of training modules, that we expected every one of our people to go through over their life in Control Data. Misa: I’m just reading here, it says, “Sales Training Curriculum”; it looks to me like there’s nine different modules. Wilson: Nine modules, yes. Misa: “Effective Sales Calls,” “Telephone as a Sales Tool,” etcetera. These are pretty hands-on; these aren’t lofty principles, but pretty much hands-on tools. Wilson: Yes, and especially things like negotiations training, and selling skills. They’re a really practical approach. In the early days, we had people from the States who would come out and deliver them, and then generally we took them over and developed them, and delivered them locally. As I said, with management training, we had a number of programs that you could do as a supervisor, and then some basic management programs, and then some of them go on to continuing development. But we had an expectation that everybody above supervisor level would probably get exposed to 10 days of training a year. Misa: Ten days per year. Wilson: Per person.

Misa: Would that be on an ongoing basis? So not just coming into the company. Wilson: There were things you would’ve done early on as part of an induction process. But then after that, for the next couple of years, you would’ve had some [training] time mapped out. Misa: That’s the 10 days? Wilson: Yes. Misa: When you came into the company, how extensive was the training at that time? Wilson: It was very minimal because it really relied on — I’m actually not quite sure what they did — I think they relied on people coming out from the States ad hoc to come and deliver training. There was no regimen or structure that existed. Misa: May I ask the question slightly differently; during your time, when somebody came in, a new recruit, did they have a formal training before they would take up their responsibilities? Not ongoing, but recruiting. Wilson: Oh, yes; I understand. I referred to that as induction training. We had people who early in their time, always had exposure to things like company history and work...
planning, but we did hire people, obviously, that were expected to be able to go out and do a job. I think we just culturalized them and tempered them to Control Data. **Misa:** Do you think the 10 days of ongoing training would be about average for Australian companies, at the time? **Wilson:** No, well in excess. **Misa:** In excess. **Wilson:** Absolutely. **Misa:** So that, again, speaks to the significance and seriousness of HR. **Wilson:** And in excess of the competitors. I think you might’ve heard the term that there was in the industry at the time, that there was IBM and the “bunch.” **Misa:** Right. **Wilson:** I think we were well ahead of the “bunch” in terms of providing training. When I left in 1984, I went and set up my little consulting business and I worked for 29 years as a one-man band consultant. And I got to a number of the other companies like Honeywell, and Camden, and Hewlett Packard; and I don’t think they did nearly as much training as Control Data did. **Misa:** All were companies operating here in Australia. **Wilson:** Yes, we just had a really strong development focus. **Misa:** And can you give me your understanding, at least, of where that focus came from? Why was Control Data Australia notable and different? **Wilson:** I don’t know that we were that different from the corporation. I think a lot of the basic philosophy and I think the values came out of people like Bill Norris, and Jim Morris, and Norb Berg. But I think because we were a relatively small company, we were also able to implement things pretty effectively; and you would’ve seen that closeness with us guys who were at lunch the other day. I mean, after 35 years or so. **Misa:** It’s quite notable. **Wilson:** Yes, still get together. **Misa:** Some people worked for 20 or 30 years, and other people worked for relatively shorter time, like yourself, and still had a notable bond. **Wilson:** Yes. I think that was part of this culture of being expected to produce results, being able to innovate, being young and it was exciting, and it was a new industry. And I think the company was also profitable so we could afford those things. In my consulting work afterwards, I’ve been at companies as late as last year or so, where they still are not nearly as advanced as Control Data was 35 years ago. **Misa:** 35 years ago. **Wilson:** It was a leading edge company. **Misa:** Can you give me an example in which something that Control Data was doing say 30 years ago, may be passing into current practices? **Wilson:** Having an employee assistance program was one. You know, it was one of the early adopters of that. **Misa:** That was EAR? **Wilson:** EAR, yes. **Misa:** Can you say a little about how you understood that? **Wilson:** Well, I actually can’t remember whether we had an EAR process in Australia. I think in the latter years, we might have. We might’ve contracted it out to a supplier. But it was designed to be a resource for employees who needed help, coaching, counselling, assistance in both sort of — in any way — making career decisions, issues in their personal lives, and they had access to professional providers who could support them with counselling and coaching. **Misa:** And it was not normal then? **Wilson:** Not then. **Misa:** Not then. **Wilson:** Normal now, but in those days it was brand new. I think probably another reason, if I can blow my own trumpet for a bit. One of the other reasons why I think that we did well in personnel administrator, was that we were all pretty good at it. You know, I travelled around the world quite a bit with Control Data and got asked to do some training in different countries, and on a couple of assignments. It’s interesting for an American company, but the strongest employee development countries were in Australia, the U.K., and Canada. **Misa:** Really? **Wilson:** All British Commonwealth countries. **Misa:** Really. **Wilson:** Yes. And I really enjoyed the time that I was able to spend with my counterparts in those countries because we had a lot in common, and we were doing good stuff. **Misa:** Can you say a bit about how those trips were arranged? **Wilson:** Some of them were things that we just arranged personally on the side. For example, I’d get to the States and try to make a side trip up to Toronto. But some of them were quite formal. For example, we were working at one stage as a project team to create a PLATO program that was aimed to be a cross cultural supervisory program. **Misa:** Cross cultural. **Wilson:** Yes. We worked out that around the world there were different cultural blocks. There was a Western block, like U.S., Australia, England; there was an Asian block, which had quite different values, like Korea, Taiwan, and Japan; and there was a Southern European block, which was Spain, Greece, Italy; and a Northern European sort of culture. And what we were trying to do was to create a supervisory training program which would teach people the elements of supervision. But for each exercise, for example, they would go off to one of those streams, based on the culture of where they living or coming from. **Misa:** So it’s taking a general model, but then trying to localize it and make it culturally appropriate for these different regions. This is an interesting way of thinking about anthropology. **Wilson:** Pretty much. And I had a fascinating experience. I was in Greece at one time, because this team of seven or eight people assembled in Europe,
and we went off and piloted our program with some live workshops, then came back to compare results. I can remember being in Greece and talking about performance review discussions, and I had a couple of great managers role-playing this discussion with an employee that wasn’t performing effectively, and they were pounding the table, ranting and raving. And I said to them afterwards, how do you think that went. And they said oh, pretty good. And I said well, I thought we talked about principles of confrontation, and maybe being less authoritative, and how important it was for the employee to be involved in the process. Is there anything you could’ve done better? Yes, they said, we should have been firmer. [Laughs.] Misa: Firmer, okay. Wilson: So that was quite an eye opener as to how different cultures worked. But I ended up running some workshops in such diverse places as South Africa, Korea, Singapore, France. It was just interesting and that was part of what made it very exciting for me because, you know, in my thirties and being sent overseas to do it, it was a pretty big thrill. Misa: And where would South Africa fit? Wilson: South Africa didn’t have a training development function, but they did have a strong personnel function. They were people we respected. Misa: And these trips, were those again relatively short duration? Wilson: Yes, five or six weeks. Misa: Were you ever actually stationed or assigned to an overseas area? Wilson: No, it was all done from Australia, and it was typically requested by their headquarters, wanting a resource to go do some work in those countries. Misa: Do you want to make any other comments about the 1983 document? You also brought in, it says, Announcing Control Data’s 1979 Human Resource Development Program; either one of those? Wilson: No, I think you can see just on the back, the sort of typical timetable that we would’ve run in Australia, New Zealand for a series of workshops. So at a constant through the year, they were active. Misa: Let me just read this into the tape; this is a 1979 program, in January, it looks like most weeks there’s something. Wilson: Yes. Misa: January 8, Marketing Orientation Seminar; 9-12 Introduction to Selling Skills Workshop; on the 24th of January, Coaching For Sales Performance Workshop; and then it looks like there’s two sessions January 25 and 26, January 30 and 31 on Effective Presentations; and that’s basically similar to the rest of the year. Wilson: Yes. Misa: So there was a lot of training, and workshops; these would be focused on CDA people, right? Wilson: That’s right. And New Zealand, the CDA ones. Yes. Misa: Now, the people coming to this; you mentioned that there were 10 days or so each year that would be part of an assignment. [Your] supervisor says oh, it’s time for you to do the Effective Presentations. Wilson: Yes, you haven’t done that yet so I’ve scheduled you for the May session. Misa: So that would be part of the work assignment? Wilson: Yes. And it would appear in their work plan, by the end of the year you will have done this training. Misa: Was that structure the same across your seven years at CDA, or did that change? Wilson: No, it changed and evolved into more sophisticated training, but the quantity pretty much stayed the same. Misa: You mentioned PLATO before. PLATO, of course, is one of those very attractive and ultimately quite controversial projects at Control Data. So I’d be interested in your sense about what it was like, and how extensively it was used here in Australia and New Zealand. Wilson: In most of my time, it wasn’t used extensively at all. We didn’t develop a PLATO delivery capability here until about 1983, I think. I think roughly, or 1984. 25 Before then, we had to get a connection from the States, and in those days of communication, you know, 9600 baud line was about all that was available. Misa: And expensive. Wilson: And terribly expensive, yes. Misa: The mainframe would be in the U.S., you’d have the PLATO terminal here. Wilson: Yes. In the later stages of that training, 1983 program you’ll see some PLATO courses. We would develop the capability then, but we would really use it pretty much peripherally. It was still a bit of a toy and we hadn’t really integrated it as individual learning would be integrated into an organization now. Misa: So it would be an option, but not part of the mainstream? Wilson: Yes. And it would be sort of something interesting to do, no more than it was really funded, though. It’s still a bit of a toy and wasn’t really compulsory or required. We really didn’t have a lot of formal programs, apart from some technical subjects, on PLATO. Misa: Do you remember any reactions or responses to the CDA people that were using the PLATO terminals? Wilson: No I don’t. No. I think probably, generally, they were excited by it; they found it fascinating from a technical point of view. I don’t think they thought too much about a learning process. Misa: Did we have a chance to do a good amount of comparing the difference between Control Data Australia and the HR back in Minneapolis; are there other observations to add to that? Wilson: I think it gets back to what I was saying before. That I think one of our capabilities in Australia was being a good implementer. When I first joined Control Data [in] 1977, I was just...
finishing my degree in psychology. I missed school, not thinking I had the brains to go to university, and it wasn’t until I got drafted and had a couple of years in the army that I matured a lot. So I went back and studied part time. In those days, you could get registered as a psychologist as long as you had more than half your bachelor’s degree in psychology subjects, and two years’ supervised experience. Misa: So you could work as a psychologist. Wilson: Yes. So I had just graduated. I found the most interesting people in Minneapolis were the personnel research people, that worked for Walter Tornow in his group. And they were really, really deep specialists in one particular area, not across the board. They seemed to know a lot about performance review, but not a lot about compensation. And they knew a lot about motivation and leadership, but not much about mentoring. So I found the benefit I had on talking to them was that I could actually work right across the discipline and at least have a, I guess, more than skin deep understanding of the issues they were working on. Misa: So you could work as a psychologist. Wilson: Yes. So I had just graduated. I found the most interesting people in Minneapolis were the personnel research people, that worked for Walter Tornow in his group. And they were really, really deep specialists in one particular area, not across the board. They seemed to know a lot about performance review, but not about compensation. And they knew a lot about motivation and leadership, but not much about mentoring. So I found the benefit I had on talking to them was that I could actually work right across the discipline and at least have a, I guess, more than skin deep understanding of the issues they were working on. Misa: What was that? Wilson: Misa: That was being a direct connection. Wilson: For example, I ran a management training program once in Korea. I don’t think my value was teaching them much about management techniques because they were so culturally different. I think my value was more helping them understand how Westerners thought about management. [Laughs.] Misa: Oh, okay. Giving them some tools to understand. Wilson: Why do we get these dumb instructions? Why do we have to do that? And what’s the purpose of this? I think that was more my value to them than it actually was helping them become better managers. Misa: Teaching them not the instrumental tools, but some cultural insight. Wilson: Yes. Yes. And I don’t know that Control Data Corporation was very strong on its cultural insight. I seem to recollect only a small number of people ever had passports, so its worldliness was not huge. Misa: From early on, in the early 1960s, we know that Control Data was an international company but, of course, most of the people were U.S. based. CDA was largely done not by shipping dozens of Americans, but essentially by organizing a group of Australians. Wilson: That’s right. They started out with an Australian agency and incorporated into the business there. Yes. It’s an interesting view that I think your countrymen have about the world, because I was just got a note from a friend; fact, he’s actually, my exfunctional boss, guy called Ron Hillbin [sp?], who lives in Boston now. He was VP of personnel for Control Data Australia: The Tom Misa Interviews

CONTROL DATA AUSTRALIA : THE TOM MISA INTERVIEWS

Misa: World Series, just from the Pacific to Atlantic. Wilson: That’s it, yes, that’s the world. [Laughs.] Misa: Americans have a very big country, but sometimes it’s also very small. Wilson: Yes. Misa: Well, Bruce, are there any other topics we should include in our conversation today? Wilson: No, I wanted to talk about training, which you’ve done. How are we thinking about it. An example of being innovative which I haven’t covered is I tried to create, at one time, new and different ways for people to learn. I mainly used it for some team building work and instead of just having indoor sort of activities, I actually took people out into the forest for three days. Misa: For three days? Wilson: Yes, we found a conference center that was in the country and we ran outdoor activities. They weren’t the typical activities that some ran, like carrying logs of wood and all that sort of busy stuff. I developed a whole series of exercises that related to organizational problems, like I got people to build a log bridge across an area. One team there, and one team to either side; and left it quite ambiguous as to whether they were working on the same bridge or little bridges. And then we talked at the end of that; teamwork, and how you integrated that. And I found that that environment really, really worked. I still get people coming back and say remember that bridge we built? I really learned a lot from that, you know, even after 30 years. Misa: Do you have any reflections on why that different mode seemed to be memorable? Wilson: I think it was connected to the overall culture of achievement, being young, something different, and it was sort of done, I think, — or I tried to do it — professionally and constructively, you know, rather than just make it a game. Misa: So there was an important purpose behind it. Wilson: Absolutely, yes. Misa: That’s a good example; little bit off the normal path. Wilson: And many local companies wouldn’t have had that opportunity; that wouldn’t have been, not so much permitted, but it wouldn’t have been
accepted as easily as this. **Misa:** For something like that, did you typically have to ask permission of somebody or was it the case that you had the responsibility to just go ahead and do it? **Wilson:** No, I would’ve positioned it with relevant people, saying here’s my suggestion as to what we could do, and have to sell it to them. [TELEPHONE RINGS — BREAK IN TAPE] **Misa:** Okay, back on. **Wilson:** I think our reward for performance system was very strong. One of the things that Control Data did right around the world was to recognize individual contribution. So as well as having very clear reward systems for salespeople, in terms of their commissions and bonuses, and attendance at things like the 100 Percent Club, there were reward systems for things like analysts, for engineers, for administration people, and I think it really made people feel valued. **Misa:** With the salesmen, the 100 Percent Club is company-wide, but what kinds of recognition would there for the analysts and engineers? **Wilson:** I can’t remember the details, but there was a recognition program, there was the same thing in administration, and in engineering, I think. **Misa:** And then admin, too. **Wilson:** Yes. In fact, a good example of that would be that one year, we had a lawyer looking after contracts and the general view of salespeople would be we don’t want a lawyer looking after contracts because we review it ourselves; where this woman went out of her way to be helpful and cooperative, so they took her into the 100 Percent Club one year. **Misa:** Brought her in and basically made her an honorary salesperson. **Wilson:** So that was part of what happened. **Misa:** You know, you could have a tension between individual recognition and a team focus or team orientation. How does that work out? **Wilson:** I think we had a good mix of that. I think the individual recognition was quite clearly defined because of the work planning system, the work plan and review system. But there was an element of teamwork that ran across that as a separate layer. So you’d find that engineers, for example, would have strong levels of cooperation with their peers. There’s always a bit of conflict between some departments in any business, but I don’t recollect that being either strong or disruptive. **Misa:** So that idea about having rewards for individuals was something that permeated the company as a whole? **Wilson:** Yes, absolutely. **Misa:** Do you know whether that was the extent also back home in Minneapolis, or was that something distinctive here? **Wilson:** No, it was right across the corporation. **Misa:** So that was a value then that came from Minneapolis and was implemented here in a satisfying way? **Wilson:** Yes. And in an effective way here. **Misa:** Well this has been really splendid, thank you so much. Anything else that we can do. **Wilson:** No, I think I’ve covered the things I was thinking through that might’ve been of interest to you. **Misa:** Well, splendid, this is really helpful. Thank you so much.

**Garry Pearce**

http://conservancy.umn.edu/handle/11299/164975

**Misa:** My name is Tom Misa; it’s 22 November 2013. I’m in Melbourne, Australia and this morning talking with Garry Pearce. Garry was with Control Data Australia from 1972 to 1985. Gary, just by way of background, can we pick up your story from the University of Melbourne, General Motors, and Arthur Andersen before you came to Control Data Australia? **Pearce:** Okay, thanks, Tom. I graduated from University of Melbourne in January 1957; and I had studied there economics and finance, in a commerce degree. I then joined General Motors, in the economics department, and spent five years there before I got headhunted to Arthur Andersen and Co. **Misa:** So the General Motors years would be 1957 to 1962. **Pearce:** Yes. And I spent the next how many years? 1972, right about July, I think, I joined Control Data Australia from Arthur Andersen and Co. **Misa:** Before we turn to CDA, describe some of your responsibilities at either General Motors or Arthur Andersen. You brought a different portfolio of skills and experiences to CDA. **Pearce:** Probably that’s true. My primary responsibility at General Motors in the economics area was to forecast the vehicle market, so that the manufacturing operations and the imports could be tailored to, and planned well enough in advance so that we got our fair share of the market, and weren’t either caught short or shockingly over. At Arthur Andersen I was in the consulting division, with a real battery of responsibilities. I suppose it went more to the accounting side and controlling finances, and planning in a lot of major companies, banks, airlines, insurance. I spent 18 months of that time overseas, working out of the London office, and in living in — would you
believe it — the South of Ireland in Cork as a consultant to what was then the second largest company, behind Guinness, in the Republic of Ireland, a firm called Sunbeam Wolsey, in the textiles game. I resumed matters in Australia when I came back from there, and eventually was headhunted by Control Data Australia to take the senior financial position when Jim Mathis, who was the incumbent at the time, was returning to Minneapolis at the end of his tour of duty, if you like. Misa: Senior financial position; do you remember the title? Pearce: Look, I think it was General Manager Finance, or something or other like that. But it was, in the sense that you had an engineering manager, you had analyst manager, you had a finance manager, you had personnel manager; I think mine was general manager finance. Misa: But the senior position? Pearce: It was the senior position, yes. So I was there and I joined the board when Paul Sibalik replaced the outgoing Herb Hughes as the managing director. And I had the unfortunate honor, when Paul was overseas and the major project we were working on at the time was with the TAB, and they decided to pull out from underneath us or get rid of us, I was the one who was left having to deal with the press and all the interviewers, just by pure accident. Misa: So you had some public relations responsibilities, as well as financial oversight and accounting responsibilities? Pearce: I couldn’t be sure of the timing of that, Tom, but at one stage the public relations and advertising area was in my bailiwick. Misa: Can you describe the notable projects or responsibilities during that early time, especially at CDA? Pearce: Well I concentrated largely on the financial arena. I had more or less a supervisory role in the advertising and PR areas as well. And later on, during the course of my tenure in finance, I also inherited at various times, ownership of the manufacturing division down at Moorabbin, and the Data Centre when it was established out at Knox. Misa: The Knox Data Centre. Pearce: Yes, which was probably Data Services Division. Misa: I know that you don’t know the inside story about the manufacturing, but if you have any comments or observations about that facility, I’d be interested. That’s a weak point in interviews I’ve been able to do so far. Pearce: I probably can’t help you much in terms of how it came to be, or why it came to be, but it was certainly there and the manager of it was originally Les Randell, and he was succeeded by Alan Brown. Now, it was during Alan’s leadership of the manufacturing division, group, whatever you like to call it, when it was put under the bailiwick of the finance manager. That was very interesting to see. Then later on, when Nate Dickenson, whom I’d met before, was running La Jolla I went over there to work out the transfer of some manufacturing capability left to us, and what was required in making sure that we handled it properly. Misa: La Jolla, in California? Pearce: Right, just out of San Diego. Misa: Do you remember looking at the finances of the manufacturing facility and seeing anything notable with that? In terms of profitability, revenues, what were they? Pearce: It was a good deal, as far as we were concerned. It was financially viable, and well managed. And it was a good mix and a good fit for doing it out here, rather than bringing them in and putting them all together; having the full bottle come in from overseas. Misa: What kind of manufacturing was done here? Pearce: They were called Business Products Division. We had a sales manager for Business Products, and we had a manufacturing manager, who was manufacturing some of the stuff that Business Products flogged. Misa: When you first came to Control Data, you had worked for two well established companies, General Motors and Arthur Andersen. Do you remember thinking anything notable about Control Data Australia? The culture, the way people were working, how the environment was set up? Pearce: Well, Arthur Andersen had a U.S. background; they were one of the major accounting firms in the world with a very well-known consulting division. And they were just like any other consulting outfit that I had previously observed. General Motors was the normal kind of company structure, where you had this “V” kind of a thing with a chief honcho on top, and then second rung below; and it got bigger and bigger as you went down. So in terms of the structure, there wasn’t a great deal of difference. Misa: I’m thinking of not only the structure, but also the culture; the way people were trained or the way people were promoted; the type of internal culture. Was that notable for CDA, in your experience, compared with the other two? Pearce: No, I wouldn’t have seen a great deal of difference. If you, for example, had a vacancy caused by the retirement or the resignation of somebody at either of those two companies, firstly, with General Motors, it went through a personnel department style of thing; and you said hey, you better go and find a replacement for this. They would advertise, they would do the first cut interviews, and then come down to those within. The incumbent would look at them and say what’ve we got to do? Does he fit, or she? And that was the same with both cases; more so with General Motors because of its structure and its relationship with the overseas
company. The division of Arthur Andersen that I worked for, which was the management services division or administrative services, you were looking for specific talents that suited the direction of the business and the opportunities that you perceived. 

Misa: Right. So each of those three are American firms operating in Australia, that is, General Motors, Arthur Andersen, and Control Data. And I’m asking about anything that was notable or distinctive about CDA, the Control Data experience, and comparing that to either of the other two companies. 

Pearce: I think probably that CDA directed more, in terms of letting you know the direction they wanted you to take, and then left it to the sales department, if you like, to go out and find and develop the opportunities probably to a greater extent than the others did. 

Misa: So where would the central direction for CDA come from? 

Pearce: Well, CDA at the time was organized with an international division and we were part of that international group. So we had a person in; mostly, it was VP International, and from memory, Mary Swenson was the first one that I can recall. And then Bill Criego. But whatever it was, when I, for example, used to go over to have discussions on finance I would go to the particular division within international that had responsibility for us. 

Misa: So you wouldn’t be talking to CDC finance, but the CDC international people. 

Pearce: Yes. But I knew the CDC finance people, I got to know them in a year; particularly the legal people, and guys like John Doyle. 

Misa: What would be your observations on the relationship between CDA and CDC? You mentioned already that you had gone to La Jolla and had quite extensive contacts. 

Pearce: But that was later on. 

Misa: Could you give me a picture of what you saw here, looking to Minneapolis, and what people in Minneapolis may have seen when they were looking from there, here to Australia? I’m interested in the relationship between CDA and CDC. 

Pearce: I think it was a very good relationship, generally. There were occasions, of course, when we didn’t quite agree with the direction they were thinking we ought to go down. Our attitude was we’re here on the ground and we know how to make it happen; you’re a little bit estranged from that. But it wasn’t too bad because we had regular visits from the key people in Minneapolis that we were responsible to the headquarters for our operations. In fact, there’s one I can remember, Bill Criego, did you ever meet Bill or not? 

Misa: No, I don’t think so. 

Pearce: Well, Bill was there; I’d come over to sort out something that we had a problem with. And I came into his office, and he said he was too busy to talk to me. I closed the door, leaned against it, and said I’ve been flying for 23 hours in a bloody plane to sort this out, and you’re not going to talk to me about it? Well, try and get past me. He found time. [Laughs.] Sometimes you have to get a bit tough. 

Misa: You said that there were sometimes disagreements about the direction. Were there times that you thought were a very strong disagreement? 

Pearce: Look, I’ll be struggling to remember any of them in sufficient detail, okay? 

Misa: Yes. 

Pearce: That’s just the impression I had . . . 

Misa: Just your impression, yes. 

Pearce: . . . that generally the relationship was very good when I would go over there, from my standpoint. And I’d have some of them come out here from Minneapolis, and we’d have our little differences of opinion, and everything. [Laughs.] 

Misa: So it sounds like the personal visits were really important. 

Pearce: They were. 

Misa: So then you had a chance to meet people and talk to them, and even in this one instance, to confront somebody face to face. 

Pearce: It was the same when I had responsibility for some non-financial areas where I had to go out to Arden Hills [Minnesota], I had to go out to Roseville, and talk with people out there. I always found those beneficial, too. 

Misa: When you’d make a trip to Minneapolis, would it typically be for a week or two weeks? Or would you spend a month? 

Pearce: Most often around two weeks. 

Misa: Two weeks. 

Pearce: And that was pretty much an annual visit. 

Misa: About an annual visit. 

Pearce: Yes, most times I would go over once a year. If it was something big that we had to go through an approval process for; for example, when we were going to change our location from 598 St. Kilda Road, then I would go over and talk with the people who were responsible for facilities in Minneapolis — Larry Reid, I think, was the guy that I would deal with — and he would pilot me around the place, Minneapolis, getting the necessary approvals for us to go ahead and take on this new operation. 

Misa: Would it be helpful to talk a bit about the activities of the CDA board? You said you joined that quite early. 

Pearce: Yes. 

Misa: What responsibilities did the board have? 

Pearce: Pretty much the same as any commercial operation out here, and indeed in the States, would have. The board is responsible to the shareholders for the conduct of the business operations through the entire company. In this case, they were responsible in the eyes of Minneapolis, for making sure that we were going about business the right way. The board
would meet monthly, and there would be a report from the managing director to the rest of the board so they all knew what was going on, and the managing director’s report would summarize, with the assistance of the regional managers for each of the disciplines, that were going to be discussed. From my experience with Arthur Andersen, that was typically the way that boards operated. Misa: But the monthly meetings sound a little more frequent than boards may have been meeting for a corporation, as a whole. CDC seemed to have a big annual board meeting. Pearce: Yes. Misa: The story was that Bill Norris actually used the board very actively. So it wasn’t because it was a non-active board, but monthly meetings would be quite a bit much. Pearce: To be honest, I’m not sure whether they were monthly; they could’ve been every two months, or even three months; but I remember they were regular enough for us, as regional managers with certain responsibilities, to have to contribute to the authorship of the report sent by the managing director. Misa: From the regular board for a company, it’s quite clear who the shareholders are; ultimately, the institution or personal officers; but here, with the CDA board you were reporting essentially to CDC? Pearce: Yes. Misa: In other words, when you would have a board meeting, what happened with that report? Would it go to Bill Norris? Would it go somewhere; presumably, to the executive office? Pearce: To be honest, I’m not sure. I think it went to the person in Minneapolis who was responsible directly for the conduct of the operations in Australia and New Zealand. Misa: So, VP International or whoever that was at that time. Pearce: International, yes. Misa: Do you remember the size of the board or how the board meetings were conducted? 15 Pearce: We only had four or five people, I think, on the board. The managing director, the finance director, I don’t think the sales person was on the board, but there was a chairman who was not engaged in the day to day operations of the company, and the other director was the legal man. Misa: So the chairman, was that a so-called outside director, or would that also be somebody from CDA? Pearce: Well, in our case, as I remember, Trevor Robinson had a background with Control Data both here and in the U.K. Misa: Right. So Trevor was the chairman of the CDA board. Pearce: Trevor was the chairman of the CDA board, yes. Misa: He was away for a couple of years. Pearce: He came back and climbed back on board. Misa: I’ve had many interesting conversations with people about Trevor Robinson. Do you recall anything notable about him? He was quite an interesting character. Pearce: I remember one of his conversations. When he described somebody, whose business competence he found somewhat unimpressive, as having an IQ in the hat sizes. Misa: In the hat sizes. Somewhat small. [Laughs.] Pearce: Yes. [Laughs.] No, he was a good person, Trevor. He was good at talking to you and agreeing what should happen, but then leaving you to get on with it and not wanting to talk to you every day about how things were going or criticize. He was an excellent manager. Misa: Yes, people have a high degree of respect for him. He had a notable set of contacts, and a notable set of people skills, too. Can I ask you to make comments or observations on the changes that you saw within CDA from 1972 to 1985, how the company changed, again from your vantage point? Pearce: It’s hard to discern any difference in the way one went about things. I suspect that probably the personnel arena became a little bit more influential simply by the character of the people that we had as personnel managers, and it was more prominent in more areas, in many ways, than what it was when I came. The normal personnel arena is you have the annual review of salaries, and you accept the guidelines, and this style of thing; have ideas about the hiring and how many people you need on the staff. 17 Misa: Were there notable people who were heading up personnel that stamped it with a particular direction, do you recall? Pearce: When I joined, the personnel manager was Brian Sheehan. And he was, from memory, succeeded by Brian Donnolley. And Brian Donnolley actually went on and lived in Minneapolis, and worked in Minneapolis. I don’t know whether he was mentioned in discussions or not. Misa: He’s been touched on but not extensively. So he ended up going to Minneapolis? Pearce: Yes. He was the regional personnel manager; I was the regional finance manager. The region included New Zealand as well as Australia. Misa: Okay. So across this period, 1972-85, the personnel function became more strongly active. Pearce: Well it needed to because you were growing, you were hiring more people, you wanted to make sure they were good fits. And yes, it needed to be a bit bigger than it was. Misa: One of the things boards oftentimes do is compensation or personnel policies; not individual people but the policies. Do you recall the CDA board being active in those areas? 18 Pearce: In personnel policies? Misa: Yes. Pearce: I don’t think the board was tremendously involved in that kind of thing. We’re just looking at is the number of people and what we’re paying for the services associated with the people, appropriate to
the level, and the nature, and the size of our business. **Misa:** Anything about compensation policies?  **Pearce:** Compensation in what sense? Just the regular wages, salaries, the levels compared with somebody else? **Misa:** The wages of individuals but then also the structure of retirement, the structure of contracts; not saying who’s getting paid what, but what the levels were. For instance, incentives or other kinds of compensation issues for sales people. Did the board get involved in that? **Pearce:** No, not really. I don’t think there was a great degree of involvement of the board in that at all. They were just looking at what was the overall cost of personnel and was that appropriate? And they would look at, from time to time, who was being paid what, and that that’s what everybody was earning, yes. 19 **Misa:** You mentioned that CDA had regional responsibilities beyond Australia. **Pearce:** Yes. **Misa:** You said specifically New Zealand. CDA also had active interests in the Far East, as well. **Pearce:** We had Thailand as well. We didn’t have Japan, but we did have the responsibility and a very close relationship, as far as Thailand was concerned. I liked to go up there and they were quite interesting, too. **Misa:** Could you make any comments or observations about those interactions with international partners? **Pearce:** Certainly, as far as I was concerned, my relationship with both New Zealand and Thailand was very good. I think John O’Neil might’ve had something to do with Thailand at one stage or another, too. But no, the relationship and the way that we worked together was very, very good. **Misa:** Do you think there were any things that contributed to that success? How did that positive relationship result? **Pearce:** Don’t know how it resulted; or how it built up. Whatever the New Zealand company did. **Misa:** Let me explain the question a little bit. You commented that you thought the relationship between CDA and CDC in Minneapolis was a strong one, and one of the reasons that made it strong was personal interaction and travel back and forth. **Pearce:** Yes. **Misa:** Now the culture between Australia and United States was not identical, but more similar than, for instance, the culture between Australia and Korea. **Pearce:** That would certainly be true of Thailand, but not of New Zealand. New Zealand and Australia are very similar, in terms of attitudes. **Misa:** Right, but for the Far Eastern countries, there could be interesting cultural differences that needed to have been managed. **Pearce:** They were quite interesting in the sense that when you had a look at, for example, Control Data Thailand, which is the only one of the Asian countries that we actually, I think, were reasonably close to their operations and needed to weigh in and help them when we could. I remember going out there and the office boy, when I saw what he was paid to feed himself and his family, I couldn’t imagine how he did it. **Misa:** Oh, yes? **Pearce:** Yes, it was just an entirely different culture and environment. **Misa:** Do you remember notable aspects about how the Thailand operations was run? **Pearce:** Well, it was, from memory, the head honcho there was Dr. Techapun. John O’Neil probably knew him better than any of us. And my relationship was with the financial element more than anything else. To guide as I could on the financial level. The financial lady was a real lady called Daranee Clark, and she was a real character, too. In fact, she used to come to the financial get togethers or conferences that we used to have from time to time in Minneapolis. And I can remember one occasion when she was getting ready to come back to Thailand, and she asked me take her out to one of the shopping centers in Minneapolis. She walked around buying things for all her relatives, and friends, and everything else; and come the day of departure — she never left my side, she was a little bit shy — and I had to take her out to the airport to catch the plane on her way back, and she’s got this whopping big suitcase and she’s tiny as they come. And eventually, I keep bumping the cases forward, and we get to the desk, the booking clerk looks up and she says, well, what are you doing? He said I’m just calculating the excess baggage, ma’am, after I’d dumped it on the scale. She looked at him, dragged herself up to full height, and said, oh no, no. I have only little, and look at that man. [Laughter.] So the clerk turned around and he looked at the clock above him, and he looked at Daranee and said alright lady, alright. **Misa:** She’s got this huge suitcase that may have well been overweight, but for sure, she was not. **Pearce:** She and the suitcase. But she was a character like that, and she was very competent, and in terms of the information we asked for and got, you could always be assured it was damn reliable. **Misa:** Do you remember other interesting or notable characters that you had contact with over the years? **Pearce:** Lee Greenslit was one of the funniest you could meet. **Misa:** So about him? **Pearce:** Lee was the finance interface from when we first dealt. When I went to Minneapolis, he had responsibility for whatever, I’m not sure, it might’ve been Asia Pacific. He was a real wag. He was just so down-to-earth it was unbelievable. He used to have a business card that I should have brought in and showed it to you because I had one done for me in exactly the same
way. He had Leon M. Greenslit, curmudgeon. [Laughs.] Bar room brawls quenched, or something or other; a great list of things; he had fires put out; a list that I liked. 23 Misa: Not your standard business card, which tends to be very dry. Pearce: Yes. In fact, I ended up using that later on, when I was doing some other things after I left Control Data. It was very interesting, I think at a conference or luncheon, and I used this. I then had to put my name; the employer’s name or phone numbers, anything on the back. They just remembered my name because of the funny card. Misa: That’s right. Everybody else has General Motors, or General Electric, or whatever it happens to be. Pearce: That’s right; this or whatever; a phone number. Misa: I should try that some time. Pearce: He was a great character. It was a great pleasure to work with him because I think he understood that he was behind the work. Some of the other people you get, that you tended to get involved with from time to time, were a little bit full of their own importance. But not Lee. Misa: You traveled back and forth to Minneapolis quite a lot. Was there ever a time when you thought that you might actually relocate to Minneapolis? Pearce: I was asked if I would contemplate living in Minneapolis, and spending some time there in a role we agreed in the financial area. Misa: What did you think about that? Pearce: I thought about it, but I thought about the family and decided that; my wife was teaching and enjoying it, and the kids were doing well at school, just starting to go to school and liking it. And we were well settled in there, so, no. Misa: May I ask where you were living? Was it here in Melbourne? Pearce: Yes, here in Melbourne. Misa: So although moving was a possibility, you decided to stay here and handle these responsibilities. Pearce: Yes. Misa: Any other interesting characters like Lee? Pearce: Jack Eickhoff was a great friend of Marv Swenson. It was just their mannerisms that made you smile a little, and the way they spoke. I was just trying to think of the guy who was in charge of funding and finance. He had an accent that I found amusing and he always used to talk about LIBOR - a banking arrangement. It was James [Jim] Tibor Halom - he was VP of Finance, or something like that. He was up in the lofty heights of the thirteenth floor, whatever it was. Misa: You said that you wanted to not go into detail about 1985, when you were leaving CDA, but there was one notable exception. That was your efforts to sell Cybernet to Kobe Steel. Pearce: In Japan. Misa: Can you describe that a bit? Pearce: The decision had been made that Control Data Japan should divest itself of the Cybernet Data Services operation in Japan and the suitor that had been identified was Kobe Steel, one of the biggest companies in Japan. CD Japan’s managing director at the time, was a person with whom I still correspond, oddly enough, Yasuo Yokoyama. And he was a character because early in the piece, when we had some discussions about the prospect of Kobe Steel taking Cybernet, and I said have you spoken to the staff about it? And he said no. I said well, do you think you ought to, at least now that we’re getting somewhere with it. Do you think it would be better to tell the staff what we intend to do and what we’re aiming to do? He said oh, good idea; good idea. So the following morning he called the staff together. I didn’t go into the meeting. And when he came out of it I said how did it go? And he said oh, they all crapped. Now, crapped in Australia means something else. [Laughter] Misa: Right. He probably meant clapped. Pearce: He said clapped because there is no “R” in the Japanese language. [Laughs.] Misa: So that would be one of those instances where there is a linguistic slipup. Pearce: Yes. He was very good. The other thing that I can remember about Japan was that our Data Services center manager, Dick Bament had come up when I was there. And at the weekend he decided to go out of Tokyo. I didn’t see him until the Monday morning following and when we were in there with the finance guy from CD Japan he said he didn’t know where he went. Tell me about it, said the finance guy. He said, well, I can help you. I wrote down what it said on the sign on the station, on the map, and he said oh. So he gets it out and shows it to him, and he said oh, very difficult, very difficult. What do you mean difficult, don’t you understand? He says oh, understand, he said. Well what’s it say? He says, it say “you are here.” Misa: You are here. [Laughs.] Pearce: Yes. [Laughs.] He had very conscientiously copied down this thing on the map with the sign. . . . Misa: It said “You are here,” that’s the point. You see that in signs here. But he didn’t know the Japanese words for that. Pearce: That’s the other thing I remember about that. Misa: You’ve had quite some experiences. Pearce: Yes. Misa: What about your reflections on how it’s the case that the CDA community has been notably strong, and some of the possible reasons for that. Pearce: I think one of the big factors in Control Data being the success they were in Australia, was the linking and bondage, if you like, between the employees. And one of the things that epitomizes that, perhaps, were a thing we used to do in Melbourne. We had a football ground only about five minute drive, at most, probably even three away. And every
Wednesday, we would put up in the personnel department first thing in the morning, a chart saying “Barbecue: sausages, steak so much, fruit juice so much, red wine, white wine, beer; giving the prices; you wrote your name down, you put your money in the bag, and the accounting department sent two of their people out just before lunch to the local shopping arena, purchased provisions, brought them down to the barbecues, and the staff turned up at one o’clock. And the finance director was the chef for the barbecue. Misa: That was you. Pearce: Yes. And that happened every Wednesday. Misa: So the barbecue was on Wednesday, too. Pearce: Yes, the barbecue was on Wednesday, and we did that every week. That enabled the different areas of the company to come together and meet, and discuss, and actually get to know one another a lot better. And that was very, very popular; and the good part about it was the discipline about it was, as I was given to understand by an American visitor when he came down and was with us there, he said, if we held this in Minneapolis they wouldn’t be back at their desk just after two o’clock. Misa: So it would be 1:00 p.m. to 2:00 p.m. So an hour. Pearce: Yes. Misa: Not a long time. Pearce: An hour fifteen was all right. You might be five minutes late coming back. There was no abuse of it at all. And there were no people who imbibed to make their afternoon ineffective. Misa: So it was a good time for getting . . . Pearce: It was a good time for bonding, cross communication, understanding what other divisions were doing perhaps better than would’ve if that were not the case. Misa: Would you like to make any observations on the remarkable, long-lived nature of some of those relationships, the fact that last Friday, there were two dozen people or so that were still meeting and still having a social time. Pearce: I think that’s a great testament to the bonding that this type of thing built between the different divisions of the company, the employees in different areas, they understood a lot better. And as you’ve seen, it’s a long time since. Misa: Yes, it’s worth puzzling over. Pearce: Yes. Oddly enough, I had experience the same way, when I went over to Telecom. We still have lunches, three or four a year, with Telecom people. Misa: So may I ask if you could say a few words about your career after leaving Control Data Australia in 1985? Pearce: Just trying to think which one came first. I got headhunted to a public company called Australia Pacific Resources. And that was the parent company of a group of companies; as Finance Director. And then, I saved them from some of the problems they were facing. There was one thing in between. The one between, I was there for 2-1/2 years, and it was OCE Australia, which was a subsidiary of a Dutch multinational, headquartered in Melbourne. They were looking for a top financial person, if you like. [Laughs.] So when we agreed that I’d sorted them out sufficiently well I decided I’d retire. But before I could retire I ended up at APR. Misa: That’s Australia Pacific Resources? Pearce: Yes. And it had Australia Pacific Minerals, it had Multistack — an advanced modular air conditioning product — and three or four other subsidiary companies. And then I went to Telecom. It was Telecom at the time, it’s now Telstra. But Telecom, at the time, had another communications business. Telecom and OTC were the two communications businesses that the company had. Obviously, Telecommunications unit was the OTC. They decided to merge them together for efficiency reason; they relocated Telecom to Sydney, which was the headquarters of OTC. I decided I wouldn’t go up there but I stayed on as a consultant for twelve months. I was going to retire at the end of one year, but I decided I would retire on the 30th of June that year, when the government announced that effective July 1 they were going to make massive changes on superannuation and I’d have spent the next two years working for the government. Misa: Oh, okay. Pearce: So it accelerated my retirement. Misa: Your job responsibilities then would’ve been entirely connected to this, we would say, the pension scheme, right? The superannuation. Pearce: Yes. I’d have been employed and therefore subject to the changed rules, whereas if I got out on the 30th of June I didn’t have to pay the tax, and it was significant. Misa: You were set, okay. Pearce: Yes. And since then, I’ve dabbled [in several things] because of the reputation I had built in that short time with Telecom, in terms of the big projects they were doing in Malaysia and in India. I had written some planning programs that were very complicated in terms of they gave you the option of saying how much we’d got to spend in this currency; you could forecast the currency exchange, the volumes, and see the effect of it all on your return on investment. And that became the benchmark. And other companies would call up and say we’ve got this particular program that’s being used, they say you 2 wrote it. And I said yes. And our Merchant Bank, when we told them you’d written it, they said alright, we don’t need to look at it any more. [Laughs.] So that was good. Misa: So it was something that got quite broad use, then. Pearce: Yes. Misa: Garry, are there any other observations
that we could usefully include on the tape? **Pearce:** No, I’ve said as much as my memory will permit.  **Misa:** Okay. Thank you so much for your time. **Pearce:** It’s been a pleasure.

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**George Karoly and Marcel Dayan**

http://conservancy.umn.edu/handle/11299/164974

**Misa:** My name is Tom Misa. It’s 21 November 2013 and I’m here in Melbourne, Australia, talking with George Karoly and Marcel Dayan. I think we’ll start with George because your experience with Control Data Australia, George, goes back quite a way. You’ve given me your CV so we have many details there, but maybe you could give a brief overview of how you entered the computing field. **Karoly:** I was in the electrical engineering school of the University of New South Wales, it was then the New South Wales University of Technology; its current name is University of New South Wales. I was a lecturer in electrical engineering there, and shortly after I joined them, they installed an English Electric DEUCE [Digital Electronic Universal Computing Engine] computer. **Misa:** English Electric DEUCE? **Karoly:** Yes. Do you want any details on that? Or you can look it up on the website. **Misa:** I can look it up, but I’d be interested in your personal experiences with it; what you might have used it for, your vantage point. **Karoly:** At this stage, I was interested in computers but I knew virtually nothing about them except what I’d read in a few articles. The DEUCE had a main memory of [mercury] delay lines, and backup storage of magnetic drum. The delay line storage was about 400 words, the drum storage about 8,000 words. It was a binary serial machine 4 with 32-bit words and there was virtually no software. You had to program it in its machine language, which was quite a complex, two plus one address structure. The way we used to prepare programs was: we would fill in sheets with instructions, which would be punched on cards but not in a decimal form, they were punched in serial binary. **Misa:** Serial binary. **Karoly:** Every row on the card was an instruction in binary form. This process, as you can imagine, was fairly error prone. There were some, what I would call subroutines supplied with the machine, including a set of what were called matrix interpretive programs. Strictly speaking, they weren’t matrix arithmetic. What they did was perform arithmetic operations that you desired on arrays of numbers. In other words, say you have two rectangular arrays of similar dimensions, A and B, and you wanted to multiply every element of A by the corresponding element of B, you just told it to multiply A by B. **Misa:** It would do that matrix multiplication, then. **Karoly:** But it was not true matrix multiplication. A matrix multiplication multiplies rows of A with the corresponding columns of B. If you’ve got true matrices, the multiplication goes this way. This program took corresponding elements of the two and performed whatever operation you wanted. For instance, you could say I want the square root of matrix A, and it just did the square root of every element. 5 **Misa:** Each element. **Karoly:** Yes. This was quite useful but very slow. I mean, as you can imagine, overall, the machine was very slow although its internal speed was quite high. Its clock ran at a megacycle. So that the cycle time was 32 microseconds and it could perform addition in approximately two cycle times. But a multiplication took — I can’t remember — considerably longer; might’ve been as long as a millisecond. Division was even worse because there was no hardware division so it was programmed division. **Misa:** Program the thing to do division, the tricky part there. **Karoly:** And, you know, I enjoyed programming for it. It mightn’t have been very efficient, but it was a very interesting intellectual exercise. **Misa:** Fun to do. **Karoly:** Probably the biggest program I wrote for it was an analysis of a multi-element microwave array used for instrument landing at the Sydney Airport. The mathematics was simple enough. Being an electrical engineer, I knew the required formulae, but making the computer do it was a slightly more difficult problem. In fact, I discovered for myself the process for using flow charts. The first time I tried writing the program, after a few days I got completely lost. So being an engineer, I thought hey, surely the way you do it is you do an overall plan and then break it down into details. 6 **Misa:** So the standard boxes, or however people schematize it. Yes. George, I was just looking at your CV. Very early on, you were at the school of electrical engineering in 1954. This is an early time in computing. **Karoly:** Yes, I gave a few lectures on ALGOL and COBOL. The DEUCE did not have either of those, but I gave some lectures at Sydney University. **Misa:** That was at Sydney University? **Karoly:** At Sydney. To put it into historical perspective, Sydney University also had a computer. It built its own version.
of the University of Illinois ILLIAC, and christened it SILLIAC. Misa: SILLIAC, right. Karoly: But in a way, our machine got rechristened also; it was named UTECOM, University of Technology Computer. SILLIAC, I’m pretty sure, became operational just before UTECOM. The way I got into commercial computing was in early 1960, a friend of mine, who had a management position in Amalgamated Wireless Australia [AWA], one of the top electronics companies in Australia, told me that they just got an agency for Bendix Computer. And he asked me would I like to join them, go over to Bendix, learn all about the computer, and teach their staff. He rang me about mid-January, and told me he’d like me to join AWA in time to be in the States by the end of February. I told him I couldn’t leave the university on such short notice. Misa: You had responsibilities. Karoly: And he said just leave it with me. A few days later, I got a call from the Vice Chancellor of the university, the top administrator of the university, saying oh, Mr. Karoly, this is just the sort of industry cooperation we want. If you want to, we will lend you to AWA on unpaid leave until you’re prepared to come back to the university. Misa: That’s Amalgamated Wireless. Karoly: So I was in Los Angeles, at Bendix, on the 28th of February. Misa: 28th of February, wow. Karoly: [Laughs.] Learning all about their G-15. Misa: Bendix G-15 was the machine you were learning on. Karoly: Yes. I realized it’d be a long time before the University of New South Wales got any more up-to-date computing equipment, so I stayed with AWA when they set up a service bureau using this G-15 equipment. They were also selling them, but they had a service bureau in Sydney. Misa: The service bureau was in Sydney. Karoly: Yes. I can’t remember who all the customers were, but there was a number in Sydney, also a large customer in Melbourne. Maybe they even used it in their own office in Melbourne, I’m not sure. Misa: So when you were doing the service bureau work, were you doing programming? Karoly: Yes. Programming commercial systems, and I was in charge of the programming side of the service bureau work. Misa: You worked there through 1962? Karoly: Yes. Misa: And then in May 1962, you were appointed programmer and analyst at the Australian General Electric Company. Karoly: What actually happened, it became obvious to me that AWA management weren’t particularly interested in their computing department, or couldn’t understand it, or both. And GE was setting up a service bureau using GE 225 equipment. I have a feeling they had other service bureaus in Australia, but this was in Sydney. Misa: Sydney. Karoly: Yes. And I joined them and this was my first experience with a machine that actually had random access storage. The GE 225 had core storage. Not very large; I have a feeling it was 8,000 20-bit words but I won’t guarantee it. I do remember wondering what in the heck was I going to do with all that storage. [Laughter.] Misa: That huge amount of storage; well, at the time, yes. Karoly: Yes. I quite enjoyed working with GE. I eventually left them because whenever something interesting cropped up, they brought in American experts, experts in inverted commas [“experts”] over to deal with it. And some of these experts knew nothing about what the problem was. Misa: So they brought in American so-called experts, but where did that leave you? Karoly: Rather unhappy; so that when I saw Control Data’s advertisement, that sounded interesting. Actually, Trevor Robinson interviewed me for the job. Misa: Robinson was trying to start a whole new company, really, wasn’t he? Karoly: Yes. I don’t know how many people we had, all I know is that my employee number was 13. Misa: Number 13. So you were one of the first. Karoly: Yes. I think John O’Neil was before me. Dayan: So was Ron Bird. Ron Bird was number one. Karoly: Yes. Dayan: I believe there was seven of them that started, and then they decided to give themselves numbers, and Ron Bird was number one because his [last name] started with a “B.” Misa: Alphabetical order. Karoly: Yes, the first seven. Was it seven? I thought it was eight, ten, but I’m not sure. Dayan: And George Crawford was number two. Misa: So “B,” “C,” okay, on down the line. “D” you could’ve been number [interrupted] Dayan: I wasn’t quite that early, I guess. Misa: So that would be in November of 1963. Karoly: Yes. I worked for Control Data in Canberra until the end of the year, then I went over to Palo Alto. I went to Palo Alto to the Control Data Software Development Center in January 1964, and stayed there for approximately six months. Misa: Six months? Karoly: No, only five; January to May. Misa: Five months. Karoly: Yes. Misa: George, do you have any memories of Trevor Robinson? Karoly: Oh yes. Misa: He played such an important role, but how did he strike you? Karoly: Tend to run out of adjectives. He was very good with people, no question about that. He must have been a good salesman or he would never have sold all those systems. I would guess he was a very good organizer because he started that company up from nothing and made it a very successful company. And personally he was a very good person to work for. Dayan: Well the fact that we still have those lunches 40 years and...
after, I think, was really due to his influence and the esprit du corps that he was able to engender in the group.  

Misa: He had an unusually wide set of contacts and a very strong set of people skills.  

Dayan: And I’ll tell you an interesting story about it, when we get to my stage.  

Misa: Okay.  

Karoly: So I think the CV says that I wrote some of the software for the SCOPE operating system for the 3600.  

Misa: It says yes, taking part in the development of SCOPE for 3600, and that was one of the earliest operating system projects at Control Data.  

Karoly: Yes.  

Misa: So you were in Palo Alto where that was being developed, so it was funny, in a way, you were going there for training but then also participating in the writing of SCOPE.  

Karoly: Well, yes. Really all the training I had was the machine details on the 3600, and all the SCOPE system. What that particular task was to write the overlay loading process for the system. SCOPE had provision for program overlays stored on tape, and this program I designed and wrote was designed to load and then to store them, as required, at an optimum speed. I haven’t got any technical details of that because I don’t think I’ve kept any, unfortunately. The program was named [by me] LOVER, Load Overlays.  

Misa: Load Overlays, okay.  

Karoly: It might still exist in some form, I don’t know. Anyhow, that’s what I did and it did work before I left.  

Misa: So your contributions went out everywhere that SCOPE went, in some sense. And SCOPE, of course was extensively used.  

Karoly: Well, there were many SCOPEs; as many SCOPEs as there were Control Data machines, just about.  

Misa: Oh really? Can you say a little bit about that?  

Karoly: Well, initially, anyhow. The lower 3000s ended up with a disk-based operating systems, the first of which was called MSOS. But the original tape-based operating system for the 3200 was called SCOPE.  

Misa: So you were resident then in Palo Alto for those five months.  

Karoly: Yes.  

Misa: Was the idea that you’d stay there, or was it always the idea that you’d be coming back to Australia?  

Karoly: Coming back to support the installed systems in Canberra. You see, Canberra would’ve been the headquarters of the major initial customers; the CSIRO and the Bureau of Census. They both would’ve had [Control Data] 3600 installations, to which later they added that lower 3000s. But initially, they were 3600s.  

Misa: Can you say a little bit about the type of work that you did for supporting those two? Did you do programming?  

Karoly: A little, but my basic task was to keep the customer systems working and the customers satisfied.  

Misa: And what responsibilities did that entail?  

Karoly: Well, the staffing was that we had some so-called site analysts resident at each site, and I don’t know exactly when it started, but shortly after I got there, I was virtually in charge of the support. What would happen is that any problem that arose, the site analyst would handle it if they could. If he or she could not handle it, it would then be referred to me. There would also be weekly meetings with the customer’s top computer man, whoever he was — I don’t know what titles they would’ve had — at the site meeting with me, and I think the site analyst would be there, and the responsible Control Data salesman, to discuss any issues that arose or any problems that they were foreseeing, or whatever.  

Misa: Those facilities for CSIRO, as well as for the Census Bureau, were really crucial to launching Control Data Australia.  

Karoly: Oh sure.  

Misa: So they were really watching those accounts quite carefully. Do you recall any of the successes or any of the problems that occurred?  

Karoly: Well, let me just try to think. Bureau of Census was interested in large scale data processing of statistical data. And there was really no suitable software program, and they were developing their own. I can’t remember how many years; I can’t remember what they called it; somebody else from Control Data might remember. Do you remember the Census software?  

Dayan: No. I was never involved with Census.  

Karoly: I was involved with it in an advisory capacity, but not in any formal way. They were also interested in, well, what software that Control Data was developing, because at that stage Control Data didn’t have a suitable COBOL compiler. They wrote everything in FORTRAN. Later on, I think, they got the COBOL, but initially they wrote everything in FORTRAN. I think this system they were developing they actually wrote in assembler. The assembler, by the way, you probably know was called COMPASS.  

Misa: COMPASS, yes.  

Karoly: So much about Census. Now, CSIRO, being by its nature a research organization, was interested in developing new software. And they decided that they would purchase magnetic drums from Control Data, and design their own modification. In fact, you could say, design an all new operating system based on drums rather than magnetic tapes. And that system was also going to use display consoles for various other things, And for that purpose, that’s the paper from the 1966 Australian Computer Conference.  

Misa: I’ll just read the title. It’s by you and by R.H. Kerr, “The Utilization of Keyboard Display Consoles in a Conventional Operating Environment.” It’s about the CSIRO.  

Karoly: Yes. And I want to show you one of the references, which I highlighted — I couldn’t find...
my copy — that describes the operating system that CSIRO designed. Misa: Okay, that’s Austin and Holden, “The Development of a Drum and Display Monitor,” Proceedings of the Third Australian Computer Conference in 1966. Karoly: I tried Google on it, [but] there’s no digital copy. There are some library copies in Australia. If you asked them, they’d send you a FAX copy or a digital copy. Misa: Through interlibrary loan, lots of times it’s possible to turn up the original. Karoly: They’ve got copies of the original paper. Look, if you Google it, you find out which library has it, probably the National Library in Canberra, but I’m not sure. Anyhow, you can keep this copy, so you’ve got it. Misa: Splendid, thank you. Karoly: I just copied my copy of it. Easy. Put it in the copier and press a button. Misa: Thank you very much. Karoly: I won’t talk about that because I think that’s enough detail about that. Misa: The drum and display project, yes. Karoly: Well, about my part of it. I was involved in it more as an observer than anything else in the overall design. But Robin Kerr and I designed that particular subsystem. From memory, Robin went to IBM from us. I think he went to IBM Research. Misa: Oh yes? Karoly: Not absolutely sure, but I’m pretty sure. Misa: Might be able to look that up too. Karoly: Okay, right. Misa: In February of 1965 you became Assistant Applications Manager; and in August 1965 appointed Applications Manager for Control Data Australia. Karoly The title’s a bit misleading. What the Applications Manager — I think this explains it a bit — what the Applications Manager did was twofold: provide software support for customers; and what software support was required for the sales staff. I think I had a group of about 20 analysts. Anyhow, that paper gives some detail. Well, in fact, I became, if you know Control Data history, you probably know that part, Regional Applications Manager. Misa: Regional Applications Manager. Tell me how that worked out here. Karoly: I ended up being Regional Applications Manager for not just Australia, but also for what Control Data called the Southwest Pacific, which is a bit of a misnomer because it also included Korea. [Laughs.] Misa: Doesn’t sound like southwest. So the countries would be Australia [pause] Karoly: New Zealand, South Korea… Dayan: Japan? Karoly: Japan, I assume. I’m not sure they had anything much in Japan. Corporate history will tell you what the countries were. Anyhow, when I was in that position, Trevor said look, you can’t stay in Canberra, I need you in Melbourne. So I moved to Melbourne. Misa: So you moved to Melbourne, okay. Karoly: And around that time, Control Data started to get involved in doing TAB business, the Victorian TAB, and I can give you a little paper on that, too. Misa: Just let me read the title; George Karoly, “Real Time Systems at the Victoria TAB and Historical Overview,” and this comes from the Australian Computer Journal, Volume Nine, Number One, March of 1977. So the Victorian TAB had a huge impact on many different things; then there’s a connection to New Zealand, as I understand. Karoly: Yes. I was only marginally involved in the original project, in the sense that one or two of my analysts worked on the original CARBINE software. I certainly got fairly interested myself in it, but I had other responsibilities, as you can imagine. I’m frankly trying to remember how I changed from Regional Applications Manager to — I can’t remember what my title was — some sort of consultant, internal systems consultant, for the internal technical consulting. Misa: I don’t know whether this is the right chronology, but it says June 1968, appointed as Senior Staff Specialist. Karoly: Yes, that’s what it was. Misa: And that sounds to me that if you’re a Senior Staff Specialist, that’s not with a specific region in mind, but rather for the entirety of CDA, is that correct? Karoly: Well, there was some talk of me going to Minneapolis on a semi-permanent basis, but I was only prepared to go if there was essentially a guaranteed path to return to Australia, some sort of predetermined time scale. Misa: You didn’t want to be transferred permanently to Minneapolis? Karoly: Well I wanted to bring up my family in Australia. And that just never happened. Misa: What kind of contact during these years did you have with people in Minneapolis? Karoly: I was there at least once a year for various meetings. I think there used to be an annual meeting of all the Regional Applications Managers. I used to attend that, and sometimes if there was something specific. For instance, I know I was there in connection with the Queensland TAB. I was trying to find suitable hardware for the system. Misa: So you’d be there for an annual meeting. How long would those trips normally be? Karoly: Never less than a couple of weeks. Typically that sort of duration. Misa: You were traveling there and visiting there, but never working there on assignment. Karoly: No. As I say, the sort of visit I had was typically in connection with the Queensland TAB, about which Marcel can tell you more. They weren’t happy about using the 1700... Dayan: They were System 17, by that time. Karoly: There was the System 17 for internal controlling hardware. I went to Minneapolis to see if I could find something better. And I could, but they wouldn’t let...
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failure for these computers was about 24 hours. So I believed they never would’ve got a Polaris missile out because the chances were the computer wouldn’t have been working! Well, I suppose it was the early transistors and capacitors that were just constantly going wrong with it. Karoly: Even with Control Data computers, we had daily maintenance periods, but still, it was still a good day if we could manage a whole day without a failure. Misa: So eight, or 10, or 12 hours would be good? Karoly: Say 12 hours, maybe. You know, eight to 12 hours was the mean time between failures. Dayan: They were incredibly unreliable. Karoly: Well what do you expect from back then? Dayan: Well that’s right. Now the other thing you’re talking about, programming, the TRW 330, you had to program the drum; there was actually no core memory. And what I remember was that an addition and subtraction was two words on the drum, but a multiplication was 35. So what you’d have to do was you’d fill up the drum and then you’d go back and look at where all your spaces were and then you’d fill up all the spaces with your instructions. Karoly: Sounds a bit like the programming the G-15, which had a drum memory. Dayan: Yes, that’s what you had to do. And we didn’t use punch cards, we used a teletype with punched tape. So every time you made a mistake you’d have to redo the tape again. Karoly: So did the G-15. That was a tape machine. Dayan: That was in 1964 and the project I was working on was with Courtaulds in Grimsby, and it was to help automate the production of rayon, or fibro, as it was called. My job was to keep the slurry, which is the wood pulp, with caustic soda [NaOH], at exactly 18.9 percent. So you had to keep monitoring it, and you had to either control the wood pulp going in or control the NaOH going in to keep it exactly at 18.9 percent.8 Misa: So that’s computer and controls, it was an application you worked on process control. Dayan: Process Control, it was process control. And at that stage, I was actually thinking of doing a Diploma of Imperial College in Process Control [which was equivalent to a Master’s Degree], but just at that time there was an Australian who visited us, who actually happened to be from Tasmania as well. I happened to have delivered the newspaper to his house many years previously when I was a paper boy. And he said to me, “I’ve got a very interesting project in Broken Hill, come and work for me.” And I sort of jokingly said I will if you pay my fare back. Next thing, I know I get a letter offering me a job, offering to pay my fare back together with a very good salary plus in those days what they called, “the lead bonus.” So this worked out to be a very, very good salary. And so after pondering how to finance the Diploma of Imperial College, compared to a good salary in Broken Hill, I decided to come back to Australia. And the job was quite interesting. The mine there is a silver/lead/zinc mine and the flotation process is where they crush the ore, and then they use xanthate and various other chemicals to create bubbles. And the idea is that the lead ore is heavier than the zinc ore, which sinks to the bottom and the zinc ore sticks to the bubbles. And the bubbles with the zinc coating are then allowed to overflow and this is the way they separate the lead and the zinc. We did a lot of regression analysis to find out which of the various reagents they were throwing in were actually working because it was an art, there was actually no science behind it. 29 Karoly: I can imagine. Dayan: And we used the CDC 6400 at Customer sites:University of Adelaide to do our regression analysis. So we’d go down there with a bunch of cards and spend all night with this thing crunching away. From our analysis we believed that we could save them a million dollars a year for each separation plant by using process control to handle the correct addition of the reagents. And there were two plants, so potentially $2 million saving. Peter MacGregor was in fact the Control Data salesman who used to come round, and he was going to lease us a CDC 1700 for $100,000 for one year to prove that this saving could be achieved. And we put up a paper to the management of the company [CRA - Conzinc Riotinto Australia], at the time, saying look, we want to spend $100,000 to prove we can save two million a year. And the answer came back, “I don’t understand computers, I’ve got better things to spend our capital on such as Hammersley [iron] and Bougainville [copper].” Misa: So that could’ve been a huge money saver. Dayan: Well, but that was the attitude. This is when I said I’m out of here. [Laughs.] And I said to Peter, are there any jobs going? He said I’ll get George Karoly to come and interview you. So there’s George, comes off the plane about 11 o’clock and I think we probably chatted for about an hour, then I took him round and showed him Broken Hill, and then we had a wine tasting and I poured him on the plane at about 10 o’clock at night. [Laughs.] Karoly: That’s about right. I think you nearly got a speeding ticket. Dayan: I did; and I got out of the speeding ticket when I got to Thailand and wrote to them and said come and get me. [Laughs.] The interesting thing is this policeman that wrote the ticket, I knew him personally and he was drunk. And I’m saying to him, “Merv, it’s me, Marcel!” That’s Broken Hill for you, yeah. Misa:
Okay. And just to connect those, that’s the same Broken Hill, that’s BHP site. Dayan: Right, well that’s where BHP started. They started here. Misa: So this is, so to say, at the center of something that became immense. Dayan: Yes. Karoly: Initially, wasn’t that a high, huge surface rock? Dayan: Yes it was. There was a hill and there a guy called Charles Raspe suddenly found that it had lead and zinc; and he together with six others floated the BHP company. If you go to Broken Hill — there is about a half a mile wide and about two miles long hole right in the middle of the mountain, and they just took out all the ore and then left. Misa: So, Marcel, you’re really working for, you say, one of the computer customers but then experiencing frustration that they really didn’t get it, and ended up coming to work for CDA. Dayan: Yes, it was a mining company, CRA, which is of course is now Riotinto. Karoly: The BHP later was a big Control Data customer. BHP Newcastle, well they bought a CDC computer for Newcastle. Dayan: Yes, it’s much later; this was 1967. So I started work in Sydney in February 1968, which is where I wanted to be, and working on some proposals on, again, Process Control; I think it was some proposals to control electricity using 1700s. I was also told to learn to work the 1700 at Sydney University. Misa: Can you describe the [CDC] 1700 a little bit? Dayan: It’s a 16-bit computer. I mean, well, what else can I say about it? Karoly: It’s not terribly good software. Dayan: No. Karoly: It had; well, they used assembly language. Did it have FORTRAN? 32 Dayan: No. Karoly: No, and nothing much else, so it wasn’t easy to use it in a system. Dayan: It was the lowest in the Control Data range. So basically, there were three strings; it was the 16-bit range, which was the 1700; there was the 3000 series, which was the 3300, 3200, 3100 [interrupted] Karoly: Actually, there was an ancestor of the 1700, except it was . . . Dayan: The 160A. Karoly: . . . which was also 16-bit, but it actually had the FORTRAN compiler. Dayan: With the 160A. Karoly: Yes. Dayan: I never dealt with that. Karoly: I’ll tell you where I got involved with it. That might actually be an interesting tidbit for you. The Bureau of Census had an enormous amount of historical data on punch cards, and they wanted them transferred to magnetic tape. Control Data, I don’t know what the commercial arrangements were, probably leased them a 160A, which was a 16-bit machine with certainly the FORTRAN compiler, don’t think it had an operating system. And actually it was Leonard Whitehouse who wrote the program. Dayan: This was before my time. Karoly: Len, a Control Data employee, wrote a program for it to convert the card data to magnetic tape. Misa: And they could’ve had hundreds of thousands of these cards, or maybe millions, even. Karoly: Oh yes. Misa: A stupendous number. Karoly: Ron Bird might have some figures on it because he was around, as also would John O’Neil. And one of them might even know how to contact Len, because Len should still be around. He would be, I’d take a quick guess, he’d be about 50 now, he was quite young. Dayan: Oh, George, come on. Karoly: Sixty maybe. Dayan: Come on, come on, come on. And the rest. Come on, he was older than me and I’m 71. Okay, of course he was. Karoly: Could be. I thought he was younger. Dayan: No, no, he must be in his seventies. Karoly: He might be in his seventies but he might still be around. He was at Monash University for a while. If I can be slightly rude about it, the program he wrote wasn’t terribly good. The program was he had no sort of practical experience. I mean, he could write good FORTRAN programs but he didn’t realize one of the important things was to write a program which coped with things like misreading cards, dirty cards, jamming cards, and they had all sorts of trouble with that. Misa: So they needed to deal with mistakes or the exceptional cases. Karoly: Yes. Some of these boxes of cards, they actually had to vacuum cobwebs off before they could feed them into the card reader. [Laughs.] Dayan: Getting back to your question, there were three lines that Control Data had: a System 17; the 3000 series, which had a 24-bit word; and then the Cyber series which had a 60-bit word, didn’t it? Karoly: Actually, the 3600 had a . . . Dayan: Okay. That was a little bit different. It wasn’t the same as the 31, 32, 3300. Karoly: No, that was after; so it was the 34 and 36. Dayan: That was part of the problem, there were so many computer lines and there was no commonality between them. They all had different operating systems, they had different languages . . . Karoly: In a way, the 34 and 3600s were regarded by Control Data as their principal large computers. Dayan: Yes, before the 6000 and Cyber range came along. But that was designed completely separately, this was what’s—his-name? Karoly: Cray, Seymour Cray. Dayan: Yes, Cray. The Cybers, whereas the others were designed by a different team and that’s why never the twain shall meet. Karoly: I have a feeling Cray had something to do with the original, the father of the 3600, whatever it was called. [I think it may have been called 1604 -- someone in the USA may know.] GK Dayan: I think that had a long word as well, before the 3600. Yes. Misa: The Cybers were, in some way, my
understanding is that they were a successor to the 6600. Karoly: Vice versa. Dayan: Vice versa, yes. Karoly: 
Cyber was the development machine and 6600 was the commercial machine. Misa: The commercial machine, okay. 
Karoly: Commercially produced. Dayan: And then they produced the 6400. The 6400 was a cheaper version of the 
6600. Karoly: Yes, you’re right. So the Cyber was, in fact, some way — I should have brought it because . . . Dayan: 
Actually, it wasn’t the Cyber; the 6600/6400 were the ones that . . . Karoly: Sorry, I never thought to bring it; I’ve got 
a numbered copy of an engineering manual for the Cyber. Misa: That’d be something to hang onto, George. 
Dayan: I’m sure you’ve got access to a different type of stuff. So anyway, here I was; started work in Sydney. And 
then I think it was you, George, that asked me if I had any moral objections to working on a horse racing project - the 
Victorian TAB - because of course, Control Data in those days, was a very moral company. And the second question 
was “did I want to go to Minneapolis for about three months.” And I remember saying what’s the catch? And the 
catch was, you’ve got to come back to live in Melbourne. There was all this Melbourne/Sydney rivalry, you see. And 
being single, I said I could handle that. Victorian TAB The project, which was called the RIMFIRE project, was following 
the success of CARBINE, which of course you know Ron Bird and the guys will tell you all about. Carbine was a famous 
racehorse that won the Melbourne Cup in 1890. The system was designated Computer Automated Real-time 
Betting Information Network. Rimfire was descendant of Carbine and won the 1948 Melbourne Cup at odds of 80 to 1. 
The system was designated Remote Input Machine For Investments on Racing Events.] Karoly: It was an off-course 
totalizator. Dayan: Well, CARBINE was basically a way of computerizing the telephone betting side of the betting 
and consolidating the agency totals Karoly: As well as; yes, you’re right. It does do that. Karoly: That’ll give you a 
good lineup of the history. That’s why I brought it. Misa: Thank you. Dayan: Do you understand totalizators . . . ? 
Misa: Enough to have you describe them. I don’t know the details but if this is one of these problems that actually 
occurs several times in computing, it’s quite fascinating. Go ahead. Dayan: Well, let me give you a little bit of the 
history of totalizators, because for many, many years, only on-course betting was allowed in Australia and New 
Zealand. So in other words, people who wanted to have a bet on a horse had to go to the racetrack. And it was the 
same in the U.S. It wasn’t the same, interestingly enough, in other countries. My parents were living in Egypt before 
the war and my father was, would you believe, employed to sell bets outside of the racecourse and one of the things 
he did was to go around the cafes and actually take bets. Then they brought them in to the race course and 
consolidated them with the on-course bets. The whole idea of a totalizator is that you take the money in for a 
particular race and bet type [called the pool]. Let’s say it’s $100,000 is bet on the winner of a race; you then take your 
share out of it, which is, say, $20,000; and then the $80,000 that’s left is distributed to the bets on the winning horse. 
So if there is 8,000 tickets on the winning horse, then everyone will get $10. Misa: That’s the winning share. 
Dayan: Yes. But if there is only 4,000 tickets on the winning horse, everyone will get $20. That’s the whole idea of a 
totalizator. So the totalizator company can’t lose money because they take their share off the top and then distribute 
the rest, so it’s a very nice business to have. Karoly: And in fact, from that summary you could work out that the aim 
of a totalizator company is to get the maximum number of bets because they just take a percentage of the money. 
They don’t care what horse wins, but the more bets there are, the more money they make. Misa: The greater 
amount of money coming in, their 20 percent gross, regardless of who’s winning or not. Karoly: They couldn’t care 
less. Dayan: After the Second World War, there was an explosion of what was called SP, starting price bookies that 
used to basically have their own area in each of the pubs and illegally taking off-course bets. It was actually in New 
Zealand, a guy called Morrie Smythe, who first said to the government, look, you’re really missing out on a huge 
potential revenue. All this illegal stuff going on, you could in fact, legalize it and tax it. So he would have been a major 
or similar rank in the war, and he had very good organizational skills. He developed a system whereby you would hand 
write a ticket, and there would be three copies of the ticket, an original and two carbon copies The top [original] copy 
would be given to the punter, the second was what they called the collation copy, and third which was called an audit 
copy, which would be kept in a bottom drawer, in case there was a hint of fraud or anything untoward. And this 
collation copy, what would happen is, as soon as the race closed, which was usually half an hour or an hour before the 
actual race took place; these collation copies would be used to count how much had been bet on horse number one, 
how much on horse number two, and so on. And in fact what Morrie Smythe did was he developed a plastic tray that
had 25 little pockets [5x5], one for each horse, because there was 24 horses, and one was for any horse that was scratched [i.e. a horse not in the race]. And so by setting it up in these pockets, you could very, very quickly count up how much had been bet on each horse. 41 And that what would happen is 30 minutes before, each agency that sold these bets would call in to a central point and say I’ve got 26 on horse one, 35 on horse two, and so on. And at the central point, the person would sit there and would write it all down, you see, and . . .  

Karoly: And each bet would be the same amount of money?  
Misa: No, they were in units.  
Dayan: Actually, they were in 50 cent units, but it would say this is how much you’ve got. Someone at the head office would say, okay, this particular agency in whoop-whoop has got the following. And then another agency has got the following. So they would write all these numbers down and then they would add them all up. Then you know how much you’ve got in total on horse one, how much you’ve got on horse two, and so on. And then you add it all up and know how much you have on the whole race, and then they would sit down and work it all out, take off the 20 percent, and say this is the amount of money we’ve got to actually give out. And then when the horse, whichever horse won, would then say okay, this is the dividend. They would then advise each of the agencies, this is the dividend. Then when the person came in with the ticket, they would then match it with their collation copy to make sure it hadn’t been altered, and then pay it out.  

Misa: Okay. Was the payout done centrally or in the remote?  
Dayan: No, in that particular branch or agency, actually. Mostly it was agencies because they would set them up — this is why they’re called Totalisator Agency Board — they were individuals who were contracted to provide the service. And the premises were usually owned by the TAB, and they had a contract with the agent based on the percentage of turnover, and a fixed rate. The agents would employ casuals because most of the races are run on Saturday and so allows the casuals to earn extra money. So you can imagine the collation process of sitting down, adding all these numbers together, first you had to write them down, then someone had to add them, and someone had to check them and then check them again. The original CARBINE provided a keyset in each of these agencies which allowed them to key in the totals on each horse and transmit this to the central computer. I’m right George, aren’t I?  
Karoly: I think so. By the way, hadn’t somebody in New Zealand already done a similar system?  
Dayan: No. So, basically, the CARBINE 1 used a Plessey keyset . . .  
Misa: Plessey keyset?  
Dayan: . . . Plessey, from an English company called Plessey.  
Karoly: Made here, though.  
Dayan: And basically what would happen was once all of these tickets had been manually counted, they would then transmit that information to . . .  
Karoly: The head office.  
Dayan: . . . the CARBINE computer and that’s what CARBINE did. It added up all the so-called investments, they’re not obviously investments, but all the bets on horse number one, on horse number two, and so on, for the Melbourne race three, and then Sydney race four, and so on. There’d be up to about a hundred races on Saturday.  
Karoly: And of course, there would be more than simple bets, there would be more than one bet, you could . . .  
Dayan: Well you had win, you had place, you had quinella, and you had a double. So you can see that . . .  
Karoly: A lot of computation, a lot of arithmetic to be done.  
Dayan: It wasn’t complex computation but there was a helluva lot of numbers that you had to add up and . . .  
Karoly: And get them right in a fairly limited time.  
Misa: That’s right.  
Dayan: That was the other point, was that people would want to bet . . .  
Karoly: People would want to bet as close as possible to the start of the race so they tried to minimize the time that TAB had to add all of these things up.  
Dayan: See, that’s the whole point; it used to be that the betting closed half an hour before race start time. And the reason that not only that the central authority, in the case TAB, had to actually work out the number, but then they have to actually transmit that information to the racecourse, There it’s amalgamated with all the bets taken on the racecourse because it’s the racecourse itself that determines the dividend using the total of the off-course betting and the on-course betting. So, it’s as I said, there’s nothing really magic involved in the calculation, it’s just the sheer volume of numbers and trying to do it quickly. So when CARBINE was developed, which included bringing all the stuff in from the agencies, and also telephone betting. Telephone betting is where people set up an account with the TAB, and they would deposit the money through the agency, and they would then be able to ring up and actually place their bets by telephone.  
Misa: From somewhere else.  
Dayan: From home, usually. And so by placing the bet by phone, again, in the old days it was all done by hand. You know, they would write down the bet details by hand and this copy would go to a central location to be added up; so CARBINE automated the telephone betting and brought in all the consolidated bets that again had been sold manually in the agencies, into the central
system. And there’s lots that’s been written about it. Ron Bird has written all about it on the Ex-CDA web site. It was one of the first fully backed up real-time systems, and it was a very big success. So the next stage was why don’t we actually automate the selling and paying part with a terminal? **Misa:** And that was RIMFIRE? **Karoly:** Yes, that was RIMFIRE. **Dayan:** And so what they worked out; the best way to do this was to set up a joint team made up of Control Data people and TAB people, and of course, there were some advantages to having all these people go to Minneapolis on expenses; [laughs]; so I joined . . . **Misa:** So this group is the CDA people or did TAB people go to Minneapolis? **Dayan:** I was the only CDA guy. There were three guys from CDC came here, and the four of us were then put through a month of understanding how the manual TAB system worked. First of all, we had to go through an “agents” course conducted by the normal guys that used to teach agents. This was a full week’s work and what was interesting, by the end of that week, was that they said this was by far the best group they’d ever had because up until then, most of these agents were in fact, ex-bookies. And the TAB in those days was such that they were told you will do this, you will do this, you will do this. Of course we kept saying why? Why? And now all of a sudden they had to think why are we doing this? And it was actually very good because there was a lot behind all of their procedures and it actually made them think. **Misa:** Because you were trying to understand the structure of the system. **Dayan:** Exactly, and we were saying why do you do this? We actually had to get on the phone and listen in, and take bets ourselves. So for a whole month we were totally immersed in the manual system. And then we went to Minneapolis and we were locked up in a room. There were ten of us, there were six people from Victoria TAB, there were three CDC guys, and myself. **Misa:** So three CDC guys from Minneapolis. **Dayan:** Yes. There was a sort of a manager guy, called Bill Criego; there was an engineer, Milt Spieler, and there was Orrin Butterfield, who was a guy who had communications expertise. And we basically tapped into all the resources of CDC. Well, the trouble was that there were a few personality clashes. The guy who was running the TAB team at the time [Charles Scorgie] was a very, very strong personality, and unfortunately, Bill Criego was just well, young would be the best way of putting it. And Charles Scorgie dominated him. So they brought in John Miller, who was a much more senior guy to bring Scorgie under control. Which he did, because for a while there the study was going off the track, and out of control. The actual problems were pretty major because for a start there was no selling terminal. **Karoly:** No suitable terminal. **Dayan:** No suitable terminal. What we found was that there was a printer that was being used in New York, in a theatre application. Control Data was actually selling theatre tickets. Imagine a drum printer that actually had a drum that printed the tickets. We had to design the electronics, we had to design the packaging and keyboard, the whole works. Plus, of course, you then had the communications, and comms were bloody expensive in Australia and very slow; 150 baud; 150 bits per second. **Karoly:** Occasionally you could get 240 [bits per second], if you were lucky. **Dayan:** Well, yes, but remember that we actually put two RIOT [Remote Input Output Terminal, that’s what the terminals ended up being called] on each line, so one would be transmitting while the other would be receiving, just to get the speed of this thing going. So essentially, the basic design was done and the group came back after about three months; and Charles Scorgie got fired after he got back [laughs] because of some of the shenanigans that had gone on. **Misa:** It was one month of manual training, but you were in Minneapolis three months then? **Dayan:** We had one month here, which was the whole of May; and then we got to Minneapolis mid-June; and I stayed there until mid-December. But the rest of the group... **Misa:** From June until December? **Dayan:** December. I was there for six months. But the group actually came back after just about three months, the TAB group; and I stayed on to keep the project going. **Karoly:** By the way, what was Scorgie’s boss’ name? **Dayan:** Ken Davis. **Karoly:** Did you know that I nearly became a consultant for Ken? **Dayan:** I didn’t know. There’s a picture of the group in Minneapolis. **Misa:** Oh, okay. Bill Criego, that’s C-R-I-E-G-O. **Dayan:** I’ll give you this. This is basically the write-up. **Misa:** This says RIMFIRE design team. That’s great. **Karoly:** And this is just an outline of the whole history. Actually, CARBINE 1, which was just purely the central totalizator; CARBINE 2, which expanded and improved the telephone betting system; then RIMFIRE, which automated the ticket selling and automatic collating. **Dayan:** What happened then was that the TAB themselves had a lot of problems because Charles Scorgie was fired, and Bart Godwin took over. As I said, in December I was asked to come back here because of the New South Wales TAB, as it seemed that the Victoria TAB was doing so well, NSW TAB decided they would automate as well and so they put out an RFP. So we worked on this RFP. Unfortunately IBM had a
much closer relationship with New South Wales TAB and we didn’t get the contract. In fact, IBM had initial problems with the system implementation but eventually got there, but it was nowhere near as good as the system we had. The other thing that happened . . . then was that CARBINE had been going so well, especially the telephone betting [because you could now bet much closer to the time], had absolutely blossomed and they needed to have extra capacity [i.e. to handle more telephone betting accounts]. So at that time, it was based on 3100s with only 32k of memory. And so the idea was to replace the 3100s with 3300s and double the amount of memory from 32k to 64k, except it was in banks so when you addressed the second bank, you couldn’t just flip from one to the other, you had to actually know which bank you were addressing. So to actually convert 50 the code was not a straightforward exercise, not a trivial exercise at all. And when I came back I was put on that team to work on with Steve McCusker, Mike Clayton, Kurt Imberger, and Alister Dowling, and Ian Wadham was basically trying to run things. So I then spent basically a year working on this, and the idea was also to replace the Plessey betting keyset with a CRT based telephone betting terminal, from a Canberra Company called Information Electronics. Dayan: Anyway, so it was a separate project; it was called CARBINE 2, and again, you’ll probably see it written up on the Ex-CDA web site; but the idea was to, if you like, expand the number of accounts the system can handle, provide a better telephone betting terminal and also to make provision for linking it to RIMFIRE. Misa: So RIMFIRE was still under discussion? Dayan: Well, it was designed; it was basically a design and there was a lot of too-ing and fro-ing about the price and the cost and the timetable. Now, the interesting thing is that eventually the contract was signed and it was for $6 million to develop the RIMFIRE system with was it 1000 or 1100 terminals? But I remember the terminal was priced at $3,800. Now, there’s a suburb where my wife’s parents had a house, and at that time, that house was worth $12,000. So it was one-third the price of a house. And today, that house is worth about a million dollars. [Laughs.] So that puts it in perspective. That terminal today is probably about $50, you know? How the hell they were able to justify spending $3,800 on a terminal in those days; but it just shows you how profitable the TAB was in those days. Dayan: I’m actually just quoting here. The ticket selling machine each worth $3,800 will be manufactured to TAB specification. This is how Control Data was able to set up a manufacturing plant in Australia to produce these terminals, the famous RIOT [Remote Input Output Terminal] terminals as they came to be known. And, of course, that’s all covered by John O’Neil and the establishment of the Australian Systems Division. This RIMFIRE project was, if you like, what gave Control Data the base which allowed the Australian Systems Division to be set up, and which allowed the manufacturing to be set up. Misa: Because you wouldn’t need ten terminals, you needed how many? Dayan: Oh, I think the initial number was 1000 and was eventually expanded to 1100. Misa: 1100. Dayan: Actually it eventually expanded to 1000 RIOT’s and 120 D-RIOTS [Dual RIOT] which gave them 1240 selling windows. The initial RIMFIRE contract was five 1700 computers, and 1,000 RIOT betting terminals; to a total value of around $6 million. Misa: The terminals themselves, that’s almost $4 million right there. Karoly: Yes, 1000 RIOTs plus 120 Dual-RIOTs later. Dayan: What was interesting also was this was the price for the hardware only, and the software was thrown in for free. In 1993, I had my own company with a couple other guys, and we developed a system for virtual horseracing, and it ran on PCs. And we could afford to throw in the PCs for nothing and just charge for the software. [Laughter.] Karoly: How the world changes. Of course those PCs were probably a helluva lot more powerful than those 1700s. Dayan: I’ll tell you another interesting little story attached to this. I was asked in January of 1970 to become the project manager for RIMFIRE. I was never all that keen on programming; I did it but I always preferred being involved with people. And I knew nothing about project management, but obviously, I had a good relationship with the TAB because of the previous study and everything else. Misa: That was in 1970? Dayan: January of 1970, and I went over to Minneapolis with the TAB to see how things were going with RIMFIRE because by that stage the project had already started. And the whole idea was that the first 50 terminals would be manufactured in Minneapolis together with the software which was also being developed in Minneapolis, and then in August of 1970, the software team was all going to come back to Melbourne with the 50 RIOT terminals and then finish it all off. It had to be running by May of 1971. So I went over there to see how things were going; and then we went back there again in April; and then there was the final trip in July/August, where the TAB were going to take delivery of their 50 terminals and at the same time they were going to go through and test the software, so August was the big date. Now, it so
happened that a new entity called New York OTB [Off-Track Betting] put out an RFP in early 1970 to bring in off-track betting to New York. Misa: New York Off Track Betting is something similar. Dayan: New York Off Track Betting put out an RFP. And immediately Control Data in Minneapolis said hey, come and help us write a proposal. Dayan: We had the big acceptance tests scheduled for August and just before that, well, when I got there to Plymouth, they said to me oh, sorry, you’ve been bumped. I said what do you mean I’ve been bumped? There’s a thing called a DART terminal that’s taken priority and you’re not going to get any RIOT terminals in August. What am I going to do?! The TAB guy is coming over and they said oh, that’s tough. Of course, you know, being an Australian you can’t monitor these things that close up, obviously the local guy’s in a better position. Anyway, I had Bart Godwin there and I said, look, we’ve got a bit of a problem. How many terminals would you be prepared to accept? I also went to 54 the manufacturing plant and asked if you were to stop making DARTs today and started making RIOTs, how many could you make by the end of August. He said we could probably make 20. I went back to Bart and I said would you accept 20 terminals. Sorry, it was near the end of July. And he said, well, if that’s the way it is, it has to be; yes, I’ll accept 20 terminals. Misa: You’re doing proof of concept . . . Dayan: Yes, the basic software was there; you’re going to run tests on it, and volume tests and all the usual type of stress testing. The software was actually not in bad shape, but you needed terminals to be able to do anything. Now, the proposals for the Off-Track Betting System were in to New York City, and we had to go and do our presentations to the NYOTB evaluation team, and it was in July. I remember that a whole group of us went to New York, and there were all these deputy mayors there asking questions, and I always remember one question from a black guy who got up and he said “I don’t see any black faces.” Oh my God. My boss in Minneapolis was black; his boss was black; we had at least two customer engineers with us who were black but we didn’t think of putting them up front. Misa: As a part of this travel . . . Dayan: Well, the group that were doing the presentations were all white. Shock, horror but one of the Control Data VP’s answered “…but we have manufacturing in Israel.” [Laughs.] Misa: Not the same constituency. Dayan: But, I mean, that was; unfortunately, they were a little bit out of their depth and AMTOTE, who’d been running all the racetracks in New York were obviously in a much better position. But that night we stayed in New York, and the guy who was in charge of the sales effort, Tom Moore had actually had been a politician, and he knew Bill Norris personally. And I went to him and I said, you know we’re not going to have any chance of getting this contract, and he said why not? I said look, we’ve got the Victoria TAB that this whole system is based on, and your group from New York, after these presentations is doing a tour around the world, and on August 8 and 9, they’re going to be visiting the Victoria TAB. And, you know we’ve missed all our deadlines, they’re going to be totally pissed off. He said, what can I do about it? I said, it’s all dependent on these RIOT terminals. He said I’m going complaint to Norris immediately. And I tell you, that manufacturing plant went CLUNK, stopped producing DART terminals and started producing RIOTs. Misa: The terminal you needed in quantity. Dayan: Yes. I was amazed. It just shows, you know, if you’re at the right place at the right time, you could have influence. Karoly: Also, in the United States, you’d better do it. Misa: That’s right. If Bill Norris says A, B, or C type . . . Karoly: It’s going to start; they start making that RIOT type the next morning. Misa: Or earlier. [Laughter.] Dayan: We got accepted, although there were a lot of problems. The group came back to Melbourne, completed the software, and it was due to go live on May the first. It went live on May the third, which was in fact the first Monday after May the first. It was actually done on time. I think it was done within budget but I wouldn’t swear to that, but I think it was because there was a lot of fat in that budget, as you can imagine. Misa: To do development, you want to have an ample budget. Dayan: Yes. When you think about the fat there was in things like that. And of course, it was the basis of the Australian Systems Division; so that was the RIMFIRE project. Karoly: Next thing, I suppose you can talk about the New Zealand TAB. Misa: New Zealand TAB. Dayan: New Zealand, yes. What happened then was because of course, RIMFIRE was very successful and went live on time. This was on May the third, 1971. At about this time, New Zealand TAB hired some consultants [PA Management] and issued an RFP to computerize their operation. And naturally enough, I was involved in doing all the technical backup work, and Peter Dulmanis was the salesman. Karoly: I remember going to New Zealand with you over something, but I actually don’t know what it was. Dayan: Well I’m not sure at that particular time; well there were lots of different times. I remember that the first time I went over there was in August 1971, because I tried to go skiing and
there was no snow, and then the proposals had to go in. Well, when we really knew that we had won the contract was when we arranged for a telephone link back to Australia and the stand-by RIMFIRE module, and we actually ran a phantom race meeting. I’d got some videotapes of some races in Auckland, and we took a RIO term over to New Zealand, and we actually sold bets on the race and processed them in Melbourne and then paid them out. Basically just ran the whole thing and just showed that we could actually do it. Misa: Processed, real time, with a good race, it gave a sense of does it work? Dayan: Yes, the whole thing. And the funny part was that we gave a bottle of whiskey to whoever would win the most Monopoly money on the race. And it was the TAB consultant that ended up winning the whiskey, and somehow or other, they were not happy that the news got out into the newspapers. [Laughs.] But we had a lot of competition from IBM because Control Data was not set up in New Zealand and of course, IBM and ICL were very well established there. And IBM did everything they could to stop us, you can imagine; they went at the political level, they went at the board level, they went at the executive level; it was a very, very tough sell. Misa: ICL and IBM had already established subsidiaries in New Zealand? Dayan: Yes. Misa: But curiously; I’m not saying that CDA ought to have, but it’s pretty close. Dayan: In fact, the only thing CDA did prior in New Zealand was to sell a message switch to the Ministry of Defence. So they did have one setup, but there was no office [just a representative called Flight and Field Services run by Digger Harding], there was nothing else, it was all done out of Australia. Ministry of Defence; because they had sold the 1700 here as a message switch to the Australian Ministry of Defence, and because there was such close contact between the two Defence Departments, it was logical that they bought the same thing. So there was no real competition on that whereas this particular contract was very, very hard fought. In fact, one of the interesting things is that ICL approached us and said why don’t we go in this together? We’ve got the base, we’ve got organization and maintenance, and you’ve got the knowhow. And so we said okay, well let’s explore this. You’re familiar with ICL aren’t you, the English company here? Misa: Yes. Dayan: Finally it got down to, at a meeting, was how much are you going to charge for your computer? And they puffed out their chest and they said whatever their cost was; and we then said this is how much we’re going to charge, and it was a hell of a lot less than they were. And they said how do you do that with a 3300? And we then said no, we’re going to do it with 3100. And they said how can you achieve that processing power with a 3100? And I said, that’s our knowhow. [Laughter.] That was pretty good. So anyway, we decided we’d do it on our own and this is why this is very, very personal. I had a girlfriend in New Zealand, and I had a girlfriend here, and then all of a sudden, in December, it looked like this was all going to happen. And they insisted that we do the project over there so that meant I had to go over there and live there for two years. Misa: So that was December of 1971; so this is all happening in that launch year of 1971? Dayan: Yes. And I had to go over there and put together a team and take that team over there. And so I got the hard word put on me and I got married in February of 1972; and three other members of the team also got married. One got married in July, Bob Jensen; Phil Stokes got married; and so did Stuart Broad. There were four of us that ended up getting married just before we went over there. [Laughs.] And it was a very, very good group, as you can imagine; they’re all very, very good programmers. Misa: How close was the New Zealand TAB thing to what you’d already done? I know it’s not just doing a duplicate, but were there different ways the New Zealand TAB was organized that meant that the system needed to be adapted? Dayan: Yes, and I’ll explain to you about this. I should also tell you that the New Zealand TAB was the first TAB to be set up in the early 1950’s; and then the Victoria TAB was set up in 1960; and seven people from New Zealand came over to set it up so there was a lot of links backwards and forwards between the two. They were very, very close; so they knew everything that went on. One of the problems with RIMFIRE was that there was no unique serial number on the ticket, so what was in fact happening was that there were a few scams whereby the agents themselves, after they had got the tickets in, would go to another agency and cash them again, because there was no unique serial number. Karoly: Winning tickets. Dayan: A winning ticket. Misa: Oh, these winning tickets collecting up and down the street. Dayan: Exactly. Misa: So there’s no way of saying the winning ticket has been called in. Dayan: That’s right. Karoly: All the system knew was that they were winning tickets. They didn’t know what the numbers were. Dayan: That’s right; they didn’t know the numbers. It all went back to the fact that there was so little memory storage. There was so little storage you couldn’t have a unique serial number. Today, it’s obvious; you have a unique serial number; you mark it off; you
couldn’t do it in those days. So in actual fact the way the Victoria TAB solved the problem is that as each ticket did have a unique identification number, you could find out if the ticket had been cashed twice, but this could only be worked that after the fact. So what they did is because every transaction ended up on that magnetic tape, they then wrote a program that subsequently would go through every transaction, every ticket, and find how many duplicate payouts there were. And then they could work out a pattern that there was a particular agency that would cash these winning tickets, and two days later, in some other part of Melbourne, some of those tickets would be cashed again. So they built up a pattern of who was doing this, and then they swooped and got all these guys and then charged them with fraud and stealing and made scapegoats out of them and gave them fines and jail sentences. And that stopped it, especially as none of the agents and casuals knew how they had been caught. Misa: What were they doing was illegal, right? Dayan: Of course. It was an absolute scam. So to get over this problem, the way that we solved it was we ended up putting a bitmap on the 3100 to represent each ticket sold on the 1700’s. Again, because memory was so limited; and we had a bitmap for every single ticket sold representing the serial number on the ticket. Karoly: But it was in bit form. Dayan: And we didn’t actually keep the serial number, but we kept a bitmap of every ticket. So when the ticket came in to be cashed, we crossed out that one bit. And that was held in the central computer, the 3100. Misa: So if somebody tried to take that same ticket, and cash it, was there some way then that the agent would say is this a valid ticket? Dayan: Well, they just put it through the system and the system would then reject it, because it had that one bit crossed off. So that was one of the changes that we had to make to the CARBINE/RIMFIRE system to meet the NZTAB requirements. The second change — and that was the basis of GWS (GENERALISED WAGERING SYSTEM), actually — because the original CARBINE system only catered for four bet types; win, place, each way, and quinella. Karoly: No, but it didn’t. Dayan: . . . each way was just win and a place, quinella, and doubles. Sorry. Karoly Yes. Dayan: New Zealand wanted a treble, and the problem was that throughout the system there was only two bits that were used for identifying the bet. Dayan: If you’ve only got two bits, it’s only four bets that can be identified. And that was right through the whole system. It was two bits. Misa: If you had three bits, then you could’ve had eight but two bits is four. Dayan: That’s right. So when they said they wanted to add a treble, I thought oh God, here we go. And I remember that Jim Walters, he was project manager on the original CARBINE 1, in one of my talks to him — and I can’t remember when it was — he said he had a way, a generalized way of handling a bet type so that you wouldn’t specifically say it was a win, or a place, etcetera. He called it CVS, it was a generalized way of handling bets. In that way, he said, you would not be locked in to four, or five, or six, you could have any bet type. I thought that’s a pretty good idea, so I took that to the New Zealand TAB and said look, this guy’s got a fairly good idea. Why don’t we have him come out and see whether in fact implement this CVS system, which would then allow you to go beyond trebles. They agreed to pay for the study and so I invited Jim to come and do the study. So he comes out and he does the study, and blow me down, instead of ke...
which it isn’t. You could do this, you could do that, you could do that; and all of a sudden, there’s a contract with the Victoria TAB for GWS committing to all this, which was pie in the sky. **Karoly:** Completely, and it never worked properly on site. That’s what I was talking to you about; it was trying to design software that nobody had ever designed before. Multiprocessing software, you know, interconnecting processors. **Dayan:** These System 17s were very underpowered machines. And you had a whole bunch of them; these TICs and TOCs of transaction-oriented processes and a terminal . . . **Karoly:** It was a system of; just trying to think of how many processors — Marcel can probably tell you more details — but it was quite a large number of processors dealing with the same data, designing it from scratch. **Misa:** That was one of my questions, whether there were any other models that people could draw on. **Karoly:** Not that I know of. **Misa:** In terms of distributed computing, it’s hard to imagine what the model would be. **Karoly:** Yes. The idea that there were smaller processors that process the incoming data, and then the incoming messages, if you like, you know, the bets. Actually, those processors were called TICs [Terminal Input Controllers], I think. And they’re the ones which took these bets and calculated totals, and all sorts of things in real time. And all of this, in a way that hardware or software failures wouldn’t affect the final result. **Misa:** Because if you’re running census data and something has a hardware fault, you just run it again, but you can’t rerun a horse race. **Karoly:** Census data don’t cost money, not really, and here you’re tossing millions around. To give you an order of magnitude — I don’t know what it is now — but I had something to do with Hong Kong TAB many years ago and they told me that their turnover there in the last hour before the race is several million Hong Kong dollars. **Misa:** Just in the last hour. **Karoly:** Yes. So you’re talking about real dough. **Misa:** Definitely. **Karoly:** You don’t want too many mistakes or too many fraudulent actions. **Misa:** So the whole thing also has to be secure, again, because somebody tampering with the data could…. **Karoly:** Security and recoverability. But as far as I know, they never, ever had to use this Audit Tape Recovery. We kept what we called an audit tape on all these systems, which recorded every transaction in detail. The theory being that given that, it was possible to recreate everything, but you can imagine how long it would’ve taken, right? Forever. **Misa:** An immense amount of time. **Karoly:** It never happened, to my knowledge. **Misa:** That was a kind of security that kept the system whole. **Karoly:** Everything was recorded in duplicate on different pieces of hardware. Well, so it was a difficult project and there was some design errors made, no question about it. Design errors are human. In fact, rather interestingly, very late in the piece, one of the designers came up with an idea which would have simplified a lot of things, but it was too late. You see, one of the problems is that to attract more customers, TABs invent all sorts of fancy bet types and some of those . . . **Misa:** Oh, of course, not just the standard ones that Marcel is describing. **Karoly:** Some of those bet types have an incredible number of permutations so that storing them in the system gets to be a problem. Just take a fairly simple bet type, a double. It’s simple, you pick the winner of two races; you know, horse 1 will win the first race and horse 17 will win the second race. But some of them are offering multiple doubles; you could say I want to bet that either one or 17 wins, or one and 4 wins, or two and 7, you know? **Misa:** Yes. **Karoly:** In fact, in the extreme, I think it was possible to have; but I don’t think everybody that is betting on it, to have every possible combination of horses as a double, so you can imagine how many records are in there on the drum, in that record, you know. **Misa:** Stupendous requirements to keep track of those very few types. **Karoly:** So it was a challenge to plan these bet types. I can’t remember the details of some of them, but there’re all sorts of ways, weird things designed by salesmen to attract…. **Misa:** Bettors. **Karoly:** Yes. But just causing some of the technical problems of designing systems like the GWS [Generalised Wagering System]. **Dayan:** Oh boy. **Karoly:** Terminal Input Controllers, I think it was. **Misa:** Terminal Input Controllers, if that’s TIC, then TOC is . . . ? **Karoly:** Transaction something. I can’t remember. **Dayan:** The trouble was that because everyone talks to everybody else, they spend all the time talking to each other saying you got this, you got that, and they don’t have any time to do any processing. **Karoly:** Oh yes, and there’s no defined. I mean, for instance, one of the things that always bugged me, when a TIC received a bet and verified it, which TOC it sent to was a completely random event. **Dayan:** Yes, that’s right. It was all part of redundancy, you see. **Misa:** Oh, okay. Just a way of talking about security and so this is one way of getting redundancy? **Dayan:** You send it to two of them, didn’t it? I’m pretty sure it sent it to two of them. **Karoly:** Maybe, but at random, so there was no way of controlling the loading or anything, it was done at random. Not really at random, but ask Jim. [Laughs.] **Dayan:** The New
Zealand TAB system, again, very lucky, we managed to get it done on budget and on time. That was interesting because the group I had, we had a fairly good deal because there was no policy for Australia sending people overseas. So we used the Minneapolis one, which had tax equalization, and paid for your accommodation, all that, so we were on a very, very good wicket, you can imagine. So I had a very happy team. And at the end of it, I remember negotiating because all the salesmen were getting all these real freebies and things, and I kept on saying well, if we get this done ahead of schedule we should be able to get some reward. So I finally got approval to run a post-mortem in Fiji and take the whole team and wives. **Misa:** In Fiji? **Dayan:** Fiji. And so we did; in fact, there’s a picture of the group in Fiji. **Misa:** Pretty happy. **Dayan:** Anyway, it was a very, very happy project; very successful, did wonders for NZTAB’s turnover; their turnover jumped, you know. Everything about it was really very, very good. [Because close of betting was reduced to 15 minutes before race start time and payout allowed within 5 minutes of winners being announced, bettors could now bet race to race with their winnings. This was a far cry from the early days when you bet on all races before the meeting started and collected your winnings the next day. This was one of the main reasons that the betting turnover, and also TAB profit, exploded.] **Misa:** So the turnover for New Zealand TAB jumped up then too. **Dayan:** Just jumped because, you know . . . **Misa:** . . . they’re taking the, whatever, 20 percent so that was a gold mine. **Dayan:** Absolutely. So then I came back here, which supposedly was as the Manager of Project Management and I had been back here about a month when all of a sudden John O’Neil said, you’re taking over all of the wagering projects . . . **Karoly:** That’s right. **Dayan:** . . . because by that stage, they’d sold GWS to Queensland TAB, and they’d also sold it to Natal TAB. **Karoly:** Yes, and by the way, it was Queensland TAB; the system where I wanted to get that, you know, that military hardware. **Dayan:** Everyone could see, even Jim says it was underpowered. But the point is they kept going with it, there was no end. And all of a sudden, as I said, I found myself here talking to the Victoria TAB, it was Maurie Henderson. So there’s your functional spec, meet every item here; and I’m saying, but that’s a blue sky document; it wasn’t meant to be a functional spec. That’s what you contracted for, you do it. That was the attitude of — it was a different group of people at the time — but that was their attitude. Now, I remember saying to John O’Neil, look, I’m very unhappy with this because I just don’t think that we can do all of this. By the way, when I first went up to Brisbane, Jim Walters said to me, this is my project. If you try and screw it up I’ll get you fired. **Misa:** This is in Queensland? **Dayan:** Yes. He and Bob Morris were actually based in Queensland. This is the Generalised Wagering System because the whole idea was that the one software system that was going to run . . . **Karoly:** Everything. **Dayan:** . . . Victoria, Queensland, and Natal. **Karoly:** And we thought everywhere else. **Dayan:** And we thought everywhere else, yes. **Misa:** That was the GWS **Dayan:** That was GWS that was going to be the package, then. **Dayan:** The package, yes. Anyway, I was unhappy and I asked John to get someone out to do an audit. So a guy came out from La Jolla [California], and Bob and Jim just completely snowed him. And the answer was no, everything’s fine. Heads down, bums up, get on with it. So I was stuck with continuing to do this, and somewhere along the line it became obvious that things were going off the track. Jim and Bob went back to the U.S., and by this stage, La Jolla started to get a bit concerned so they sent out some managers; A.J. Rutter and Ron Hilgers; and there was another guy, I’ve forgotten his name. I then went up to Brisbane and tried to run that part of it for about close to a year. I was very unhappy, as you could imagine, because they were just adding more and more people, and the old adage, you know, you add people to a late project all you do is make it later. By this stage, we were up to 50 programmers, you know, it was just getting out of control. Meanwhile, NZTAB suddenly says hey, this is going so well, we want a new expanded system; we want to redo all this. So naturally enough, I get involved in it. **Misa:** But this is redoing the successful operating system for New Zealand TAB? **Dayan:** Yes, they want a new system now, because the initial system only handled the three major areas: Christchurch, Wellington, and Auckland. They said now we want a system to cover the whole of New Zealand, because it’s going so well we think we can justify it. Now, comms in New Zealand was very, very expensive because the population is more spread out. I mean, here in Victoria, you know, 80 percent of the population is just in Melbourne. And when RIMFIRE went in, it was just basically Melbourne. In fact, the country areas weren’t automated until very much later. But in New Zealand, you couldn’t do that; and again, it was the same in Queensland and in Natal; the whole idea was based on just having the major population area coming in. **Karoly:** They also had a few very fancy bet types, if I remember rightly. **Dayan:** But
anyway, so I said to New Zealand TAB: don’t go with GWS. And this is when I got approval for these 32-bit computers; this MP32. They were not a standard product [in the “Red Book”] but were classed as a “Special Product.” And I actually got them on the build schedule. Now, what I was told at the time was that the MP32 was a skunkworks project out of La Jolla, where these guys in the back room had “dualed up” [sic] the System 17 and made it into a 32-bit computer. And at the time, there was already a 32-bit computer that Government Systems Division was selling to the Air Force. It was a military version of a 32-bit computer. They already had an operating system, and they had compilers; so everything was there! Karoly: Ended up having to write compilers for the 1700. Dayan: Yes. So I actually went over to La Jolla; I worked there for about four months; this was in 1977; I was there from about September 1977 through to February of 1978. And I had a guy from New Zealand TAB there, we were working through the functional specification, doing all the bits and pieces to get the project started; and I remember that Chris Reilly came over, and he actually went to Minneapolis and did some work there on making sure that we had the operating system and compilers and all that for this MP32. Karoly: Yes. Dayan: And everything was going along well. In the meantime, New Zealand TAB offered me a job, headhunted me and said, we want you to come over and we want you to head up a new division. Not only do we want to automate the whole of New Zealand off-course, we want to automate every single racecourse, as well. Misa: Wow. Dayan: And there’s 81 of them. Misa: Wow. Dayan: And you’ve got about $50 million to spend. My wife didn’t like the States and she, being an only child with elderly parents, she really wanted to get back. So I thought this is all great; I’ll get back and I’ll do an MBA; I’ll sit back and I’ll watch Control Data do all this good work; and what have you. And so I left Control Data and came back to New Zealand and this is what started to happen, and I started doing an MBA, and about six months into the project everything fell apart here in Victoria. Victoria TAB cancelled their GWS (GENERALISED WAGERING SYSTEM) project; Queensland cancelled their GWS project [laughs] . . . Karoly: Not unreasonably, mind you. Dayan: . . . not unreasonably. And Control Data said, do we really want to do this little project for New Zealand TAB? It’s going to be an orphan, you know, and we muddled our name in this industry. And they came cap in hand to New Zealand TAB and said we want out of this. How much can we pay you to get out of this? And New Zealand TAB said to me, what am I going to do? And I said well, there are 50 out of work programmers in Australia, I reckon I can pick the “eyes” out of them; and I reckon we can put together our own team. They said go for it, which is what I did; so I didn’t do an MBA. I put together a team, I got all the best guys. Misa: So you ended up actually working for New Zealand TAB? Dayan: Yes, I was the Development and Planning Manager for the New Zealand TAB. And what we did was we went out for terminals; we bought terminals from AmTote [or General Instrument as the parent company was called]. And we went out to buy a computer and, at this stage, we said we want a 32-bit minicomputer. We had three proposals, two of which were viable, because Prime, at that stage, was much more commercially oriented, they weren’t really real time oriented. The two computers were the Perkin Elmer computer, and the DEC VAX. And it was very, very close between the two of them, and ultimately we chose the Perkin Elmer 3200 computer. And they had a mixture of them; they had a 3240, which was the large one for the main system; and we chose the smaller 3220 for the race-courses. We could put these in a van and we used to drive them around to the racecourses. The terminals we bought from AmTote were also moved from course to course. Misa: You couldn’t [inaudible]? Dayan: Now, the interesting thing — and this is the point that I made — when we bought the 3240, which was a year after Control Data cancelled, it was nowhere near as advanced as the MP32 had been a year before. And my view is that if Control Data had managed to get that MP32 out commercially, they’d have blitzed VAX, because VAX computers subsequently became the de facto standard for 32-bit computers. Misa: They became essentially the de facto standard. Dayan: Control Data had the reputation, it had the hardware, it had the software, and it had the marketing. But why couldn’t it get it out? This is where it would be interesting if you could actually go back and interview some people on this, because my theory is there was no product champion, right? And anything in any organization needs to have a product champion. The problem that I could see was this: La Jolla was not interested because a 32-bit [computer] was competition to their 16-bit, okay? Government Systems Division didn’t want a commercial version because apparently they had an agreement with government that if there is a commercial version available, they have to drop their price. You can imagine the sort of profits they were making with their militarized version. And that was at the time when Cyber was bringing out
the Cyber 71, and they didn’t want a low-end, in-house competitor to the Cyber 71. So you had three big divisions, each of which says if this comes out, they’re going to hurt my P&L; they don’t look at the overall good of the company, and there was no one strong enough within the company to say look, you really need to do this. And I can give three examples that I know of, of similar things that happened to other well-known companies. IBM PC. IBM bought their quick and dirty DOS from Bill Gates; they didn’t want to own it because they didn’t want to compete with their low end machines because they didn’t want an in-house competitor. Look at Sony. They had the Walkman, and they had all the technology — this is in Jobs’ book — they had all the technology to develop an iPod, but again, they couldn’t get it out the door because the Walkman division said this is going to hurt us. And of course, the best example of the lot is Kodak. Kodak had all the patents for digital photography. Karoly: Did they? Dayan: Yes, they had all the initial patents. But at one stage in the 1990s, 89 percent of their revenue was coming from film so they weren’t about to go to digital. But of course, what happened? They actually went bankrupt; but they’ve just come out of Chapter 11, just recently. And Jobs actually says in his book, if you don’t cannibalize your own product, someone else will. Simple as that. Misa: And that’s of course, a really hard lesson but your idea about their needing product champions, that’s just across the board; big companies, small companies. This fell between a number of cracks. Dayan: Yes, it’s a bit sad, really, because, you know, of what might’ve been. I’m sure that’s true of a lot of other things. Karoly: Actually, given that sort of hardware, GWS (GENERALISED WAGERING SYSTEM) could have been a workable proposition. Dayan: Absolutely. Karoly: Particularly with some of Chris Reilly’s later ideas, which never got implemented. Dayan: Yes. The interesting thing is that the system at New Zealand TAB is still running today. It’s running on different hardware, running on different operating system — but it’s still the original software. The same software, it’s over 30 years old, same software. It shows that if you have a good design, and a good team, which I really did have, it will last the distance. Misa: Can you fill in, the New York part, this off track betting. What happened with that? Dayan: What happened with that, the initial contract was to a company that was tied in with AMP here in Australia; they bought it, basically. Can’t think of the name; I forget the name of the company; but anyway, the result was that they couldn’t deliver. There has been a lot of disasters in TABs automation, including the Queensland TAB which had two disasters with Burroughs machines; and South Australia had a disaster; I mean; Western Australia. There’s been a lot of systems that didn’t work, including the first New York OTB system. And what happened then was that AmTote came in and took over. AmTote used to run all the on-course totes. And at that stage, Control Data had a subsidiary called Ticketron, and Ticketron actually got a slice of the action as well. In fact, Ticketron was the one that had the original terminals that we used the drums out of to make the RIOT terminals. Misa: That printer. Dayan: Yes, that printer; Ticketron, yes. So they sort of went their own way and actually had some service contracts to run the OTB in New York. I became quite friendly with AmTote because we bought the terminals off them, for NZTAB and I got to know Jack DeVeirs pretty well. Subsequently, actually, after I set up my own company I actually represented them here in Australia and my company became their software arm. You know they used to run all the tracks in New York; Saratoga and all of that; on-course. Misa: New York has a big racecourse industry and then a big betting industry. Dayan: Yes. In fact, I remember the first time I went there, with AmTote, and coming back on the train from one of the race meetings, with sort of a PR guy. And just at that time, there was a very big scandal going on. You know how they got the illegal betting on numbers; the illegal numbers bets, where you choose three numbers? If you get the correct three numbers, you win $500 I think, is that right? Because you’ve got one chance in a thousand of getting the three numbers, and basically 50 percent is what you get. And the big scandal was the claim that people who were running the numbers, which was in fact the last three digits of the turnover at the race meeting, were scamming the game. The claim was that they were putting the bets on the winning numbers. I mean, they knew the numbers before the tote was closed. Misa: Oh, so that’s easy, then you just write down that number and you win. Dayan: Exactly. And the funny part of it was this PR guy... Misa: But illegal. Dayan: Yes. But the PR guy that I was with said that Amtote had to write a letter to explain that the reason this happened is that at the course, the computers know the turnover before they publicize it and so the moment that the computer spit out these numbers, these on-course guys would immediately call up their mates down the street [and] say go and put it on 1-2-3. [Laughs.] Misa: So it’s the turnover figure. Dayan: Yes, it’s the last three digits of the turnover figure; that’s the number. So it was funny, here
are these letters in the paper explaining how an illegal game was being scammed. [Laughs.]  **Misa:** Well, there was a lot of money in that, I suppose.  **Karoly:** Diverting you for a minute, do you have anything in your files about the Royal Turf Club of Thailand’s system?  **Misa:** I have two people that have said something about that; that was a similar setup to the TAB system.  **Karoly:** Factually it was, but in detail, it was very different because they had . . .  **Dayan:** It was an on-course system.  **Karoly:** . . . first of all, it was an on-course system, which makes the software technically simpler. But the problem was that it had a lot of electromechanical devices as part of the system. For instance, the system had to operate the results display.  **Dayan:** That’s right, the infield indicator.  **Karoly:** Infield indicator. And the bet selling machines were electromechanical.  **Dayan:** ATL machines. ATL was very upset they didn’t get that contract, of course, because they had all the on-course systems. And, of course, the reason was that . . .  **Karoly:** Anyhow, I designed the software for that system.  **Misa:** Oh, for the Thai system?  **Karoly:** Yes. And as I say, because of those electromechanical devices, timing was very important. Say it was for things like the display board, it had to be a certain delay between sending the signal, you know, so the whole backbone of the system was a timer—a software alarm clock. Well, programs worked on interrupt basis and a program performing something could tell the time where I want to be interrupted in so many milliseconds. Or, you know, I want to be recalled in 23 milliseconds time because that’s the timing of the particular electromechanical device I want to give it another kick or something. So I pinched the CARBINE memory allocation system, you know, these different size memory units being allocated to the different processes as required. But that actually I gave a data flow diagram of the system, now wait a minute, who did I give it to? I think I gave it to John O’Neil last Friday.  **Dayan:** I think you gave it to me.  **Karoly:** Did I give it to you?  **Dayan:** Yes.  **Karoly:** Did John give it to you or not? I showed it to John O’Neil, the functional diagram; the data flow diagram of the system.  **Misa:** I got a package of materials from John.  **Karoly:** That might be in that, because I gave it to him.  **Misa:** It’s in that large manila envelope.  **Karoly:** This one?  **Misa:** Yes.  **Karoly:** Okay, I’ll have a look because it was my only copy I have of this huge job.  **Misa:** John said that these were materials that he didn’t want me to take, but that I needed to copy. But I don’t remember seeing a diagram.  **Karoly:** No, it’s not there. I wonder what he did with it.  **Dayan:** Or did you give it to Ron? Because Ron was the project manager of that.  **Karoly:** Maybe I gave it to Ron Bird. I couldn’t remember whether I gave it to John or Ron, maybe it was Ron. Have you seen Ron yet? Ron Bird.  **Misa:** Yes, I talked with him on Tuesday.  **Dayan:** My only involvement with the Thai project was one stage when I was Manager of Project Management. I saw all the financials and I remember being very naive, saying “Cost of Sale - 20 percent! How can that be.” I was told shshsh, that’s the “General’s cut.” Okay.  **Karoly:** Did I give it to you?  **Dayan:** Not really.  **Karoly:** No, I don’t.  **Misa:** This has been very rich, thank you so much for your time.  **Dayan:** This is the write-up on those three projects. It’s actually on the web.  **Misa:** Is that on the [CDA] website, as well?  **Dayan:** I think it’s on the website because the photos are probably better.  **Karoly:** I left Control Data later because the Systems Division died, and they didn’t seem to have anything for me to do.  **Misa:** Yes. Then Marcel, you moved on to the New Zealand TAB?  **Dayan:** New Zealand TAB. I spent the first five years putting in this on-course/offcourse/telephone betting system covered the whole island and worked myself out of a job. And basically found that I was getting bored; I was picking fights; I said it was time to leave so I came back here and starting a consulting company. We then moved into developing Keno systems. AmTote became General Instrument so we became the software arm for General Instrument. We developed Keno for the Jupiter’s Casino; and then Keno for Macau; and then we did Keno for the whole of New South Wales [NSW Club Keno]. And then we found that we were making other people rich and we thought it was time to do something for ourselves, so we developed our virtual horse-racing.  **Misa:** So it’s a software package . . .  **Dayan:** It’s a software package, yes.  **Misa:** . . . that included the hardware for free.  **Dayan:** Exactly. And unfortunately, the TAB here started to privatize just at the time we were supposed to go with it, and so we were stuck with a product and no market. So I then went round the world selling it to all sorts of Third World countries, and have some very interesting stories to tell. And then in 1994 we went out and got some venture capital; and the actual venture capital was from the Australian government. And that kept us going but we didn’t go viral; and we didn’t die; we just plodded along.  **Misa:** Middle ground.  **Dayan:** Middle ground. So after five years, our VC partners said it was time to get rid of you and there’s the TAB sitting there, just waiting. Of
course, they then scooped us up and we didn’t get very much for our product, as you can imagine, because they were sitting there waiting, as they had the license and could dictate terms. I had to do an earn out for three years, that actually worked out pretty well. They are making so much money out of the product now; they’re probably making about $100 million, bottom line, a year. At one stage we almost got it into the UK but we didn’t want to sell it outright, so Ladbrokes went behind us, took all our materials and ideas and got someone else to develop it. Their turnover about four years ago, was £2 billion a year. And this is a product when everyone told us we were stupid to develop it, saying nah, who’s going to bet on virtual horse racing? **Dayan:** If you go to any TAB you’ll see it running; it’s called Trackside.  
**Misa:** Trackside, okay, I’ll have to check that. George, you said that you left Control Data. What did you do after that?  
**Karoly:** I joined Computer Power. None of it still exists; it was a software consulting, fairly small outfit.  
Actually, it was a mistake on both sides  
**Dayan:** They was trying to bulk it up so they could float it.  
**Karoly:** Yes. Anyhow, he wanted me to set up a consulting division in this company, which up to that stage, was mainly doing software development. And I thought he wanted me on the technical side but he thought that he was getting a salesman, which I’m not. So I left after a couple years and went to the Victorian Railways. Actually, what was my title? Manager of Technical Support of their computer center.  
**Dayan:** He floated the company and made a lot of money, and then died. [Laughs.]  
**Karoly:** He claimed that if he ever made a million, he’d retire and write a book. And that’s the last; well he made more than a million, but he never wrote the book. [Laughs.] Maybe it’s still coming, I don’t know.
the rest of it. Leaving a wife with two babies, one and two year old, and being nine months pregnant with a third. So not wanting to go to Sydney to do that, I went to Control Data in Melbourne and asked to do an aptitude test. They told me that as long as the check didn’t bounce, I was eligible to start the course, but they would give me a qualification test after lunch if I cared to come back. The result of doing that test, I was offered a job to start the following Monday morning, and I became a terminal engineer. Terminal engineering, as you probably know, is repairing and maintaining equipment in customer sites, in the way of batch terminals; 200UT 731 and 734 systems. I did that for 12 months until somebody decided that perhaps I could actually work on mainframes, as well. In the first seven or eight weeks, we chased ones and zeroes around diagrams with Bob Munnings, and at the end of that six weeks or seven weeks, I was placed in the Bureau of Statistics here in Melbourne. **Misa:** At the government office? **Downie:** Yes, at the government office. And the couple of weeks of practical experience that I had on that site in the training period, there were five engineers onsite; the engineer in charge and three shift engineers, and another that never left in the daytime. **Misa:** Let me ask just a question of clarification; you were employed by Control Data but working physically in the Bureau of Statistics? **Downie:** Yes, on Control Data equipment. That site consisted of a 160A and a couple of printers; a 3200 and a 3300. The day I started on the site, the engineer in charge and three of the five; four other engineers all left. And so Bill Clyjne and I ran the site on our own; and two weeks later he went on a month’s leave and never came back. And I was there for the next three years until they closed the site. **Misa:** Can you describe the work that you did to support the Bureau of Statistics? **Downie:** It’s basically a planned preventative maintenance and troubleshooting, writing machine language code, not simply ones and zeroes; not any of that higher level languages; and it was quite rewarding in that you really had to analyze what the fault was and write an appropriate diagnostic if the machine was so disabled that you couldn’t run diagnostics off tape and the like. And it was a unique site in that the BDP box, the business data processing box and being amalgamated with a machine it was never intended to be used with, and that was done here locally in Melbourne. I don’t recall who it was that actually did that but it was a local mod. **Misa:** Modification [pause]? **Downie:** Yes, modification of the mainframe and its interface, in order to connect this group of boxes. A BDP box does moves of one or two K of data with four instructions. So, simply a complex [pause] **Misa:** So just to be absolutely clear, BDP is [pause] **Downie:** Business Data Processing. It did block moves of data from one part of memory to another, or from memory to a piece of equipment, or vice versa. It inserted commas in between the thousands and the millions, and those sorts of things; it added dollars or deleted them in blocks of data; it was quite a complicated piece of gear. It’s typical failing mode it would deep-end, would get into an endless loop that it couldn’t get out of. You then had to scope test points on the machine, in something like 30 ranks of 28 test points, and analyze what it was doing and how far down the path of instructions it had got, and what was the failure mode was before you could hope to analyze what the fault was. The quick easy way was to hit [stop master, clear, and go], and that would overcome the fault, and lose all of the data that you needed to fix it, and hope to God that somebody else was on shift when it failed the next time, because that somebody else was always going to be me. So that sort of made it that cannot be the way to go. You had to fix the thing. The CPU on that machine was 7,000 cards so there’s no way you can shotgun that sort of a problem; you have to know what you’re doing. It was a great exercise in learning troubleshooting techniques and logical thought analysis, and it is a part of what I learned using fluidics. My kids had the typical Commodore 64 and that sort of thing; I also studied at night school prior to joining Control Data, doing black and white TV, and radio repair work, so that gave me a background in electronics, as well. When the Bureau of Stats machines were removed and we cut them up with an angle grinder because they wouldn’t fit in the lift anymore, I then transferred to the Victorian TAB. **Misa:** And the Bureau of Stats, when were those machines taken out? **Downie:** I think about 1978 or 1979; right about then. **Misa:** Then you moved to the TAB. **Downie:** TAB, which had similar 3000-type machines, along with 1700 machines. Lots of teletypes; half a dozen of them, I think. And a 300-line crossbar exchange. So it was a very broad scope of things mechanical, electrical, electronic. **Misa:** Physically, that facility was here in Melbourne? **Downie:** Yes, here at Number One Queens Road. **Misa:** Quite close to here, then. **Downie:** Yes, quite close to here. No longer there, the building’s been reallocated to other purpose, and they shifted out of the city proper into the suburbs. **Misa:** Can you make any comparisons between facilities and scheduling of work between the Bureau of
Statistics and the TAB? Their purpose is quite different. **Downie:** Bureau of Stats worked five days a week, and around the clock, midnight Sunday to midnight Friday night. TAB, being the racing industry, was six a.m. to one a.m., seven days a week, although there wasn’t much happened on Sundays. It was fairly rare for race making book on Sunday. But it was a real time live data system so if they were betting on anything happening, then the machine had to be up. Up time was critical. Unlike Bureau of Stats, if it failed, then they just sit around and wait for you to fix it. Although they had two machines and they could run the printers on the 160A, that wasn’t quite so bad. **Misa:** Could you say how that high degree of reliability was achieved for TAB? **Downie:** Provocative maintenance; sorry, preventative maintenance [pause]. **Misa:** It could be provocative, too. **Downie:** Planned might mean scheduling, running margins and replacing things that failed on the margins is what kept its reliability high. The crossbar exchange was a perpetual source of annoyance. I can’t remember who built that but every now and then something would fail, probably due to residual magnetism, and the crossbars would lock in and then not drop out again, and so it would lock up this one, and that one, and the next one, and the one after it, until you eventually lost 15 to 20 percent of your exchange. **Misa:** Crossbar sounds like telephones. **Downie:** Yes, 300 remote betting agencies were connected to the mainframe by this crossbar exchange. **Misa:** So this is really running a computer network, pure and simple. **Downie:** Yes. **Misa:** Not the internet, but a computer network that’s being run through the phone system, set up for a real time application. **Downie:** Yes. **Misa:** Nothing like that had been done in Australia, I bet. **Downie:** The Bureau of Stats had remote terminals that were connected to the 3200. **Misa:** Would that’ve been a real time application? **Downie:** No, not really. It’s the analysis of data collected in the census and the distribution of it when people have requested and paid for information about some particular aspect of business, or population, or age groups, or whatever. **Misa:** Can you give me a sense of about how many people would have been working to keep the TAB running? Just the computer staff. **Downie:** All the external stuff was run by TAB’s own people, and that wasn’t maintained by CDA. There was an engineer in charge and I think three daytime engineers; and a couple of early morning and late afternoon; there were evening shift engineers; about six or eight people. **Misa:** Six or eight, okay. **Downie:** And then shift work, and all of those sorts of things, of course. **Misa:** Now, my understanding is with TAB that wasn’t a single system? **Downie:** When I started there, there were three systems; two [real time race track] systems; and a third one in the basement, which was the accounting system, not time critical. Even to the extent where they had their own gas-fired turbine standby power supply, too, to run the race system in the event of power failures. That’s how time critical it was. We did have, I think, two or three failures in the couple years I was there. One of them was caused by our own people when they were doing on the floor maintenance on the system’s disk drives; a brand new engineer, a university graduate, was working in the false floor installing braided ground straps to cabinets. And because of the old braid, it was corroded and whatnot, and so the big 150-watt iron he was using would get very dirty; they’re inch-wide straps that you have to sweat; solder into it so you could drill a hole and then bolt them to the subframe or to the machine. And he got a little confused and put the iron down on one side, and the rag he was cleaning the soldering iron with on the other, but he got out of sequence and, of course, it smoked. Then you’ve got 30 seconds to get out of the place before it drops half a ton of halon gas into the computer room and shuts down all power to the building. And he got terminated as a result of that; something I wasn’t happy about because I think it was lack of instruction, lack of supervision had caused the fault as much as it was his apparent carelessness. **Misa:** In retrospect, it was a reckless thing to do but you have to be told how to do this type of repair. **Downie:** Well, all that he knew what to do was remove the iron from the rag and go and push a isolate button, and the event wouldn’t have happened. **Misa:** An isolate button to take that part of the system out. **Downie:** Yes, so the halon wouldn’t have been released. He could’ve just simply put out the rag with a CO2 bottle. The fact that he wasn’t trying to do any of that was the reason why the whole thing failed and it wasn’t really his fault; it was lack of training on the part of the company, in my view, but not too many people agreed with me. [Laughs.] Especially my boss. However, there was a 1700 system; have you ever heard the term “schmooing” the memory, the core memory? **Misa:** Schmooing, no, why don’t you describe that, please. **Downie:** Diagnostics run on [DOS equipment], were basically running margins, where you increase the positive volts by five percent, or seven-and-a-half, or ten percent, or twelve-and-a-half percent. And then you do the same on the negative voltage. And then you run splits, both up, both down, and one
with each way. And this shows you marginal transistors and circuits that would normally run but might fail if things got a little bit further down the out-of-bounds area. Schmooing the memory was doing something similar. Core memory use was two power supplies, and you would run the diagnostic loop, and increase the voltage up until it failed, and then reduce the voltage down until it failed, and then split them until it failed, and you would get an area of voltages, and then you would reset it to the middle so you would have the optimum margin for variation before it would fail. And that was schmooing the memory. Misa: What you’re really talking about is techniques for doing evaluation and preventative maintenance and trying to be able to spot conditions or spot components that could fail. Downie: Reliability. One of the things we had to do at the Bureau of Statistics in the early days, all of the printed circuit cards had 15 pins. They were, I think, probably brass or bronze pins, gold plated to make them not oxidize and higher reliability. But somewhere down the track they outsourced that to Mexico, and they were then only tin plated pins, copper pins. And after a number of years, they did oxidize a little, and did become an intermittent fault. So every once in a while you had to pull, in your morning maintenance period between seven and eight o’clock, pull 40 or 50 cards and wipe the pins with a brass-bristled suede brush to delete the oxidation, and then put them all back in again. And that improved the reliability, as well, of the 3000 machines at the Bureau of Stats. Misa: So during this morning maintenance routine, from seven to eight, what other types of activities would you end up doing? You were saying each morning. Downie: Yes, those would be there. You would run margins, you’d run diagnostics, you would run voltage checks, you’d clean filters, you would scour the print drum to get rid of paper dust; those sorts of things. You’d check voltages on power supplies; you would check the action of fan fail switches, all on the routine planned basis of daily, weekly, monthly, quarterly, or half yearly, or yearly. Misa: Certainly, not everything each day . . . Downie: No, no, no, no. Misa: . . . but on a schedule. Downie: You had a specific schedule of things to do on particular days. Misa: How did that maintenance schedule evolve? Downie: Long before my time. It came out of Minneapolis. So no, I don’t know who started it or how they established the failure points, but it certainly worked. Provocative maintenance, as I said, it did provoke problems, but it was problems that were in noncritical time, when the system was unavailable to the customer so you prevented a problem occurring during operating times. Misa: So that was for the Bureau of Statistics. Downie: That was applicable to all equipment with Control Data; terminals, mainframes, the lot. Misa: So the TAB system, though, you got this period from morning until late at night, one a.m., where the system had to be absolutely reliable, so you’d do maintenance during [pause] Downie: Right, it had to be absolutely reliable during times when the TAB agencies were open, when people could bet, or when the telephone system betting was available. But outside of those hours, other than when calculating dividends or things like that; you would then have availability on some parts of the machine. You might take one unit out of seven out of circuit; one disk drive, because there’s redundancy in all of it. So as long as no other unit had an unplanned failure while you had something else that is available to you for maintenance, that wasn’t a problem. Misa: So with the TAB system, there’d be redundant tape units and redundant CPU units, too? Downie: They have two systems running in parallel; one the live machine and the other the backup machine. So if one failed the second one could pick it up immediately, or within seconds. Misa: More or less switching back and forth. Downie: Disk drives or dual access tape units with dual access so they could access system A or B. Misa: So that was another way, then, of engineering real reliability. Downie: Yes. We had very, very few failures that I was aware of. Misa: Are there any other parts of the TAB years, or the Bureau of Census and Statistics years that you’d like to describe? Downie: TAB is something that people who are far better qualified than I am, I guess, where our Ross Laws again might be. I can tell you a bit more about Tic, TAC, and TOC for the System 17 system that was installed in Hong Kong, and Natal, and New Zealand; where again, there were redundancy factors that allowed three machines with three front end machines, and three interface machines, all cross-linked to each other. There was so much housekeeping going on that you really didn’t get any production out of it. But that’s something Ross knows a lot more about than I do; I never really worked in that system. Misa: I’ll hopefully talk with Ross Laws later this week. Downie: There’s up here, other engineers that are far more knowledgeable in that area. But if any of them are still with the company, I don’t know whether we can get in contact with any of them anymore. But it was very much subject to interference from the government, because the contract that created the TAB in the first place, was never a fixed target. Every time you write a spec for something,
they’d come in with modifications and modifications, and additions, and enhancements, and so on, so you never, ever reached the target because it was never fixed. In the end, I think the Labour government sued Control Data for failing to produce the end result and Control Data sued the government because they had cancelled the orders that they had, by contract, to fulfil. I think they each sued each other for a similar amount and, in the end, nobody did anything good out of it, except for the other company that took over, and the lawyers. But that’s something that I don’t know a lot of the detail of it; it’s something that management could tell you a lot more about than I can.  

Misa: What I understood with the [later] TAB contract, it was almost a gentleman’s agreement to get a system up and running without necessarily fixing on defined specifications.  

Downie: Specifications were very rubbery, they were changing all the time. Have you run across Geoff Hipwell?  

Misa: I’ve exchanged e-mails with Geoff, but I’ve never met him.  

Downie: Geoff, I think, started with Control Data but ended up as management in TAB. He can tell you other side of that story, as well, if you can get to contact him.  

Misa: Now, you’d also mentioned that you’d been involved with the petroleum industry in China.  

Downie: Not personally, no. Two of our tech support engineers, Klaus Endress and Horst Simon, had both worked in the petroleum industry in China on leading edge Control Data computers that were supposedly only allowed to run the programs that they were intended to run, but the reality is they did all sorts of things out of there — so I’m told — but I have no personal experience so I can’t enlarge on that at all. It was interesting that Klaus, also, was brought into Defence Signals Directorate to solve a couple of problems. Being German, I was surprised that they admitted that, but he was the key engineer with the knowledge and the troubleshooting skills. He’s one of those typical geniuses, I suppose: hair out [to] here; was what a lot of people would say was extremely untidy, if you looked at his workspace it was stacked out eight inches deep with core dump projects. Help god anyone who tried to tidy it up because he knew exactly where to find the core dump from this site or that site, and when it occurred, how deep down the pile it would be. It was purely archaeological sequence, I suppose. But he was a man that could pick up a six-inch stack of 300 sheets of paper printed 136 columns wide, with a dump of the core of a mainframe, and tell you what was wrong, what failed, which word had failed and therefore, which module in the machine had to be replaced, or 19 the one after, or the one before it. He could solve, in a couple of hours, what other people could spend a week on.  

Misa: How do you think he developed such...  

Downie: I have no idea. He’s way more intelligent than I.  

Misa: Had special insights.  

Downie: Yes. I think he probably fits the genius mould fairly well. And, of course, Horst Simon was very, very close second.  

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Downie: Yes. I think he probably fits the genius mould fairly well. And, of course, Horst Simon was very, very close second.  

Misa: How long did you end up doing the work with TAB, then?  

Downie: I moved out of TAB to Defence Signals Directorate, and I can’t talk about that. Other than the fact that it was the site that we maintained 10 hours a day, and had standby call-in, if need be, if it failed. It was a site that was very difficult to work at because anything that did fail had to stay on site. If you couldn’t repair it on site, it got put in the store [storage] and was left there forever. One of their preventative maintenance routines involved a spike generator, that produced I think, a three or four nanosecond pulse of 300 volts, that you attached to the subfloor frame, and the second lead went on the machines that you were testing, and you would put 50 or 60 spikes into the skin of the machine, basically a static discharge. The mainframe would never fail but the IBM crashed quite frequently so we only had to do it three months, then the...
blank cards, 50 percent punch cards, or 50 percent punch cards, 100 percent punch cards, and I ran through it hour after hour after hour. I blew through [writing] the memories in the core. Having done that for three days, we then took a pair of scissors and cut all the wires around all of the cores, so that we could separate the cores out, put them on a steel plate, and pounded them with a hammer, and then there were taken to the basement and dissolved in acid. Now, if that’s not the nth degree of paranoia, I don’t know what it is. Misa: A little magnetic core beaten to a pulp? Downie: Yes. Beaten to powder and then dissolved. Misa: Dissolved in acid. There’s no data ever coming out of that. Downie: [Laughs.] Nobody was getting any data out of that of any value to anyone. It’s interesting, they shut the site down at one stage because apparently the Americans sat outside in the adjacent street, and they said they could read the image off the cathode ray tubes by analysing the noise, the electrical noise that was radiated out of the building, and so we had to screen the whole floor to prevent that. Misa: Some kind of mesh around the floor? Downie: Faraday caging. It was an interesting place to work and you typically walked on to the site past a glass house with a manned guard; and you showed your pass as you walked through and he’d glance up from his newspaper and he’d look at it. One of our red rag friends that was a very left wing Labour party supporter got a wind of this bloke and he cut out a picture of Mickey Mouse, pasted it over his photograph on his ID card, and he walked through the glass house for about a fortnight. . . . Misa: As Mickey Mouse? Downie: . . . with Mickey Mouse as his photo, until one day, he said, he got about two steps from the guardhouse and somebody hit him square in the middle of the back and said, one more step and I’ll shoot you dead. Let me have another look at your pass. So he was banned off the site after that, but rightly so. On another occasion, there was one of our other guys that said two blokes in [white] coats approached him on the site and said to him where was the x-ray department? We don’t have an x-ray department as far as I know. Of course you do; every hospital has an x-ray department. Oh, no, you’re in the wrong building. They’re next door. Misa: A hospital. Downie: Yes. Oops. So that’s how good their external security was or wasn’t. Very different thing inside the building itself, but that’s as much as I’m allowed to talk about. Misa: Can I ask — and again, not to pry — but how did you end up moving from the TAB, which was a more commercial-oriented site, to the DSD, which is of course a secure military site? Downie: There were regularly two or three engineers that rotated through DSD. One of those left; I think he was riding a bike and got hit by a car and broke a leg so he was off site for quite some time, we know that they replaced. So I was put into that rotation. For a while, then, they decided they were better off with one engineer alone onsite, and unless he was gone to a meeting or something, they had to have somebody else trained to look after it, but that’s all. It got to the point where they’d change the password every month. You weren’t allowed to reuse a password for two years and you weren’t allowed to tell anyone what it was; and you weren’t allowed to write it down anywhere; but everybody had to know what it was. Misa: Had to actually keep the password in your head. Downie: Yes. But if you were then the engineer tomorrow, you had to know what that was; but I wasn’t allowed to tell you; and I wasn’t allowed to write it down; and I wasn’t allowed to record it; and it was different from the last one. Misa: So, a Catch 22 problem, not easily solvable. Downie: Well, we cheated. When it was decided that there would be a monthly renewal of passwords, we said right, the password this month is ... B; and the month after it’ll be C-D-E-F-G-H-I. Misa: You set up a pattern. Downie: Yes. We set up a pattern, which totally defeated the point of having passwords in the first place. [Gesture]. You kept on having them. Misa: And how long did you work for DSD? Downie: About three years. And that would’ve been roughly when? Downie: Would’ve been 1981, 1984. Misa: 1981 through 1984. Downie: I think that’s getting probably fairly close to the management buyout, and CDA becoming an independent company. Misa: Do you have any observations you’d like to share on that transition? Downie: Not so I’d want to put any of them in print. Misa: Okay, that’s fine. Downie: The company was bought out by Philip Michod and Doug Dent, and so the company then became MIDEN, the first couple of letters of each of the two surnames. And I think they were not really aware of where the industry was going, and it was when mainframes were disappearing; that is, Control Data’s mainframes were disappearing. Misa: I would say pretty much everybody’s mainframes were disappearing. Downie: Yes; apart from IBM, and the Japanese companies. Misa: Which they say they are no longer a mainframe company; that’s another path. Downie: Around that time, Control Data Australia really got into the third party maintenance with printers, PDPII, and VAXs, and a few
other odds and ends. And that was the way we were headed when I think corporate decided that no longer would we as a corporation be involved in education, medical, weather forecasting, scientific and whatever other the fifth one was. And so they would get rid of all of the overseas branches and companies, and that’s when the management buyout occurred, as I understand it, anyway. Misa: Would you like to comment on your years after working for CDA? Downie: Yes, because basically the company didn’t change a lot as far as we in engineering were concerned. It became more engineering services and less professional services, and CDI became a totally separate company. I think it was sold to Computer Power, from memory, and that might’ve preceded the management buyout by a year or two. Computer Power, yes, I think that’s what it was. Misa: Computer Power. Downie: CDI had gone through an interesting history, in that I think when it was first started in Australia it was subcontracted out to a lady I can’t recall and don’t want to. Misa: Control Data Institute. Downie: Yes. She basically ran a card punch and review bureau, and it was a sweatshop. The 026, 029 readers and verifiers were stacked into the room to such a high density you had to shuffle sideways to walk between them. After a couple of years of that, then they pushed her aside and the company got seriously involved in it. And I don’t know how long we had it after that it was actually sold off, anyway. I was involved in the repair center, after I left DSD, which was then moved from Cheltenham, the manufacturing facility down there, and brought into Collingwood, when we moved out of St. Kilda Road to Collingwood. We did a bit of external third party repair work for Apple, repairing Mac SE, and that was a very intermittent business. We were, I think, repairing Mac SE modules for a fixed price of $64. Apple could get them repaired in Singapore for $8, but we could turn them around in three days and they took nine weeks to turn them around, but all of the stuff went to Singapore except when they were overloaded and then it came to us. So that was a successful business but an intermittent one. Shell’s franchise service stations, we got an interest in when Shell decided that the company that manufactured the equipment didn’t want to maintain it, but at the same time, Shell wouldn’t tell us what the cost of components were, or the mean time for repair, or mean time between failure. Not sure they even knew, but they didn’t want to reveal it to us, commercial in-confidence. And they wanted the company to do it that was big enough to have the expertise, and big enough to sue for a million for contract failure if it occurred, where they’d gone bankrupt, so Control Data was chosen. And that was dropped in my lap to try and work out what we would charge, and what we’d repair, and what they’d accept, and what the response times would be, and all that sort of setup. And I think in the first year we had something like 40 service stations under our wing, which were predominantly capital cities. And because we couldn’t get the data to base the numbers on, I persuaded Shell and the manufacturer of the gear to change the system so that in fact we could become a distribution point, and a labor source, and a repair source, but that the manufacturer would carry a perpetual warranty on it so that if anything failed, we’d swap it out and they’d fix it at their cost. Because they wouldn’t tell us what the costs were, they wouldn’t give us the drawings of what equipment was constructed of to make it easier to troubleshoot it. That made it much easier for us [and] more reliable for Shell because the manufacturer had the cost if it failed. That’s how it became a win/win situation all around. Misa: So you were handling the servicing but you had no clue about the frequency of failures . . . Downie: No. Misa: . . . and, of course, it would be a huge financial liability. Downie: Exactly. And I think we quoted them something like $1,000 a year for the installation and repair per year, and we offered to maintain their back-office PC systems and their attached printers as well, and I think the going rate in the industry then was something like $300 a year, but we were charging $1,000. And I persuaded MIDENmuch against his knowledge, that we would sell the PCs — which he wanted nothing to do with because we couldn’t compete on price with anybody else — but my argument was if we’re going to maintain somebody else’s system by swap-out, we could end up with 480 sites with 270 different makes and models of PC. On a swap-out basis where, hang on, what I send back to you is better than what you send to me, I want an improved model that’s at least equivalent to mine; I said to hell with that. Let us sell the PCs, we’ll 29 only have one or two model options; they’ll all be the same; so it’s easy to maintain a very small inventory of spares; and it makes sense. Misa: So a standardized model? Downie: Yes, which would’ve been good, except that we started with 286 and ended up with 486, and there were a few service stations that insisted that they wanted IBM, they didn’t want NEC, which was what we were offering. Misa: You became a reseller, then, of the NEC PCs. Downie: Yes. They pay cash with order; NEC would grant us 90 days credit after delivery, so we had no investment
involved and we could make an eight or nine percent margin on it, and [Doug] said no, he wanted a 36 percent gross profit. We said well no, no, no, nobody’s going to wear that. And if they won’t wear it, they’ll use something else, a prospect where we didn’t want to start. And he eventually agreed to that; and that seemed to work reasonably well. Generally speaking, if a PC failed we would replace it in office hours five days a week, based on Australian office hours standard times, and they would replace it. It was up to them to maintain backups, though, so that they could restore their disk drive and that was fine except that NEC disk drives were not particularly reliable. Their failure rate was fairly high on the 36 Meg drive, the base model; and then some opted for the 72 Meg version instead, which were far more reliable, as unlikely as that sounded at the time. NEC was known as not exactly compatible; not engineered correctly.

Misa: Not exactly compatible? Downie: NEC, not exactly compatible, not engineered correctly; not even close.

Misa: Unfortunate. Downie: But they knew that. Sorry. We maintained Shell service stations up a maximum of, I think, about 440 sites, eventually, after six years; and we maintained the price from day one until we finished. Eventually The Hague, Shell head office, decided that no contract could exist for six years without going out to tender, and we lost the tender. Honeywell, I think it was, came in at 66 percent of our base price; and this was in the days when inflation was running around about 18-20 percent. So to maintain the initial price in spite of inflation, we were doing fairly well and making good money out it. Honeywell I think only ran it for about, I think, 12 months and then they handed it off to Wang, and at a loss. And it was at that time, when I think I got retrenched from Melbourne and I think within eight or 10 months the company collapsed, bankrupt, because they had lost their major mainframes, Melbourne University, the bureaus — our M.I.T. — the major cash cows for the company and they just went under. They also took 20 percent of our superannuation along with it. Misa: That was the pension fund. Downie: Yes. It was invested in the company but they’d already filed. And a lot of engineers wouldn’t have been too happy about that; nobody would’ve been too happy about that. Misa: Well, quite an interesting career that you’ve had, Ian.

Downie: Yes. Since then, I worked with Staging Connections, the audio visual company, as their technician, maintaining all of their projectors, and amplifiers, and speaker systems, and lighting control systems, and all that sorts of things. I spent a couple of years installing pay TV multi-point distribution systems, and satellite systems. And that became untenable when the government decided that Foxtel couldn’t take over the company I worked for, so Galaxy went broke. I did a bit of mechanical engineering for a number of companies. I spent maybe another year at SAFCOL, South Australian Fisheries Co-op, back in the can industry again, they are fish canners, predominantly. Have abalone at $25 a can, being a very highly regarded seafood in China, Japan, the East. Until they came up with a proposal to tighten all the tolerances on things I knew was impossible to achieve, and their can making supplier said it was a bit they wanted them improved by 30 percent and that just wasn’t possible so they moved out of Melbourne and lost their major customers. And I did odds and ends then with a clock manufacturing company that does town hall clocks, big clocks. But they also did a lot of electronic clocks as well, including clocks for the gaming industry and the Navy, 32 supplying digital clocks to the Navy, which displayed either nautical time wherever they were in the world at the time, or UST, British Standard time. And from there, I worked at Tenix Defence Systems, the design and manufacturer-builder of Australian Navy frigates; had a three-month contract with them analyzing the data for repair of all the electronic equipment involved in public address, radio reception and transmission; basically everything electronic except radar, telephone systems and all, as well. And that was such a mess with some manufacturers keeping their documentation in escrow where you would never get access to it unless something failed. And that three-month contract ran to 2½ years. Misa: Can I just ask you to make any observations you might on the notable experience I had last Friday, meeting the group of two dozen-plus people that are continuing the CDA legacy. Downie: Australians are a funny people; funny strange not funny hilarious. Unlike the British upper class society, we don’t have that below our middle class. And management would treat each other as equals, so there’s very little to separate the upper level of management to the floor cleaner, and as such, we enjoy social life together. We often had barbecue lunches on the last Friday of the months and have a wine, or two, or three — but never more — a glass of white or red; a decent steak, a few sausages, a hamburger or something of the sort down on the beachfront at St. Kilda, which is only three, four kilometres away from head office. And provide that no one did the wrong thing, and I don’t know of any occasion when anyone did, that continued all of the time that I was with CDA in Melbourne; we used to have a
regular barbecue over at Collingwood as well. **Misa:** So almost a company tradition, during the company time, in some ways that that’s being continued today. **Downie:** Yes. You’d go to lunch at 12 o’clock; you’d come back about one or two, but certainly no later than that. And if you were on site where it was critical, well, you did that; but beyond that, everybody was involved. They had the odd wine tasting at the company office after hours of an evening. Sorts of things that weren’t allowed to be done in Minneapolis. **Misa:** That’s true, yes. **Downie:** There are very few people in the company that would disassociate by choice. There were one or two, but only one or two; and I think there were typically 200 or so in the Melbourne office, you know, around the Melbourne office, and I’d count most of them as friends. I’d probably even be able to pat them on the back and ask them for a lend of a thousand, if I needed it, and I don’t think I’d get too many knockbacks, but that’s the sort of class relationship we had. And still regularly, there’s a dozen or more or up to 23 or 24 that get together on the third Friday of the month. **Misa:** That was the experience that I enjoyed last Friday. **Downie:** Yes. There were more there last week than there would normally be simply because you were there. And there were people that wanted to hear what you had to say and maybe offer some information as well. So, yeah. It was a company I enjoyed working for, and a job I loved to do, it was never work, as such; it was more like being paid to do your hobby. Electronics has been a lifelong interest, and still is. I’m an active amateur radio ham; still building electronics, transmitters, receivers; still involved in a home brew group, where we try and encourage people to live up to the spirit of what the amateur radio license is about, improving self-knowledge and experimenting, pushing the boundaries of knowledge; being involved occasionally in critical things like the tsunamis, the hurricanes, and the like. When all else fails, amateur radio will still work. Been involved in the recovery efforts after bush fires here in Australia; only twice, thank God, actively providing communications when mobile phone towers were out of action and there was no power in the area, but they still managed to be able to keep in contact with people. **Misa:** That’s right; hams have been pretty creative. **Downie:** It’s something that seems to be a dying race to a large degree; where it’s hard to get the very young involved, unless you go to the preteens, scouts and guides, they’re very much into technology. If you can get them to build a Morse key and sound a code, has some magic about it. We’ve managed to get some of them back, interested in amateur radio. Australia was amongst the first to introduce a new grade of ham, since they got rid of Morse code as a requirement. Something that I’ve never been able to master in 30-odd years I’ve been interested in amateur [radio], partly I suppose, because of hearing deficiency. And that’s the result of working in the can making industry 15 years; the ambient noise level was around 105 dB, in parts. **Misa:** 105; very intense. **Downie:** 105. And that’s cost me the hearing in the 2K hertz range. It’s 93 dB down at 6 KHz. So when I’m in a quiet room like this, I find listening pretty easy and could probably take the hearing aids out and I’d get away with it, but then bring in three or four others I’d have to have help. **Misa:** Well, any other comments or observations that you’d like to record today? **Downie:** No, I think that covers most of what I thought to talk about. **Misa:** Great. Appreciate your time, then.
Conducted by the head of a computing center and it was unusual in that the topic was advertised as being computer programming. But the man himself had thought that it was about linear programming, so he got a bit mixed up. By the time he worked out what the topic was meant to be, he adapted his talk to be computer programming, about linear programming. And that went for maybe an hour or so and when we came out, most of the students with me were sort of shaking their heads, wondering what it was all about. Misa: What is linear programming? [Laughs.] Baxter: And I thought to myself, I understood that; maybe there’s something there. So investigated further, and he was the head of computing at what was then Caulfield Technical College. Misa: Caulfield, okay. Baxter: The name later became Caulfield Institute of Technology, and later became part of Monash University, which it is now. So investigated it further and enrolled in a diploma course at Caulfield Tech, so that was my entre into computing. Caulfield Tech, at that stage, had a single computer, called a Ferranti Sirius, which was a very slow, very small capacity machine that ran on paper tape input and output. We wrote student programs to run through the Ferranti Sirius. I also managed, as did a few others, to get a part time job in the evenings as a computer operator in the computer center. So that helped me just with the interest, if you like, and also earning a couple of dollars. Dollars? Were they pounds then? Yes, they were still pounds, before we switched to decimal currency back then. So it’s that long ago, 1965. Misa: 1965, okay. Baxter: Caulfield Tech later got a much larger, much faster computer called a Control Data 160-A, which readers of this might know, is essentially a desktop machine. And that was interesting, and I got to program that. After finishing at Caulfield Tech, I joined a company called Felt and Textiles. Misa: And what year, do you recall? Baxter: Late 1967 that would be, because I actually joined before I finished the course, so I was working part time and studying part time. So I worked with Felt and Textiles on Honeywell equipment, mainly writing what we’d call commercial programs to manage processes, invoicing, and stock control, and so on, for carpet manufacturing. Misa: So on the financial side. Baxter: Yes, the financial and the physical stock inventory side. In parallel with that, a friend of mine, a member of the baseball club that I played with, was a sales representative for Control Data’s Data Centre Division. We were talking fairly late one night, I guess, or maybe it was after a baseball game one time, but with a bit of lubrication, and we got into betting. “I bet I can get you a job at Control Data.” “I bet you can’t.” So we went like that for a while. He arranged for me to have an interview with the manager at Control Data, who offered me a job, not quite on the spot; matter of fact, between when he told me he was going to offer me a job and when I got the offer was nearly two months. This was in 1969. So I joined Control Data in July 1969, about a week before Armstrong walked on the moon. Misa: Yes. Baxter: One of the early things I did was sitting in a darkened room with a black and white TV, watching the moon landing. Misa: Okay, right. Baxter: So it was a Data Centre Division; we operated a CDC 3300 computer running what would then have been called traditional service bureau programs. Our customers were commercial companies running accounting, stock control, financial type systems on the 3300. They prepared their data input; we would’ve written the programs for them, in many cases. A lot of the business was transaction-oriented, and a lot of the charging to customers would’ve been transaction-based. So if they put in 200 invoices, they might be charged $5 an invoice for the customer processing. Misa: That was here in Melbourne? Baxter: That was here in Melbourne, yes, all of that here in Melbourne. So my role at that stage when I first joined was writing programs to run some of these financial and accounting systems. Misa: And what languages did you use programming? Baxter: COBOL language. Misa: COBOL, which for Control Data, was a move out of the scientific FORTRAN. Baxter: Yes. But we did a lot of COBOL. We would’ve had 20, maybe 25 COBOL programmers here in Melbourne, writing commercial software for the Service Bureau. Back track a little bit; while I was a student, as well as having the computers at Caulfield, we used to some of their processing offline. We’d write programs, and they’d be put onto punch cards, and taken off to places like Monash University, which had a CDC 3200, or sometimes the Victorian TAB, but at that stage were just getting up and running the 3100s. And so I had a history as a student, of dealing with Control Data equipment at some level, and that, obviously, led me to respect for the company, if you like; served as part of the interest there rather than be interested in IBM, and Honeywell, and others. As I mentioned, at Caulfield we had a 160-A. We also had a 160-A in the Data Centre after I joined there, and nobody else in the Data Centre, I think probably a couple of engineers, but nobody else in the programming side had ever worked with a 160-A before so I had some knowledge of a language called OSAS [One Sixty Assembly System], which was a machine-
oriented assembly language. And one of the jobs I was given was to look after the programs that ran or that needed to be written for the 160-A. That’s one of the particularly interesting projects that I worked on. It had already been started before I joined so I didn’t initiate it but I helped look after it for a number of years. The Melbourne Trading Post was then a newspaper and you might liken it to a newspaper version of eBay, people buying and selling. People would phone in advertisements and they would be charged for the cost of the advertisement after the product had sold. It’d run for maybe two editions. It came out every week or maybe every two weeks. I think it was every week that a new edition of the Trading Post came out. Misa: We used to call it classified ads, in the U.S. at least. Baxter: So it was classified ads, yes. But this was a specialized newspaper run by a small company and that’s all it did. It didn’t do news, or movie reviews or anything like that; it was just classified advertisements, personal buying and selling. The way it worked was that the Trading Post people, receptionist, telephonist, whatever one might call them; they took advertisements over the phone. So if I wanted to sell a piece of furniture, I would call the Trading Post, they would type the details onto a continuous fanfold sheet. They were typed in an OCR optical character recognition font, using special typewriter font, because attached to the 160-A we had a thing called a CDC 915 page reader, which was a high speed optical character reader that could read one page at a time. We’d take the data directly in from the Trading Post typists, convert it onto magnetic tape, and that magnetic tape would then be taken onto the 3300 to run in the main applications. And that was two things: one was an accounting application that would take the details of the item to be sold and how much the customer was going to be charged, and so ultimately, the invoices for the customers would be printed. The other program that ran on the 3300 was an automated typesetting program that had been written by a local typesetting house. Misa: Typesetting. Baxter: Typesetting. Misa: That’s notable. Baxter: Yes. And it took the straight typing characters, words, formed them into columns and did justification, whatever, to set up for an offset printing machine, so that from phoning to place an advertisement to receiving the newspaper or receiving the invoice, it was all automatic. Misa: So it was typed once, is that right? Baxter: Yes, typed once, run through the OCR, put onto magnetic tape, and then split into two streams, one which became a set of ads themselves in the newspaper, the other which became the invoices that went to the customers. Misa: So this typesetting program, you said, was done locally by CDC or by a third party? Baxter: By a small third party software house. It was a very small software house, but as part of Australian history, I guess, was a company called Computer Power. Misa: Computer Power. Baxter: Computer Power, that became a very large company, and one of the leading companies in the industry of the time. But at that stage, it was essentially a two-person typesetting house in late 1960s, early 1970s. Misa: Computerized typesetting was something pretty new. Baxter: Yes, there was a lot of computerized typesetting going in in the sense that there were front ends that you could directly input into the typesetting machine, but this one was taken from one step further back, doing the pre-typesetting and some degree of proofreading available on the 3300, before then going to the actual typesetting machine to produce the galley proofs, and the data to go into the printing machine. So it was, I think, if not a unique application, certainly unique within Control Data and I think unique within Australia because there was nobody else in Australia doing that sort of thing those days. It was quite different and it’s just an example of the sort of thing that set Control Data Australia apart from the rest of the Australian industry, as well as setting it apart from the rest of the Control Data world. Misa: Setting it apart from the rest of Australia in the sense that . . . ? Baxter: In the type of application that it was. It was fairly speculative in that a typesetting program might not work and, in fact, needed quite a lot of maintenance. Every now and then we’d get a phone call from the owner of the Trading Post saying, my paper’s come out and produced like this, like this, like this. So we had to analyze the typesetting program because the Computer Power people would say well, it’s something to do with your computer doing it wrong, and of course we’d say no, it’s your software. Misa: The software, right. [Laughs.] Baxter: So we’d get into a cooperative problem solving thing. Misa: So Melbourne Trading Post would be coming out every week, you said. Baxter: Think it was every week, might’ve been every two weeks, a couple times a month at least. Misa: Well, today you would say it’s a graphics problem to try to line up text in columns, and then directly setting the adverts. Baxter: ‘Yes. So it was quite different.’ Misa: And what kind of work did you end up doing during that? Baxter: I was maintaining the software on the 160-A and helping to maintain the software and interfacing with the Computer Power people on the 3300. And occasionally needing to interface with the Trading
Post people themselves; but that was more my manager who dealt with them when they had problems, or when we needed to sell them an extension of their contract, or whatever. **Misa:** And you mentioned that Computer Power became a larger company; I don’t know the principals who were behind Computer Power. **Baxter:** At the initial time, the principal was a guy named Jack Vale, who was an expatriate American. But he’d likely got investment from a guy named Roger Allen, and Roger Allen became one of the leading lights in the computer industry in Australia and then made so much money out of doing all that that he became a venture capitalist. **Misa:** As a venture capitalist; you start out with lots of money and then multiply that if things go well. **Baxter:** Yes, but I’m not sure if he’s still doing that or if he’s retired now; he’s getting on a bit. That last time I saw Roger would’ve been about seven or eight years ago. So that’s an example of the sort of stuff we did. The scenario, then, we had the 3300 in Melbourne; we had what one might call in the 1960s, traditional service bureau customers doing transaction processing, sending us data, receiving printed outputs from. Now, in parallel with that, the Sydney Data Centre has been established, based on a CDC 6600, which was doing more in the nature of scientific and technical work. **Misa:** And a 6600, of course, would have been at the time the top of the line of large capacity machines. **Baxter:** It would’ve been the most powerful computer in Australia; that individual one. So it was based in Sydney, but we had a number of customers in Melbourne who used it and there were two ways of accessing it from Melbourne. One is that we had a couple of terminals connected into it, so we could read programs or data on punch cards, transmit them up the line to the Sydney Data Centre and process them there, then have the results come back and be printed. Or if there were large scale printouts, as a result they might’ve been printed and physically shipped down. So as a result, we had a public access for that. We had a number of customers who just had small, occasional requirements and a couple of the larger customers had their own terminals, so terminals in their own premises that were connected into the 6600; companies like BP (British Petroleum); and BHP, which is Australia’s largest company. So they were doing technical processing; BP doing things like analysis of oil exploration or of petroleum mixtures going to refinery application. **Misa:** Did I understand this correctly, focusing on the larger customers, British Petroleum or BHP, that they would have terminals but then the terminals would also have a measure of public access? **Baxter:** Not in their places, their premises. They had their own terminals. **Misa:** Okay, so those would be . . . **Baxter:** Leased terminals with a leased line connection directly into the Sydney Data Centre. **Misa:** So that wasn’t public access, that was strictly then for their own [pause]. **Baxter:** We had public access in the Melbourne Data Centre. Indeed, representatives of both of those companies would come in and use the public access terminals until they developed enough data volume, usage volume to get terminals in their own premises. Then they were connected by land line, the leased line, directly to the Sydney Data Centre. **Misa:** The terminals that you had connected to Sydney, those were also through a telephone line? **Baxter:** Yes. **Misa:** Were there any special requirements for the telephone line? **Baxter:** Well, the telephone lines at that stage were fairly low speed and they needed to be fairly good quality, so they needed to be structurally not just a normal dial-up phone line. **Misa:** Those would be the so-called leased lines that were quite expensive to operate? **Baxter:** Yes, they were quite expensive at the time. Telephony in Australia, at that time, was quite expensive because of disparate populations with lots of space in between. The whole data communications was really just getting off the ground, if you like, at that point. **Misa:** The distance between Melbourne and Sydney is . . . **Baxter:** About 600 miles. **Misa:** 600 miles. **Baxter:** Yes, 1,000 kilometres. **Misa:** Thousand kilometres, so that’s a long line. **Baxter:** Yes. So with that scenario, the business volume out of Melbourne became such that we had, in fact, installed the highest speed terminal in the public access area. And then at that stage, Control Data in the U.S. had developed a system called Shadow, which allowed our 3300, or 3100, or 3000 series computer to connect to a 6600 and to be used as a terminal. So we had the 3300 in Melbourne and installed the software on it to 16 effectively emulate a high speed terminal, and connect into the Sydney Data Centre via high speed telecommunications line. And part of my job at that stage [interrupted] **Misa:** And that’s different than the high quality leased line . . . **Baxter:** That’s different, yes. **Misa:** . . . for larger internal capacity? **Baxter:** Internal 20 times the speed. The leased lines were typically 2400 bits per second, and the high speed line that we ran between the data centers was 40,800 bits per second. **Misa:** 40,800. **Baxter:** Yes, 40.8 kilobits. So my role, I’d moved out of the commercial programming side of the data center into software support, so I was supporting and maintaining the operating system on the 3300 at that point. **Misa:**
Just let me clarify, Shadow would be running on the 3300? **Baxter:** Shadow was a set of programs that ran on the 3300 and imitated a high speed data terminal so that the 6600 thought it was talking to a terminal. The 3300 was running special software to emulate the terminal, so we were then inputting data over the counter, 17 or via local terminals connected to the Shadow system. Then the data would be pumped up the line to the 6600, which would run the programs, and the data would then come back down the line and the results would be printed, because we’re still talking about printed data at that stage. We’re not talking about graphical representations, so it’s all printouts. **Misa:** Right. You said that the business volume was growing. Do you remember some of the larger customers or some of the sources of that growth? **Baxter:** A lot of the source of that growth was in the construction industry. We were doing a lot of finite element analysis of structures and structural engineering, as well as a lot of financial modelling so the data volumes had got high. For example, one of the customers; there was a tragic incident here in Melbourne, with a bridge called the West Gate Bridge, which is a quite a large bridge over the lower part of the Yarra River. When the West Gate Bridge was in the process of being built, it fell; or part of it fell. I think 35 people were killed. A lot of analysis was then done as to why did it fall and how can we design it better so we can build a proper one next time. So the company that had the structural design contract for the rebuild was a customer, and would come in and run its structural engineering programs in the Melbourne Data Centre, but using the Sydney computer. So they’d run through the Shadow system. And typically the output of a structural engineering analysis might be a couple hundred pages of numbers that an engineer would then need to interpret. And we were doing processing for many large engineering companies in buildings, in water works, not so much in electrical works. I suppose there were some electrical works; but also oil exploration, and mining exploration, and mining design. **Misa:** So these would still be more scientific-type applications, rather than business applications running payroll or financial things. So this was number crunching intensive. **Baxter:** Yes, it was relatively little of that at that time; yes, big intensive computing stuff. **Misa:** At some point in time, I’d be interested in your experiences with Cybernet. **Baxter:** We’ll get there. **Misa:** We’ll get there, okay. **Baxter:** Yes. In fact, the 6600 in Sydney was part of what became Cybernet. It wasn’t called Cybernet back in 1971, which is about the time we’re talking about, but it really is what became Cybernet. My role at that point, at the start of all that, was to get the Shadow system on the 3300 and get it to talk to the 6600, and there were two complications very early on. One is that we’d been advised by I’m sure very competent and very highly paid people or so; and certainly not something that went 1,000 kilo metres or so; and certainly not something that went 1,000 kilometres. So their engineers needed quite a lot of memory on the 3300 and we r

**Baxter:** And these are programs that are running fine on 3300s in the U.S. where they have larger configurations. We would have to take a lot of unused code out of them to make sure that they’d run, and, of course, then verify that they in fact still run, that we hadn’t taken important stuff out. So that was one of the interesting challenges that took quite a bit of time, really, to get it running. The second complication was that the local Communications Authority, which was then the Postmaster General’s Department [PMG, later became Telecom Australia, and is now called Telstra]; they had never implemented a long distance wideband line before. They had done short distance, like building to building, high speed data communications but never anything over maybe a kilometre or so; and certainly not something that went 1,000 kilometres. So their engineers needed quite a lot of assistance in debugging the interfaces. Our engineers worked with them to make sure that the hardware talked to the hardware. But then we had to make sure that the software correctly talked to the hardware, and then correctly talked to the computer in Sydney. So there was a lot of work by the PMG engineers, extremely competent people but just doing something they’d never done before. So that took a while and there’s complications; and then something still didn’t work. And we discovered eventually that was simply due to the distance; that some of the timing in the software was assuming that you’d send data and you’d get a response by such-and-such a number of milliseconds. And in fact it didn’t work because we were operating over a longer distance than any comparable configuration in America, so even though we were doing essentially the same job that data center and Shadow systems were doing in
the U.S., because of the distance, we had quite a lot of chasing of problems that hadn’t been encountered elsewhere in the world. **Misa:** I think, from the e-mail that you sent to me, it was also the case that it was a bit complicated because there wasn’t just one line but there were two local lines, relatively short . . . **Baxter:** Yes, they were. **Misa:** . . . but this long line was really the main technical challenge. **Baxter:** Every time you have to go through the switching mechanism you’re potentially introducing another delay. So there was that sort of delay. **Misa:** That’s right. The local computer, the local line, the long line, and then back to the local line in Sydney or Melbourne. **Baxter:** Yes. So essentially, we would send some bits or send a packet of data and wait for an acknowledgement. We don’t get the acknowledgement, we assume the line’s dropped out. And in fact, the line hasn’t dropped out, it’s just that he’s received it and sent the acknowledgement and then he doesn’t get anything so he thinks the line’s dropped out. By that time, the software’s given up and we have to get it to work longer at both ends. So we had to get our colleagues in the Sydney Data Centre to modify their software, which they really didn’t want to do. **Misa:** Because each one of these millisecond delays to a computer is a vast amount of time. **Baxter:** Yes. We’re talking about milliseconds. **Misa:** Milliseconds, not microseconds. **Baxter:** Not microseconds, milliseconds, yes. And our computer 6600 had a cycle time if I remember rightly, of one microsecond; and the 3300 was something like six microseconds. So the computers themselves were all fast enough, except that the software we had told to expect a certain amount of time, but it needed to wait a lot longer than that. So it was interesting, it was all solvable, but it was something that hadn’t been encountered elsewhere and it took us quite a bit of time to get it all running. When it got up it ran really well. **Misa:** This is part of the history of networking that we tend not remember correctly because we think that the ARPANET was the first network. That’s far from true because all the big companies, Control Data, and DEC, and IBM were also running their own proprietary networks with some of the same kinds of experiments with networking, and distributed computing, and on and on and on. **Baxter:** Yes. In later times, we were also running internal e-mail systems before anybody was using the term “e-mail.” **Misa:** E-mail, that would be useful to record today, too. **Baxter:** Yes. The key word there is Technoteck. **Misa:** Technoteck, okay. **Baxter:** T-E-C-H-N-O-T-E-C, which was our [CDC] system that ran somewhere, that effectively was our internal message switching system. But we think it was used quite a lot as the normal communication method. You could send faxes or whatever, which weren’t really being used much then. So it was a rudimentary form of e-mail. **Misa:** And you could use that not only to communicate within Australia, but then also to the U.S.? **Baxter:** Yes. That was the main thing; we used it to communicate to the U.S. a lot. Most of the year, we didn’t have an overlapping business time. **Misa:** Right. I’m still puzzled at the plus-seventeen-hour/minus seventeen-hours; and I’m still scrambling to figure out what time it is. **Baxter:** Right. So we’re talking to Minneapolis or to the East Coast, we used to [pause] **Misa:** So being asynchronous was a huge help then, in terms of being able to send messages? **Baxter:** Yes, send something and get a response the following day. Yes. **Misa:** Do you remember when you ended up getting Technoteck here, roughly? **Baxter:** It would’ve been in the early 1980s, I think, when we first started using it because I remember one issue I had with it. I was traveling to the U.S., traveling to Minneapolis on a business trip, so that was when I was in Sydney Professional Services, in 1981, and I’d been in communication with some guys in Denver. We did a lot of mining computing work out of Sydney. We had what we called Cybernet Mining Data Centre, where we did analysis for mine planning, and geological exploration, and so on. They were doing similar things in Denver; that was where the mine activity in the U.S. in Control Data was happening. And I’d been talking to a guy who’d been visiting us. He’d visit with us from Denver for a few weeks. So I was going to go to Minneapolis and I thought it’d be interesting to drop in to Denver and see what they’re doing. So I was communicating using Technoteck and was getting no reply. I discovered later that in fact they had been replying and wondering why I hadn’t acknowledged their reply. We were using the international Technoteck and they were using the local North American Technoteck, and they didn’t realize that what they were sending out was going into a different network hub and it was never getting to us. Minor issue. **Misa:** We think of e-mail as seamless but in the early days . . . **Baxter:** There were certainly seams. [Laughs.] **Misa:** Is it a good time to pick up the coming of Cybernet here? **Baxter:** Yes, sure. Quite appropriate, because as time went on; as the whole data processing grew larger, it was determined that the amount of compute power that we had in Australia for Cybernet wasn’t enough, that we needed more than just the one 6600. And this had been upgraded I guess a couple of times,
by that stage. So in 1974, when the ultimate installation happened, in 1974; so the decision would’ve been in 1973 to install essentially a replica of the Sydney Data Centre based in Melbourne. So we had our own high speed scientific computing hub, and that was a Cyber 74, which is an upgraded technology version of the 6600. It ran the same operating system and had the same amount of onboard memory, but it could support larger volumes of mass storage; it had more data channels. And so we installed that in a customer’s premises. One of our customers was BHP, in the city of Melbourne [about 2 miles away], so not down here in St. Kilda Road. And they had worked an arrangement where they got some over the counter access to the data center, and allowed it to be installed in their building, so the special purpose computer room was built in their building. We installed the system probably in 1974; I guess the early part of 1974. So I was the site system analyst/manager, site support manager. One of the interesting things that happened very early in the piece, we had a dramatic failure of the hardware. The Cyber series and the 6600 were all water cooled computers and the hardware failed because the water pressure within the building BHP has was much higher than we had been told it was, and much higher than the tolerance of the computer. So, effectively, some gaskets blew in the cooling system and sprayed water throughout one bay of memory. Misa: Oh, good gravy. Baxter: And the first I knew of that was when I turned up one morning and the engineering leader came out and said, do you know anybody in the electronics industry in Melbourne? Well yes, I do. Do you know if they have a vacuum drying oven? I don’t know what’s a vacuum drying oven; so we got over that little problem. So I rang my friend in the industry and he said yes we do have a vacuum drying oven. And we put all the memory modules into trays, put them in the back of a taxi, and sent them out to the company that my friend worked for, and dried them out in their vacuum drying oven. And those memory modules were much, much better than the other memory that we had from then on, because they’d been cleaned. [Laughs.] Misa: The memory modules, what would be the form of memory? Core memory or semiconductor memory? Baxter: They were core memory. Were those core memory? Yes, I think they were. Yes. It was the next, the Cyber 170 series was semiconductor memory; the Cyber 70 was still core memory. And so our memory module would’ve been about six inches long, by about six inches wide, by about three inches deep. But anyway, there was a bay of a number of modules that made up the whole core memory of the machine. Those all had to be unscrewed and taken outside to be dried in vacuum. Misa: They weren’t damaged, they just needed to be dried out and cleaned up. Baxter: Yes. They had received some spray or I think in some cases, some physical drenching, and in some cases maybe only a bit of vapour, so [there was some] condensation. That was interesting. But we got it sorted and we got the system up and running. Misa: The vacuum drying oven did the miracle. Baxter: Did what it was meant to do. Misa: Okay. Baxter: So in 1974, that machine was, I think, of those that we’re allowed to know about, the most powerful computer in Australia — for about three weeks — until they put a CDC 7600 into CSIRO in Canberra. Mind you, I think there are other computers in Australia that we aren’t allowed to know about, that are probably bigger. So the Melbourne Cybernet customers, and indeed, customers in other cities — Adelaide, Perth, Tasmania — connected into the Melbourne Data Centre instead of the Sydney Data Centre. So they were operating completely independently but we did have the ability to transfer data between them. But it wasn’t a regular thing that somebody dialling into Melbourne to run stuff on the Sydney computer. Misa: So almost two parallel systems, and some matching. Baxter: Two parallel systems, yes, with communication between them. The next stage of Cybernet was the installation of a time-sharing machine in Melbourne, running the KRONOS operating system. So the two previous earlier data center machines ran SCOPE, which was more a batch processing oriented system, multi programming, meaning you have a number of programs in various stages of execution at the same time. The programs would sit in the computer and run, whereas the time-sharing, somebody would sit at a terminal and interact with the program. And so we installed that machine in the Melbourne Data Centre to run the time-sharing KRONOS system. In some cases, we could input data into the KRONOS system and send it to the SCOPE system, so we had more of a true network at that time. And that was set up in 1977, 1978, that sort of time. Misa: So was the KRONOS machine a separate machine entirely? Baxter: It was a separate machine entirely. It was a Cyber 73 and it was a completely separate machine, in a separate building because the Cyber 74 was in BHP, up in Melbourne city. Cyber 73 was installed down here at 493 St. Kilda Road, which is where Control Data had moved to by that time. No, sorry, it was in 598 St. Kilda Road. It was before they’d moved. Misa: So there were two high end machines in Melbourne,
but aimed at so to say different types of applications. **Baxter:** Different types of applications, yes. Different levels of customer, I guess; in that some of the customers on the time share machine would’ve been possibly students or companies that would have one-off occasional computing requirements. Some of them were, I know, financial companies that maybe had dial-in terminals and would connect to the machine that way, from a portable dial-in terminal. **Misa:** So it’s a network they’d be running remote terminals over phone lines. **Baxter:** Yes, sitting in their office, that they’d plug their telephone handset into the data port of the terminal and would dial in [pause] **Misa:** Acoustically coupled? **Baxter:** Acoustically; yes, mainly acoustically. Some of them were probably connected in a different way, but most of them were acoustically coupled. Many of them were portable, equivalent size like a typewriter but about the size of a large laptop computer these days. And it had a little printer instead of a disk drive. Often a thermal printer would’ve been part of the computer. **Misa:** All of a sudden then you’ve got access to a quite powerful network. **Baxter:** Yes. **Misa:** Interesting to think about what kind of a psychological experience that may have been for people. **Baxter:** Yes, that’s right. So that takes us into the late 1970s and Cybernet. So some of the customers were larger industrial companies. One of the biggest customers that we had was Telecom Australia, which was the telecommunications authority, who were a major user of the Cybernet system in Melbourne. And they had a lot of specialized application software, some of which we had written for them. **Misa:** My understanding is that the Telecom applications generated a lot of business and a lot of revenue then too. **Baxter:** They generated a lot of revenue for our Professional Services division, and in the late 1970s I was the District Manager in Melbourne for Professional Services so I saw a lot of that revenue come across my desk. They also generated a lot of revenue for Cybernet and, in fact, if Professional Services hadn’t gotten its revenue by writing the programs for Telecom, then Cybernet wouldn’t have got its revenue either, so it was a hand-in-glove type of situation. **Misa:** The two sides actually worked together. Could you comment on something that people have told me? In their perspective Cybernet, when it first came to Australia, was more directly coupled not to CDA, but to Minneapolis. Then over time it was more regularized and then run as a division of CDA. **Baxter:** Yes, that’s right. It wasn’t called Cybernet back in the late 1960s, but it was physically in Sydney. The director of that division was in Sydney and reported back to Minneapolis, rather than to somebody in Control Data Australia headquarters in Melbourne. So business wise, it was somewhat autonomous from the rest of the Australian business and, yes, that was a bit of a challenge, I guess, for both parties. The structure changed in the early 1970s so that Data Services Division [later Cybernet] reported as part of the regular Control Data Australia management. We went through a period where there was a lot of distancing, because of the different goals of the different business types. Cybernet, Computer Systems, Engineering, Professional Services, each had matrix management lines into Melbourne and back into Minneapolis; and had certain business goals. Sometimes the business goals of one division got in the way of the business goals of other divisions. **Misa:** Do you have an example? **Baxter:** One example was in the late stages of Telecom, with Cybernet. The Telecom people were wanting to purchase their own computer. They were putting so much processing through it, arguedly, it [the processing cost] justified them having their own system and there was a certain push for them to buy their own computer. Now, at that stage, the operating systems that were run by Cybernet and by hardware customers of Control Data were somewhat different. Cybernet had put different things into its operating system for data security, for accounting security, and so on. So the operating systems were a bit different. So what Telecom wanted to do was to have their own computer that wasn’t shared with other people because it would be cheaper for them to run their own computer instead of paying fees to Cybernet. Our computer systems division was keen to sell them a computer because it would’ve been a fairly large sale, and Cybernet division wasn’t keen to lose the revenue. **Misa:** Because that was fairly large. **Baxter:** Very large. So there was a non-sharing of goals to put it diplomatically that way. It got to the point where potentially there was an arrangement that could be worked out that there could be a facilities managed computer in Telecom premises, but managed by Cybernet, but solely for Telecom’s use so that the costs to Telecom would be as though they owned and operated the computer. Or, that computer could be in Control Data’s premises but facilities managed as the Telecom computer, not the public use computer. And that could’ve happened; and it might’ve been able to be arranged so that Cybernet didn’t lose the business but computer systems division got the business. And it never happened, and I guess in time Telecom went away. **Misa:** Arranged a compromise or
adjustment between those two competing choices of ongoing revenue versus a very sizeable sale. Baxter: The business goals of the two divisions got in the way of each other. And there was some animosity locally between people in different divisions. Misa: You mentioned security as being an important issue for Cybernet. Can you say a bit more about the computer security and what kind of a concern that was, and how Cybernet responded to that? Baxter: I can give you a couple of examples. I remember in the early days, when we had the 6600 in Sydney, and public access terminals in Melbourne, I can remember one person from one customer having put his program into the computer, and waiting it to run, and watching — not watching it run because you couldn’t — but watching it go through some time steps and waiting for his output; and sitting in front of the terminal and more or less wrapping his arms around it so that nobody else could see what was on the screen, because in his case, I guess he’s doing petroleum exploration or mining mineral exploration. Misa: Somebody could’ve looked over his shoulder and gotten insight into something that was tradable knowledge. Baxter: Might be tradable knowledge. So, you know, there’s a degree of paranoia on his part. But when we then got to public access computers with data sharing, so that printouts would come to the data center, be printed on the data center’s computer, and separated by job number by the computer operators. We needed to be sure that the job number for one customer went to that customer and didn’t go to another customer. So there was a lot of control; lot of training of the computer operators. And within the systems, if we had terminals connected in, we needed to be sure that the data that was meant to be sent to terminal number three went to terminal number three. Misa: And not to #4, or 5, or 6. Baxter: I have an example. In 1976, we had by then sold a large computer to Defence Signals Directorate, which is the Australian equivalent of NSA, so they’re doing code breaking and data analysis, at that time. And we were training them on the new system, because it was radically different from the old system. We had provided them with a terminal that was connected in to the Cybernet center so that they could run some of their programs, simply to make sure that the data worked properly, that their programs worked correctly, and that their people were getting trained. I get a call from them one day — they were just across the way here, not too far, about a five-minute drive from the data center — I got a call from them one day: can you come around please. So I went around there and they showed me a printout that had come out on their terminal, from one of our other commercial customers. Misa: Oops. Baxter: Yes. We had a — I forget whether it was a hardware or a software fault — but there was some technical glitch that had meant that the wrong files had been sent to the wrong place. It was our concern that they’d seen somebody else’s data. They were even more concerned that somebody else might see their data, because their data wasn’t meant to be out of their building. Misa: Right. And they’re sending it into this public system. Baxter: I mean, they were only sending non-secure stuff, but they were concerned at what does that mean with security of the operating system? And security of the data transmission? So there was also the data management and accounting, that typically saw that their operations were based on our program running and using so many computer cycles; or some many data processing seconds; and so much mass storage. So there had to be a lot of very accurate accounting of all that so that customers didn’t get incorrectly billed. Misa: In terms of security, there were also pressing concerns about data and program security within the computer, as well. Did you have any experience with that? Baxter: Not that there was any issues with it, really. Within the computer, the operating system was set up pretty well so that programs couldn’t interfere with each other and couldn’t; every now and then you might get an issue, but not really. I think the operating system’s internal security was pretty good. Misa: I know with the proper time-sharing system, they’re not supposed to be sharing resources or getting access to unauthorized resources. But, of course, sometimes that happens by accident or by design. Baxter: Yes, well user names and passwords were probably not as secure as they are these days. So the general data security was to some extent to be learned as a new discipline back in the 1970s. Misa: Right. And there’s some parts that we’re still learning today, actually. Baxter: It’s true. Misa: Far from unsolved problems. Baxter: The Cybernet operating system was different, say, from an operating system sold by Control Data on a computer going to a university, because the university didn’t care so much about its student processing security or its research processing security because it was all within the university. And the industrial company, because it was all within the company. Whereas within Cybernet, we’re dealing with the public, essentially, and each one thinks they’re the only one there but of course, they’re not. Misa: Right, that’s the illusion of time-sharing. Baxter: So a lot of
the software security needed to be at a higher level within Cybernet, for a higher level of surety. But the security was heavy, so part of what that meant was the features of the operating system, in many cases, tended to lag what was available within Control Data computer systems, simply because any security and data management features needed to be retrofitted whenever a new version of an operating system came out. So we had a large team of software support people in Cybernet doing that. **Misa:** So you needed to get the feature but then you'd also need to make it secure for public access. **Baxter:** Yes. One example we had, there was a new range of disk drives that Control Data released. They were available if you bought whatever model of Control Data computer to put in your building, you would get it with the new model disk drives. The Cybernet system couldn't get handled by those disk drives because it needed some upgrades to the operating system, because it lagged. So it was sometimes many months before the newer model disk drive might be available on the Cybernet system. Even though when they were there, the even greater capacity, and high speed, and whatever, it just took longer to get all that stuff implemented because there were so many other resource issues. **Misa:** Communication peripherals is, in fact, a security issue because of the nature of identifying the peripheral, and on and on. **Baxter:** Yes. **Misa:** A question on your contacts with CDC people; it could be in Minneapolis, but also there were other facilities, in terms of software; in California, Sunnyvale, and La Jolla, too, I gather. **Baxter:** Yes, and Rockville. **Misa:** What kind of contact did you have with those colleagues and what kinds of communications did you have with people in the U.S.? **Baxter:** I guess we had, at that stage, if we needed high speed communication we could ring them on the phone but we were discouraged from doing that because it was 38 expensive. Did we have fax? We didn’t really have facsimile transmission, so we’d send them something in the mail; and likely, we would exchange data with them because we would be able to dial in via the Cybernet network, or via the Technotec network I mentioned earlier. So we had that type of communication. But to a large extent, particularly through to the mid-1970s, we were pretty much on our own. In many cases, our sites, we had somebody from one of those other sites who had had the type of experience that; and our people would go there sometimes to spend some time to do some learning. **Misa:** How common was that for somebody here in this part of CDA that you were involved with, to go on a regular or semi-regular basis to Minneapolis? **Baxter:** Not very. **Misa:** Not very. **Baxter:** No. My first trip to Minneapolis was in 1979, for example. So I’d been through a lot of technical roles at that stage, and by that time I was the district manager professional services. My general manager arranged for me to go on a sort of orientation visit to Minneapolis largely because I hadn’t been here before, but then to meet people who were doing similar roles to mine who’d been doing them a bit longer. And so I went to Minneapolis, and Toronto, and Houston, and a couple of other places. I was away for a month, at that stage. **Misa:** A month. **Baxter:** Yes. But every now and then we would have software specialists associated with our computer systems division who would go over because we needed to run benchmarks to demonstrate to a customer that our computer would run the programs that they needed to run. So we’d get a suite of programs from the customer, debug them here probably, but then take them over to Minneapolis to run them on a configuration equivalent to that we were trying to sell to the customer. And so somebody might be away for a couple of weeks, or in one case, maybe a couple of months, finally debugging and then running benchmarks that they need to run on so we could demonstrate to the customer that yes, we can do 70 hours of computing in three minutes. It was quite common for somebody to be there; and hopefully, somebody from there who would — whoever that was — would then pass information around locally. And we usually had, maybe once a year, we would have a group of specialists come out on a marketing visit. So some marketing people and some technical people would tell us about what good new things were coming out and so we’d establish communication with those guys. **Misa:** So it would be somebody from Minneapolis coming here? **Baxter:** From Minneapolis or from wherever. We’d set up a conference for a couple of days, and run presentations, and have question and answer sessions. That happened at least annually; I think more often than that. **Misa:** So that would be another type of communication. **Baxter:** Yes. And there were regular publications that came out within the technical areas. We had the thing called PSI, which is Programming Systems Information, I think it stood for; it was sort of like a monthly newsletter that had inputs, went to and from people all over the world. And then now they were consolidated and published for people all over the world. So we might have somebody — in fact, we did because he later came and worked for us — there was a guy who worked in South Africa and he knew lots about the database.
software, and he would write an article about a certain aspect of the database software. He’d send that to Minneapolis and they’d publish it in the newsletter, and so everybody else would get to read about this particular thing that we maybe hadn’t known before. Misa: When did database software become a large concern for you here? Baxter: First one I can really think of was in the early 1970s, when we were selling a computer system to the State Government Insurance Office in Queensland and we were trying to win them away from ICL. And so they had a number of programs and they had a transaction processing system, and so we needed to demonstrate that we could run their transaction processing and database. Misa: That was the early 1970s. Baxter: Must have been 1972, 1973, I think, because we ran the benchmarks on the computer at Melbourne University, and that’s about when the Cyber 72 was installed at Melbourne University. Misa: And were there other types of customers or other types of applications that database software became useful for? Baxter: Well, the Telecom applications were mainly large databases, but they are pretty much custom written databases. Control Data had a number of different types of database systems suitable for different types of applications. Some of our customers might use one, and some might use a different one, depending whether they’re transaction processing, or relational database, or whatever. But that was all coming to be, really, in the late 1970s, early 1980s. Misa: So several different types of database management software, depending on the specific application? Baxter: Yes, and some of those were database management software that was industry generic. The software that was written by a software company that might run on an IBM, or a Honeywell, or a Burroughs, and also on a Control Data computer and it would look the same, sort of. But it was the same piece of software, essentially, from that software vendor. Misa: And what would be some of the, you said, industry generic software? Baxter: One called Total, T-O-T-A-L, is one. It was originally written in France and there’s another called IDMS, I think. Misa: I-D-M-S. Baxter: I think it was called IDMS. And there was another called Basis, which came out of Batelle Laboratories. Misa: It’s so interesting because databases are stable now, and relational databases have sort of ruled the roost, but in the 1970s, particularly, there were many different types of database applications and a great variety of different approaches. Baxter: That’s right. We had a couple of people that knew quite a bit about databases and advantages and disadvantages of different architectures. A lot of that you needed to know because if you got the wrong architecture on the computer of the day, it might run a lot slower; whereas today, more or less architecture independent. The computing system underneath it is so much quicker it nearly doesn’t matter; ultimately it does, some way. But the computing speeds we’re talking about and the data access speeds, the mass storage speeds, were such that choosing the wrong architecture could be really, really time expensive, or dollar expensive. Misa: Yes. Do you have any examples where there was either a good choice or a not so good choice? Baxter: No, not really; none that I can think of. But I can think of a couple of examples where somebody wanted to design — they didn’t know it was going to be called a database but that’s essentially what they wanted — and we spent a bit of time discussing what type of architecture would be more appropriate for the requirements at the time, whether it was a fully relational database, or index sequential, or whatever it might be. There was a bit going on there. Misa: I was just looking at the e-mail you sent me. I think that we talked at least some about the 915 page reader . . . Baxter: Yes. Misa: . . . the wide band data link between Melbourne and Sydney; I think you touched on also the installation and commissioning of the Cyber 175 at Defence Signals Directorate. Are there other notable projects that we should make sure to include in our conversation? Baxter: Well, the education stuff, I guess, was something different. It was probably in 1982 because I was in Sydney. I think it was for an Australia Computer Conference, or similar. Don Bitzer [from University of Chicago Urbana-Champaign], who was one of the original architects of the PLATO system, came out to Australia and Control Data sponsored him, or at least hosted him when he was here. One of our specialists traveled with him when he was here for this computer conference. He lectured at the conference but he also did some customer visits while he was here. So that was the first exposure that we had in Australia to PLATO. And after that, we had some PLATO terminals set up that were connected into the U.S.; or connected into a PLATO system somewhere; don’t know where. Misa: Somewhere. [Laughs.] Baxter: Somewhere. By that time, we didn’t necessarily care. But I remember in 1982, I actually ran some training. I did a couple of training courses on PLATO to learn about mining engineering because we had mining engineering people working for us, working for me; so I needed to understand what this language was that they
spoke. So I had some experience with PLATO doing some of that. We set up an education division, which was marketing what was then becoming available as micro PLATO. **Misa:** Micro PLATO. **Baxter:** Yes, so small computers running individual PLATO systems with portable courseware; so the courseware would come on a floppy disk and you’d load that into the computer and run your training course. And the business of this division was selling 45 courseware and selling micro PLATO computers and I got a little bit involved with that in the late 1970s. No, mid-1980s. **Misa:** Mid 1980s. **Baxter:** Yes. In fact, I took over the role of analyst manager of the support team. We had a half dozen people, some of whom had a computing background but some of whom had an education background. For example, one guy, who was based in the Sydney office; initially, he was based in the New Zealand office but then he moved over to our Sydney office; he had been and Air Force Officer and the head of personnel in New Zealand Department of Defence so he came from a personnel training background. Computers was not in his background; but he knew how to set up training programs so he was an education consultant. So we had a group of people who were educational consultants, who knew a bit of that computing, and then some people who were computing people who were getting to know a bit about how to deliver education on computers. **Misa:** PLATO, of course, had tremendous front end potential but also tremendously high cost, so the micro PLATO was an attempt to get a cost that would be more attractive. **Baxter:** Yes. And there was a number of organizations in the U.S. which were being set up with business and technology centers, which were walk-in centers for people, and one of the things they offered was PLATO training. And I guess as they were being rolled out, micro PLATO was being focused on. We actually tripped over our own feet at one 46 point because we were dealing with the Department of Social Security, I guess it was, here. They were wanting to set up training for their staff Australia-wide in their social security offices, which would be typically offices in suburbs or towns. So we’re talking thousands of people and they needed to train them in some of the new compliance issues or new products that they were offering, and they wanted network delivery of all this training. **Misa:** So you make one change and have it go system wide. **Baxter:** Yes. And so there was PLATO, which ran on a specialist computer, a new specialist terminal, which would’ve been horrendously expensive. We had micro PLATO, which would run on individual small computers, but you had an enormous distribution issue of the new courseware because you had to print up new disks and send them, and who knows whether they actually use them properly. But at that stage in the book, the “Red Book” it was called, which was the sales and pricing manual for Control Data. **Misa:** The Red Book was the official list. **Baxter:** The official, this is what you propose to the customer. There was a system called PCD2, PLATO Courseware Delivery, I guess it was. But PCD-2 was a large software application that ran on a mainframe computer, that could connect to more or less anybody’s terminal, and it seemed like the ideal way to deliver this hybrid centralized courseware. So we proposed it to a customer, and had a number of discussions with the customer, and wrote a detailed proposal. A couple of us went to Minneapolis to go through the final stages of getting the proposal signed off, and the vice president, when we presented it to him, he said, you are not allowed to sell PCD2; it is not what we are focusing on; we’re focusing on PCD3, which is the standalone micro product. So why is it in the Red Book? I don’t know why it’s in the Red Book, but you’re not allowed to sell it. **Misa:** Okay. So PCD2 was a predecessor to micro PLATO? **Baxter:** It was more a parallel. **Misa:** Parallel, okay. **Baxter:** But it seemed to us that it was ideal as a network; do your authoring centrally, do your courseware distribution centrally, but your actual course taking would be at remote systems. But we were not allowed to propose it. **Misa:** So PCD2 was forbidden. **Baxter:** Yes. Well, apparently, forbidden in any regard and nobody really knows when it really worked out how or why it was there, but apparently it wasn’t [pause] 48 **Misa:** Why it got into the Red Book. **Baxter:** Yes. I guess it was somebody’s idea at the time. So we’d spent quite a few weeks and including a more or less specialized trip to Minneapolis to knock that proposal together. **Misa:** That must have been somewhat frustrating for you to have it more or less taken away. **Baxter:** A little bit, yes. And it was, I suppose, to some extent that was an example of this division’s goals getting in the way of that division’s business goals. This was a computer systems sale but using education division products. **Misa:** Yes. **Baxter:** But the education division apparently didn’t want to sell that product; they wanted to sell this product. So, yes, frustrating is a good word. That’s a polite word. [Laughs.] But it was great fun and working with the education division was particularly good. At that time, the whole computer-based education industry worldwide was starting to get some speed. Apple computers were just coming out and we, Control
Data’s education division in Australia, had a distribution agency for courseware, diskettes that ran on Apple computers, for example, Apple IIs. So nothing to do with anything that originated in Control Data Corporation, but courses that might’ve been written by Bloggs and Company in England, ran on Apple IIs and taught people how to do this, whatever this might be; how to take apart a carburettor of an engine. And Control Data Australia had the agency to sell that type of courseware. Misa: The agency, yes. Baxter: So we were actively marketing. Misa: Essentially, a license to do that for Australia. Baxter: Yes. In fact, we had distributorship, so there were companies set up, which were book companies, so book stores; or analogous to that, anyway, and a little bit analogous to say a Blockbuster Movie Hire Store. So the public could go in and browse through and buy that diskette or that courseware, take it home and run it on the Apple II or later on the IBM PC. And so we had the distributorship for that, and we were then selling to these different stores to be the final retailers. So it was a distributor/retailer business model; quite different to anything that Control Data had been doing. Misa: It’d be hugely different because most computer companies aren’t involved in retailing anything at all. That must’ve been a real challenge to set up. Baxter: Yes. Many of the retailers were maybe sourcing that type of material from elsewhere in the world. But for a number of types of packages, we had the Australian 50 rights to the distribution of it. And that, on the face of it, looked like a good business but I don’t know what pulled it down or turned it off but it was a change in management and that business wasn’t there anymore. Misa: Would you like to make any comments about the more troubled times in the mid-1980s? Baxter: Yes, I guess the mid-1980s was around the time when Control Data was probably primarily seen as a mainframe computer company and lots of the customer base were moving away from the mainframe computers to what we would call departmental computers. Digital Equipment, for example, was getting into universities and not selling a computer system to the university but selling a computer system to the physics department, and another one to the chemistry department, and another one to the electrical engineering department, who previously would’ve each done their computing on the computer center’s main system. We didn’t know how to compete with that because we really didn’t have an offering that competed at that level, and there was a certain amount of blinking, I think, within Control Data that said when those people wake up that they really need powerful computers they’ll come back to us, when in fact, those people didn’t wake up. Or if they did, they woke up to the fact that the existing computer provider could provide another, or a more powerful one of what they had. So to some extent, in the vernacular, they ate our lunch. And I think we struggled with that, and I remember I was given a paper by the then managing director here to review. At that stage I was in the marketing division and doing on the mainframe side of the business. He 51 gave me a paper which was talking about the five-year plan for production, or this next range of large scale computers. And it was still talking about water cooled, liquid cooled computers when, in fact, the cost of ownership of those things was so high because you needed to put in plumbing infrastructure as well as just plug it into electricity. You actually got more power out of it, probably, but the cost of ownership was just so high that others were able to buy two, or three, or four, or five. Misa: And distribute them . . . Baxter: Heck yes. Misa: . . . and equivalent computing power without the hoopla of the water cooling. Baxter: Yes, equivalent enough, anyway, for what they wanted, so. And the market here wasn’t big enough or the individual customer weren’t big enough to buy big computers. And so we needed sometimes two or three [customers] to share a big one, or a big facility, like a Melbourne University, to get a big one — which they did. But other universities and many companies were buying smaller computers simply because they were physically smaller, so they could put them in their own office building and not have to re-plumb the building in order to put them in. So that was something that was happening in the late 1970s and I think through the 1980s. Control Data was pulling itself in directions: is it a hardware company or is it a service company? And there were mixed messages coming to us here, probably, and mixed messages certainly going to the 52 customer base. You don’t care about us anymore because all you’re going to be doing is selling Cybernet. Well, that’s not really true; we do care about you it’s just that we might deal with you in a different way. Misa: You felt there were mixed messages coming from CDC headquarters so in some way you’re caught in between and had to deal with that. Baxter: To some extent, yes. To us at CDA and to our customers. But I think the industry was having a big shake-out; starting to have a big shake-out at that time. Misa: Oh, yes. Baxter: That’s before Burroughs and Univac rolled themselves together. Misa: That’s right. Baxter: Yes, probably about the same, but later on, lots of
those companies got divided up or eaten up. **Misa:** Even IBM ended up basically being extremely profitable until the 1990s. So it was a fundamental transition; people just didn’t see minicomputers, that’s the departmental computers you’re talking about; let alone microcomputers. **Baxter:** Let alone microcomputers. Well, I know for a fact, we had a manager in one of our divisions; that was after the time that Control Data had acquired [IBM’s] Service Bureau Corporation from the U.S., and we had a version of SBC running here, Call 370, and one of the managers in that division was fired because he was running a business on the side selling microcomputers and that was seen to be a conflict of interest. **Misa:** We were just talking about sort of the challenges and shifts in the computer market in the mid-1980s and how different companies responded to it. **Baxter:** I guess one of the things that happened within Control Data around that time, we’d been through a few managing directors in my time with the company, some of them locals, more of them expatriates. **Misa:** Americans coming here. **Baxter:** Americans [and other nationalities] coming out here, some of them coming out here — I’m going to be a little bit rude but I won’t name names — I think some of them came out here to run the Australian business. Some of them came out in order to get experience running a business so that they could then go back and run a real business. And some of them came out maybe because they couldn’t find any other place to put them. They were a mixture of them. Some of them I think did a reasonable job, some of them did a very good job, and some probably we were happy when they went back. But by the mid-1980s, the corporate mindset, I think, it seemed was getting pretty defensive. There were a couple of personnel cutbacks at the time; we had one that happened in probably the early 1980s, when Control Data Australia was growing and doing lots of good business. And I think there was an across-the-board 10 percent head count reduction, and we needed to take that because regardless of how well we were doing we needed to be seen to be sharing the pain. But in fact, most of the business turndown was in North America and Europe. That was disappointing; we weren’t being recognized for as well as we were doing ourselves. But we had one appointment; a guy who was probably quite a good managing director; he’d been a marketing director in another large computer company and his basic method was getting out and spending money to try and get money to grow the business at a time when the corporation was contracting. So his operating style didn’t fit and he probably was with us less than a year, probably not much more than six months, simply because his style didn’t fit with what the corporation wanted to do. **Misa:** It was a time of retrenchment, you could say. **Baxter:** Retrenchment, yes. And probably if one was looking at it from the outside and looking at it from where we are today, it was signs that the business was starting to go out the back door. It was around about the same time that the ETA Systems [Subsidiary] was canned, for example. And there were new major computing ventures going on that were not going to be seen through because there were probably a number of different streams of advanced computing or supercomputing, not all of which could be supported. I know that the ETA I because I was at ETA for a brief visit; and in fact, I was there the 55 first day that they turned the first ETA on. It worked. I saw all the guys walking on air, didn’t touch the floor. They turned it on and the thing worked. **Misa:** It worked, yes. **Baxter:** Yes. John O’Neil and I were back there at the time. But then we had another one of our young analysts go over there for a while and he rang his colleague in Canberra, fairly late on a Sunday night, and said I just came into the lab to do some work and there’s a sign on the door that says all the employees meet at the, I guess it’s the City Hall or whatever, at 9:00 a.m. on Monday morning. So we were probably the first people in the world outside of Control Data or ETA management who knew that. **Misa:** To know that it’s big news and not good news. **Baxter:** Yes, that was the end of it. In fact, we’d sold one ETA, We sold an ETA-6 to Bureau of Meteorology, and we had a contract to deliver it. I was gone by the time that whatever got delivered, got delivered, but we lost our way a bit, in a number of different ways, I think. I ended up, had a couple of changes in management, and decided what I wanted to continue doing. So I left in mid-1987. **Misa:** And what did you do following that? **Baxter:** Well, my former manager had left a couple of months earlier and he’d founded a small software company that was dealing with expert systems technology and he was looking for someone to work on the technical side of that. So I went in and joined him, developing expert system applications for customers. And then later, retailing some expert system development software. **Misa:** Somebody should come up with a list of all the companies that CDA people founded. It’s a very large number. **Baxter:** Yes. I wasn’t there at exactly the start of it, but I suppose technically, I was employee number two and we ran that business for five years until, as they say, how do you make a
small business? You take a slightly larger business. But the guy that founded it, he left after about a year; he decided it wasn’t going well enough for his lifestyle and didn’t want to stick it out. I stuck it out for a bit longer. I eventually got hired by a company that had been one of my customers. **Misa:** Oh really? **Baxter:** Yes. So that sort of worked out. **Misa:** Which company was that? **Baxter:** It’s a company called Invetech, which has nothing to do with the computer industry. It’s a technology development company. **Misa:** Tell me the name? **Baxter:** Invetech, I-N-V-E-T-E-H. Invetech. No “R” in it. Invetech, which I guess initially stood for investment in technology. But it was an innovation, product design, development, engineering company; the sort of company that would design components for a hovering rocket that was used as a target by the Navy. And that also designed the beds that were used in the apartments of the athletes for the Sydney Olympic Games. **Misa:** Oh, so okay, bunch of different. **Baxter:** Very diverse in technical design; some very complex engineering; chemical plants. And I was doing expert systems work, initially, and then simulation and then business strategy activities, working for small business clients devising their business strategy. So we were a very diverse company. **Misa:** Do you have any overall reflections on the CDA times? Some aspect of the company that sticks with you? **Baxter:** I think the thing that really sticks with me is that regularly, once a month, we get 15 to 20 people having lunch together. And it’s not the same 15 or 20 people. We had, what, 25 or something this week? **Misa:** Yes, not 30 but close. **Baxter:** So that’s a monthly lunch; and that would be; there’s probably about 10 individuals every time, and then different other ones over a population of maybe 50 or more who would come. And then biennially, we have a reunion. I think the last reunion we had, I’m not sure, there was certainly more than 80, probably close to 100 people. But not too long ago, one had more than 200 people at it. So I think part of the culture is there is a lot of really, really good people who enjoyed working together, and enjoyed working in the place because it was fun. Now, I retired early last year from Invetech, and my attitude for the past four or five years has been I wouldn’t mind not doing quite as much, but I keep doing what I’m doing as long as I’m having fun and as long as I’m useful. Having fun is my call; being useful is somebody else’s call. And ultimately, we sort of made the call that I wasn’t having quite as much fun and I probably wasn’t going to be as useful. So it was a good time to retire. **Misa:** Good time to retire, yes. **Baxter:** Yes. And Control Data was like that. I hated leaving, but I needed to leave because I wasn’t having fun. I’d ceased having fun in six months or so. And that was a couple of management changes and things, and a bit of a role change; but I saw a tunnel in front of me rather than a light, put it that way. **Misa:** Okay, yes. **Baxter:** But it’s been really good to maintain the contact with those people, some of whom I’ve now known for 40 years. **Misa:** For some, almost 50 years now, I guess. **Baxter:** I haven’t known them that long, but about 45 years, now. Some of them aren’t around anymore, but that’s the way of the world. It was a really fun place to work when I first joined there, and I guess that’s one aspect of that. I worked in a company [Felt and Textiles] that was a British-style managed company, I guess, a sort of management hierarchy was more British than American if you want to think about it that way. And I was paid a reasonable salary, and I had the interview with the guy at Control Data and he said how much do you think you’d want to get paid? And I said I’m not looking to move for the money but I wouldn’t want to be getting any less than what I’ve been getting here. He looked at me and said oh, we’ve been advertising at 20 percent more than that. **Misa:** 20 percent. **Baxter:** We’d have to pay you what we’ve been advertising as a minimum. I said okay. **Misa:** Suffer through that, yes. **Baxter:** But I was happy, doing what I enjoyed doing, and as you can see from the discussion, I’ve had a number of different things, working on other peoples’ programs. I’m dealing with the diverse range of hardware and I guess part of my education background was understanding how some of the hardware worked, not to the extent of being able to fix the hardware but at least understand the logical flow of things through the computer, and how the disk drive worked, physically, rather than just you’re then stuck with a disk drive when it comes back. And so interacting with engineers, with hardware engineers, and quite often needing to debug a problem that we didn’t know at the start, is this a software problem or is this a hardware problem. And usually he thinks it’s a software problem and I think it’s a hardware problem, but, so we each want the other one to fix it. **Misa:** That’s right. [Laughs.] **Baxter:** [Laughs.] So there have been occasions when I thought it was a software problem and he was convinced it was a hardware problem, and so we worked jointly and yes, we fixed his hardware problem. So, you know, that was all fun; and then computer systems, the data networks, databases, education sort of things, marketing. I was responsible for marketing campaigns and so on, at one
point, and getting marketing information together and distributing marketing information to the sales force. I mentioned at different levels, technical management. **Misa:** Yes, seeing the interesting sides of the entirety of CDA. **Baxter:** I worked in the two different offices, but at different times, had contact with all of the other Control Data offices because when I was district manager in Melbourne, I had Adelaide and Perth professional services people reporting to me. And when I was in Sydney I had Brisbane, Newcastle, and Canberra reporting to me, so 50 people in one area and 30 or something like 35. And then at one stage when I was in the education area I also looked after the professional services people in New Zealand. So I had some knowledge of, again, a different business; a different scale; a different flavor of business that they were doing out of there. So a wide range of stuff. **Misa:** Is there anything else of interest that we should make sure to record this afternoon? **Baxter:** Nothing that I can think of, really. If I do think of anything, I’ll append it to the transcript when it comes back. But no, it’s been really fun talking to you and dredging up some things. **Misa:** Yes, well great. Thanks a lot. **Baxter:** That’s alright.

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**John P. O’Neil**

http://conservancy.umn.edu/handle/11299/164954

**Misa:** Today is 16 November 2013. My name is Tom Misa. We’re in Melbourne, Australia, talking with John O’Neil. He joined Control Data Australia in 1963 and worked in a variety of different positions until 1986. So that will be the main focus of our discussion today. John, just to start, can you say a bit about your background and education, and how you became familiar and interested in the computing field? **O’Neil:** Sure. I grew up in Newcastle, which is still a coal town, about 90 miles north of Sydney, on the coast. My parents moved to Sydney when I was about 15, in my third year of high school. [After finishing high school] I then went on the University of Sydney; started a degree in engineering; got involved in too many other things; and had a couple of missed years and changed across to science. I worked in the department of physics at Sydney, as an undergraduate when Professor Harry Messel came out to Australia. He was a power house Canadian; very young professor to take over the chair of a department of a major university. And I left before I graduated, but went back after I met my wife because she said she wasn’t going to marry me if I didn’t have a degree. [Laughs.] So I went back, got my science degree, initially then worked in AWA [Amalgamated Wireless Australia] Research Laboratories as a research engineer, and about two years after that my wife Jo got a scholarship that she decided to take up in London, a post-doc scholarship. She is a pharmacologist. And we moved to London. I had been contacted by English Electric to consider joining them when I got there, and I subsequently did that. They were a large electrical conglomerate that had got into computers for their own use, and then other people had asked “would you make one for us?” That was quite common in the early days of the computer industry, I think. I spent the first year in London but very soon was commuting to Kidsgrove, which was where this division was based. I did some programming [of DEUCE] in the London Data Centre, and then started working on [the development of] a large-scale scientific computer that they called KDF9. We moved to Kidsgrove after a year, which is where their base was. About the end of that second year in England, the Bureau of Stats and CSIRO [each] issued specifications for quite large (in those days) computer networks; [English Electric] decided to bid on those, and to bid [i.e., to offer the] KDF9. And as I probably knew the machine better than most people, because I had a coordinating role in the design group, they asked me come back to Australia to work on the proposals. **Misa:** Bureau of Stats, that’s also connected to the Census, is that right? **O’Neil:** That was the Bureau of Census and Statistics, originally. Yes. And we usually called it Census in the early days, and Stats in the later days, for some reason. So I came back here. My wife said “well, if you’re going back there for 3 to 4 months to work on that, I’m moving back,” because by now we had our child, and so I joined English Electric in Australia. About that time, EE [English Electric] combined with Leo Computers, another English computer company, and in Australia, they formed, with AWA, Australian Computers. Leo had had a couple of installations in Melbourne; English Electric had sold a KDF9 to the University of Sydney, which hadn’t been delivered, obviously, at that stage. I first ran into Control Data, apart from reading about them in the computer press, in early 1963. It was at a computer conference in Melbourne, the Second Australian Computer
Conference. And Trevor Robinson, who was part of manufacturer’s representative E. L. Heymanson and Company, was there, and they actually had a 160A on display. And I looked at that and I thought that’s a pretty neat machine. The engineering was just fantastic. **Misa:** A Control Data 160A? **O’Neil:** 160A, yes. . . . and I think it had that effect on quite a few people in the industry because the quality of the engineering just stood out. **Misa:** Just to double-check that would be the small machine that Control Data might have sold as a minicomputer . . . . **O’Neil:** They did. **Misa:** . . . but never quite saw it as a product line, in the sense that DEC and Data General turned minicomputers into a big product line. **O’Neil:** No. **Misa:** But it was a notable design and a missed opportunity . . . **O’Neil:** Oh yes. 6 **Misa:** . . . elegant engineering that didn’t quite connect to the market. **O’Neil:** CDC did sell them to NCR, and NCR put them out as I forget what machine they called it, but, you know, one of their commercial machines was really the 160, 160A internally; kind of a brown desk; rather than gray and white one that Control Data had. But originally, when Heymanson did approach Control Data — and the story’s in the [documents] I’ve left you — Control Data people said oh look, concentrate on 160As. These other machines, like the 1604 and 3600, they’re going to be too big for you. But the Bureau of Stats and CSIRO, especially Census, each had a requirement for a large, central processor, or central processing site, in Canberra, which would be (at) the headquarters in Canberra. And then a number of satellite systems around the states; CSIRO [was in] three states; Bureau of Stats, every state. The 3600 fitted their requirements for the central sites extremely well. KDF9 also fitted. But the English just didn’t invest the money in this industry and I was getting a bit disenchanted with them, particularly when we lost those orders to Control Data. And I got feelers from Trevor [Robinson] that if I was interested in a job, would I come and talk with him next time I was in Melbourne. So that’s what led me into Control Data. **Misa:** So the Second Australian Computer Conference was an important moment. **O’Neil:** Yes, that was in January of that year; and for the company, because . . . **Misa:** . . . for you personally, and for the company as a whole. **O’Neil:** . . . it exposed Control Data, for the first time. Those departments, the Bureau and CSIRO started to talk to one another when they realized they were both, in Control Data’s case, in English Electric’s case, and in some other cases being bid the same central sites. **Misa:** It wasn’t a joint bid? **O’Neil:** Oh no, they had two separate bids but they were so close in their requirements, it happened that way. You know, that’s why everyone and his brother bid on those. At that time, the only large government site that existed [in Australia] was the Defence Department, which a year before had bought Honeywell 800s for a logistics role in defense. And that was important because that became a major training ground for programmers on large systems around the states; CSIRO [was in] three states; Bureau of Stats, every state. The 3600 fitted their requirements for the central sites extremely well. KDF9 also fitted. But the English just didn’t invest the money in this industry and I was getting a bit disenchanted with them, particularly when we lost those orders to Control Data. And I got feelers from Trevor [Robinson] that if I was interested in a job, would I come and talk with him next time I was in Melbourne. So that’s what led me into Control Data. **Misa:** There’s a headline “Government’s Surprise Choice” — this is the Australian Financial Review, June 20, 1963 — “£4 Million Computer Orders Won by ‘Outsiders’.” **O’Neil:** That’s right, absolutely; very much an outsider. The ones that were strongly in the running, or thought they were strongly in the running were probably GE, Honeywell, IBM; on the English side, English Electric, LEO, and Ferranti. I don’t think any of the European companies bid, but it quickly got down to looking like it was between three of us. I think it was Control Data, English Electric, and GE, as I recall. Control Data got the lot, which was interesting. And Trevor’s story on that is worth reading; it really is a good history [on] how that occurred. So that’s how I got into Control Data. I guess I spoke to Trevor about joining, about the same time as they got the contract, but I had some commitments I’d made to the British company to get some proposals done and some other tenders, [for example] a tender for the Australian Atomic Energy Commission in Sydney. And so I said I can’t join you until September [or] October. I think I had the offer in August and joined them some months later. But that’s my background of how I came in. When I joined, basically, Control Data was quite wonderfully unique. It was the only one with its head office in Melbourne. All the other big [computer] companies had their head offices in Sydney, which was regarded as the commercial capital. Melbourne was regarded as the financial capital of Australia. Sydney was regarded as the commercial capital, but at the time, most government departments were headquartered in Melbourne. **Misa:** Ministries were here in Melbourne. **O’Neil:** Ministries were in Melbourne. **Misa:** . . . the capital and the Parliament would be in Canberra. **O’Neil:** Yes. And Canberra was
virtually a nonentity. About this same time, the government had started to make the decision to really move ministries to Canberra because up to then, it was really just a little country town with a parliament house and nothing else, you know, just some minor offices for support units from the various ministries, to support the politicians. And so Canberra then went into a rapid expansion phase in the 1960s, and became what it is today. [Government] department headquarters were moved to Canberra. But we set up in Melbourne and it was convenient to stay here. I think the other computer companies were all much the same. **Misa:** Can you say something about why Melbourne was attractive then to Control Data? **O’Neil:** Yes, the type of equipment that Control Data made, the largest customer opportunities, we felt, were going to be government: federal government, state government. And so while the departments were headquartered here — and it took them a decade or more to actually move to Canberra — this was the place to be. So we stuck with that decision from then on. Melbourne had some disadvantages from a communications point of view, in that all your international air services were out of Sydney. Melbourne Airport could only take small jets and turbo props; but that didn’t really worry us. So we started off, truly started hiring within a very short time of getting those contracts, or the contracts actually being signed. There was a notification of the award, and then the contract negotiations. 10 [Locally] there were just three of us involved [in sales]; Trevor, and then he hired Bruce Bambrough, who had worked with Bendix, or Bendix representation; and also Bruce had worked with AWA. And Bruce wanted to stay in Sydney so he stayed based in Sydney; I came on board in Melbourne; and that was our sales force. Trevor had the view that he only wanted to hire top people. He wanted a high degree of quality in the company so he wanted people that really understood computers, knew what they were doing, and he felt that we would build the best support organization in Australia. And so we had a lot of hiring to do to meet the requirements of those two contracts. Apart from that, Heymanson had already sold a 160A to what was known as the PMG (Post Master General) Research Laboratories; it was our postal and telecommunications organization. **Misa:** P-M-G? **O’Neil:** Postmaster General’s Department. Their research labs had bought a 160A; we (also) had the 160A in the office in Melbourne. Aeronautical Research Laboratory leased a 160A; I can’t remember when they actually got it. I think it was in that first year. I think it was after; yes, Trevor had started selling that to A.R.L. in the Heymanson days. The other contract we expected to pick up in that first year was the Atomic Energy Commission, which was based out of Sydney; and that was peculiar because Trevor and I flew up there late in that first year, you know, in December that first year to plan the training of their people. That’s how serious they were. The problem we didn’t know was the head of the AEC was also the Vice Chancellor of the University of New South Wales, the second large university in Sydney, and he’d done a deal with IBM that said if they got the contract for AEC, IBM would give them a very cheap [IBM] 360 [model] 50 for the university. **Misa:** So kind of a package deal. **O’Neil:** So that threw the department; the guys who thought they were making the decision in AEC discovered they weren’t. [Laughs.] They were simply told the contract was going to IBM. So that was one that. Trevor had bid a [Control Data] 1604 to them on the understanding that, later on, it was going to be a [CDC] 3400 delivered; it was announced [not] long after. **Misa:** Why don’t you say something about Trevor’s impact on the early [Control Data Australia] culture? **O’Neil:** The first thing was that he wanted quality people who could develop and we accepted in that process, we would probably have a bit of a churn rate. If you get very good people then you can’t provide them all career paths; and that subsequently over the years was the way it worked. The sales operation was regarded as something everyone was involved in. He [Trevor] wanted to get sales through our reputation for quality of product and quality of support. We didn’t accept a sales incentive scheme. **Misa:** No incentive scheme. 12 **O’Neil:** No. On the understanding that if we were successful, everyone in the company would benefit. So it was a very egalitarian company in that way, there was not a strong [formal] management culture, as such. Trevor was a walk and talk manager; I think we all were. That [went] away after a couple of years when we’d been very successful and the corporation refused to let us pay bonuses to everyone. We thought well, bugger you, in that case we’ll accept your damned incentive schemes. **Misa:** Right. Because the incentive scheme might boost sales, but there’s also divisive games that sometimes the salesmen feel like they need to play . . . **O’Neil:** Absolutely. That’s the problem. **Misa:** . . . so there’s team effort versus an individual salesperson’s effort. **O’Neil:** Yes. But fortunately, I think, before that came in we had pretty much established the culture that said there’s a team effort, we’re about excellence, that everyone will be recognized some way or another, and that the
engineers, and the analysts, and the tea lady are all just as important as everyone else. And we were trying to avoid game playing. Fairly early, we sold a [Control Data] 3200 — at the time, just after the end of that first year, 1963; some of the universities were given funding by the Commonwealth government to put in computer systems. At that stage, there was the University of New South Wales EE Deuce [they called it UTECOM], Harry Messel had actually built SILLIAC [the Sydney University version of ILLIAC], which was probably the first large machine, and IBM had sold a couple of 1620s and Ferranti had sold a couple of very small computers. So when a number of the universities got sufficient funds for something decent, we were hoping that they would go with [CDC] 3200s — Monash University did. [But] the other two or three that were buying at the time did deals with different companies because there were good deals going from all the companies at that stage, so for example, the University of New South Wales got their 360/50 through IBM; University of Western Australia bought a DEC PDP-10; think it was a 10 being bought for them. I don’t think Queensland had anything at their site. In South Australia. Customer sites: University of Adelaide had a [IBM] 1620. Misa: Seems that though the funding was centralized, the discussions at the university level all were with different vendors and so the universities had whatever deal that they wanted. O’Neil: Oh, absolutely. And get the best deal you could. Misa: . . . it wasn’t the government central . . . O’Neil: No. It wasn’t a central, it was . . . Misa: . . . it was decentralized. 14 O’Neil: . . . in fact, the government increasingly was funding the university system, the federal government. And they recognized the need for computers, increasingly, in universities so they made a number of grants available. And then on the next round of grants, which were probably three years later, I think, we scored quite well with, by that time, the Cyber systems. The first [CDC] 6000 series we sold was to the University of Adelaide, to John Allen Ovenstone, who had set up the DP [data processing] operation at the Department of Defence, and chose the Honeywell 800s, and he was an amazing person, actually; a very bright person; very strong personality; unbelievably strong person. And Trevor sent me over to Adelaide, I remember, in late 1964 to talk to John about a 3300; sometime in 1964 because we figured that was all he had the money for. And when I was talking with him over lunch, I said well, you know, John, it’s a pity because what you really should have Control Data’s just announced 6400. Misa: Right, 1964 is a big year. O’Neil: And he took that suggestion seriously; next thing, he went off to the States [Minneapolis] and talked to the corporation into a big discount on a 6400. [Laughs.] Misa: 64 or 66? O’Neil: 64. Yes, a 6400 went to Adelaide quite early on. We were happy to see that happen because one of our prospects was the Bureau of Meteorology, which was also based in Melbourne, and they were coming out with requirements for their system and we were planning to bid two [dual] 6400s for them. So it was handy to have one in the country already. They went through a different process than some of the other departments. Rather than go straight up with a tender process for their formal buy, they actually put out a call for “Expressions of Interest” in providing them systems. What you were meant to come back with is say here’s how we’d recommend you tackle your computer requirements. So when that one came up, Bob Price organized for a guy called Will Kane, who’d been an Air Force meteorologist working in the Washington office of Control Data Corp, to come here. And Will spent about two months here, working with me and the Bureau in developing a proposal to them on how they should do their processing. Misa: That’s Will . . . ? O’Neil: French. Misa: French. O’Neil: No, sorry, Will Kane. K-A-N-E. Sorry. Will French was the admin guy for us in Minneapolis. And we put in something that they pretty much reflected back to us in their specifications. And it was a very tight contest between ourselves and IBM, because IBM were getting pretty upset they hadn’t got any serious government business at this stage, apart from the AEC. And that — I don’t know if this should be on the record — basically when they lost Defence [to Honeywell], the head honcho of IBM in Australia went down to the Secretary of Defence and told him that this guy, John Allen Ovenstone, didn’t know what he was doing, going off and buying these crazy Honeywell computers and they should have IBM computers. The Secretary of Defence, said well, thank you very much for that advice; I’ll insure that you don’t get any government contracts for some years. [Laughs.] Misa: Those complaints can be a bit too much. O’Neil: [Laughs.] And that’s what happened. They really didn’t get a government contract, other than the AEC one, for quite some time. The AEC was an agency rather than a government department; it was a commission, Atomic Energy Commission: So it just shows you, because IBM was very arrogant in those days. Very, very arrogant. Anyway, that made them all the more determined to try and get Met [Meteorology] Bureau, and that’s where they sort of offered big discounts, bid
machines that didn’t exist but eventually won the contract, never met the benchmarks; so that was the same time IBM were attacking the corporation’s 6600 everywhere with paper machines, as I recall. Misa: They had this high end 360 machine. O’Neil: Yes, and it was a different one every week. [Laughs.] Misa: That was the machine that Bill Norris ended up taking stiff complaint to, and then starting the lawsuit against IBM. O’Neil: That’s right. That situation also got fed into those processes. Unfortunately, we lost that one. Misa: You lost the Meteorology Bureau. O’Neil: Yes, to IBM. They basically put in such an attractive price for something they said would perform, that they got it. Even though we pretty much taught the bureau how to tackle the process. I accompanied the two guys from the bureau (at a distance) when they went off to the States visiting various places and so on; and I’d been around to all our customers, starting with the Navy one in Monterey, and the national weather service in Washington. But that was unfortunate. You can do the right things; it’s a very salutary lesson to a young salesman. [Laughs.] Misa: Sometimes you win and sometimes the other guy wins. O’Neil: That’s right. Misa: It’s hard to tell. O’Neil: Meantime, out here, one of the things that Trevor and Bruce and I felt was that there were opportunities that suited our engineering bent in things like online systems. Misa: Online systems. O’Neil: Online systems. So Bruce and Sydney went after the Overseas Telecommunications Commission, which was really looking for a communications switch, with a little more than that. They handled all the outgoing communications from Australia; radio, tape, ticker tape, and so on. And they [our Sydney office] went for that; unfortunately UNIVAC got that; but that had got us interested in the lines and products that [Control Data’s] Communication Systems Division in Minneapolis had come up with, which were basically the interfacing equipment to modems and lines, that sort of thing. About that time, we also got this call from a strange lot called the Totalisator Agency Board. Misa: TAB. O’Neil: TAB, yes. And they wanted to computerize their operations. And I didn’t even know who the hell they were when they rang. [Laughs.] I think I nearly pissed them off. One of the problems we had in those early days was that everyone and his brother that wanted a computer had heard about Control Data through the press, and they would ring us and say come out and see us. You’d know that they didn’t have the cash that they needed for even a 3200. Misa: So not a realistic sales prospect. O’Neil: Yes, so you’re getting fairly careful about which ones you would do. And when TAB called in and I didn’t recognize what they were easily, and mentioned it to Trevor; and he said, Jesus, those people have got more money than they know what to do with. Phone them up! [Laughs.] Misa: Bid that one. O’Neil: So Bruce and I went in and did that one. Misa: Bruce and I worked on that jointly. We did a lot of that. The three of us would operate anywhere in Australia, and without [local] tech staff. It was cheaper to have a really good, well qualified expert and fly him wherever he was needed [rather] than try and have one in every city we were operating in. That again, was very much Trevor’s direction. One of the other interesting things I think is worth mentioning that we did at the end, I think it was over the Christmas break of the year that I joined, we had a guy called Bill Austin who did some public relations for us; had an independent company. And we’d been yarning with Bill about various things and he said you know, all the papers are now getting into having sections on information technology industry, or on computers. Misa: Real fascination at the time. O’Neil: It was fascinating, but the other thing was that they were placing lots of advertisements. The customers were placing lots of advertisements for programmers or engineers; these were [the] two reasons to start these IT sections and they got to be very big sections in some of press. And Bill said, you know, most of the guys who are writing in that haven’t got a clue. Why don’t we educate them? So we got together with Cliff Bellamy, who was the computer center manager at Monash, who was getting the 3200, and put together a two-week workshop. It may have been only one week; but it was one or two-week live-in workshop for these guys; then staffed it with our people and Cliff’s people. I took them through hardware early in the process, how it worked, and what it was all about. Others took them through compilers, and ALGOL, and FORTRAN, and COBOL. We had at one time, about 20 or more press people. These guys and I lived in one of the colleges [at Monash Un], and they were an entrée. Misa: Because you had people that would be sympathetic? O’Neil: Sympathetic to us. If they had a query, they knew they could ring us and if we didn’t know, we’d find out for them. And so we went for a heluva long time doing virtually no advertising. And most of those guys remained very sympathetic to Control Data. Other things about that time; oh yes, we’d started to get into real time systems; the TAB one was, clearly, this sort of thing, and we came up with a proposal to them.
the TAB agency would’ve been part of the government? Or separate? O’Neil: No, it was a Totalisator Agency Board. It was established by the State government as a board, an independent board. At that time, you had a lot of so-called SPs, Starting Price bookmakers, working [illegally] off the track. On the track, the betting was done [with licensed bookmakers and] on the totalisator systems, which were electromechanical in those days. And the racing industry was not getting any revenue from all this illegal betting that was going on. Misa: Away from the tracks? O’Neil: Away from the track. So they picked up the model that had been developed in New Zealand of having off-track betting shops, run by a board, that collected bets from punters and placed them on the on-course totalisator. So the role of the TAB was to sell the bet, to consolidate all the bets, place them on the tote, and then pay out on the bets according to the totalisator. And at the same time, the government took a percentage, part of which went to the racing industry, and that really was beneficial for the racing industry. To make it palatable for the general population, they took the other part and made that available to the hospitals, because mostly our hospitals were state government run in those days. So we bid on that one and we were fortunate enough to get that. The RAAF [Royal Australian Air Force] around this time approached us to go to computerized message switches, to replace their paper tape systems that all the defense people used. We bid on the first one; it was going to be one of four to six, but never went past one, because things changed in defense [budget] and they spent the money somewhere else. But we built the first one and that was installed at Darwin; ran there many, many years. Sold a similar system to the New Zealand Ministry of Defence. In those early years, we didn’t really operate in New Zealand, but we had an agent who had been an agent for Heymanson in New Zealand. He was also the Lockheed agent in New Zealand. A guy called “Digger” Harding [ex RNZAF] was the head of the firm. Misa: Digger Harding? O’Neil: H-A-R-D-I-N-G, yes. Lovely guy. New Zealand was even smaller than Australia. And so Digger knew everyone that was anyone, and he would see who’s a contact, so really kept his eye open for things. I remember flying over there couple of times [before I went to Minneapolis] to visit prospective customers with him. And the only one that we did bid on was a 3300 into Defence Department, there. And that one ended up — I think it was Defence Department — it went to Burroughs. New Zealand was funny in those days; one of the interesting things was that they, New Zealand, had really operated as a food and produce operation for the British Isles. And when Britain went into the [European] Common Market, New Zealand suddenly had [tariff] barriers [raised against them] and so they were in deep poo, economically. And so they put very, very strong import controls on. They just couldn’t balance export and import. Misa: Imports and exports had been balanced? 23 O’Neil: Yes, their source of exports had been slashed and so, you know, their imports, too. I still remember my first trip to New Zealand. I looked around at cars in the street, and they all looked like they’d come out of a museum. Beautifully polished but ten and fifteen years old, because you couldn’t import cars and it was the same with computers. They had [import controls and] a very high tariff, which worked to our advantage when we did go into this. I might as well digress, now; we went into New Zealand eventually, in 1972. In late 1971, the New Zealand TAB had decided to move to a computerized TAB system. And so they called for proposals for such systems for their work and again, we bid that with something really based on the Vic [i.e. state of Victoria] TAB system. IBM bid it, and they were our hardest competitor because they wanted to get into that. And the guy that was the consultant to the New Zealand TAB; they’d brought on a technical consultant who unfortunately happened to be ex-IBM. It didn’t matter, we still got the job. But in getting it, we realized we had to start an operation in New Zealand and I was given the task of starting that. I didn’t ever move there but I got it set up from Australia and we originally worked out of Digger Harding’s office but then we put a salesman over there, Peter Dulmanis, who’d worked on the proposal to the [Vic] TAB, and also had sold stuff to Melbourne [University], and so on. And Peter and I were still trying to figure out, well, where are we going to find further business here? About that time, Control Data introduced plug compatibles — disk drives, tape, memory. Misa: So peripherals that could be plug compatible with IBM? O’Neil: Plugged onto IBM. Yes, right. So the Kiwis couldn’t afford to replace systems, so we could add onto them with [plug] compatibles at a price more attractive than IBM’s, which meant a lot to them when they were paying something like 100%, I think, tariff on [computer] stuff. It was something of that order. So that became a major business for us in New Zealand. Just wandering back a little bit; the other thing we’d started looking at; Australia had what’s now BHP Billiton, based around a steelworks in Newcastle and a steelworks in Port Kembla, which is south of Sydney. And both those works were interested in
putting in computer systems to handle online their [product] orders and scheduling of the plants. And this again seemed to be a natural for Control Data, because these had to be real time systems, they had to be fail-safe, and so we bid those with 3300s. That [the contract with BHP/AIS] was decided after I’d actually moved to Minnesota. Peter MacGregor, who I’d hired a couple years before to manage the Sydney office after Bruce had left, [led the sales effort] by that time. Bruce Bambrough went, of course, to CDC [headquarters]. Among other things that Trevor, Bruce, and I had decided in the early days was that both Bruce and I would need to spend time with Control Data Corporation, if we were going to establish credibility for the Australian operation. We had to get to know the people over there.  

**Misa:** So going and spending time in Minneapolis?  
**O’Neil:** Yes. So Bruce took a job in Minneapolis, and a year later, Trevor rang me from Minneapolis – “I want you to come over here; I think I’ve got a job for you here.” And so I went over in late September 1967, I’m quite sure of that, and took a job working for Data Processing and Control Systems Division. It was out at Hopkins, run by a guy called Frank de Monchaux, and I went into that as Director of Product Management; it was sort of the marketing interface to the division; the salespeople would come to my department to get proposals on the stuff that we took system responsibility for. And that [move] was again key to some of the plans [for Australia] because we [Trevor, Bruce and I] decided that we had to; we were getting into the systems business in Australia. We needed to do it formally; we felt we needed to manufacture something in Australia; and Victorian TAB, by the time they came to their second system, where they were going to have ticket issuing terminals directly online, Ken Davis the GM was very keen that they be manufactured in Australia. So I remember Bob asking me about the end of my first year there, would I write a paper on what would be involved in setting up a systems division in Australia.  

**Misa:** That’s Bob Price?  
**O’Neil:** Yes, which I duly did, and I think Trevor got a bit pissed off because I gave it to Bob before or at the same time as I gave it to Trevor . . .  

**Misa:** You were supposed to [pause]?  
**O’Neil:** [Laughing] . . . which was lacking a little on protocol. I just didn’t think, you know? But it didn’t really come between Trevor and I. But the one thing that was awkward in that was, in thinking about it, I said this division, if it’s going to survive, has 26 got to have someone in Minneapolis who feels they have a responsibility for it because if we don’t have someone senior in the systems organization who feels that they’re responsible for this division we won’t get the stuff we need, the help we need.  

**Misa:** You’d be an orphan or something to corporate headquarters.  
**O’Neil:** Yes. And I felt rightly or wrongly — probably rightly — that with an Australian running the division there would not be a problem in interfacing with Trevor and the rest of the organization, which there never really was. Where it became a problem was about the same time as we [ASD] started up, one of the things we’d [previously] started in Australia was a Data Services operation, using some time that we owned on the Monash [University] 3200. About the time I left Australia to go to the States, that business had got to be enough that we installed a 3300 in our Melbourne office, and ran a data center, which had nothing to do with the U.S. Data Service’s operation.  

**Misa:** That was in Melbourne?  
**O’Neil:** In Melbourne. The Corporation decided at that time [1969/70] they’re expanding Cybernet, and basing Cybernet on 6000 series machines, and they wanted [Australia] to be part of this, and they would put one in Sydney. And they sent out a guy called Dick Ernst to run it, and he had direct line; he was directly controlled out of the U.S. Now, that didn’t work nearly as well because he didn’t know Australia, so he tended to disregard the rest of the Australian operation quite often. And similarly, Frank Ellesmere came out in that same year and set up a Control Data Institute, and again, Frank came from the U.K institutes there, and again reported right back to Minneapolis. So this is where a bit of parochialism started to set in, in the operation here; that there are too many bosses [in Minneapolis] who all thought they owned a bit of Australia.  

**Misa:** Different lines of business reporting to different people back in Minneapolis . . .  
**O’Neil:** That’s right.  

**Misa:** . . . and some activities going on here with you folks that knew the market; but then you’d have the connections back to Minneapolis.  
**O’Neil:** Yes. I never had a problem with this, with the Australian Systems Division, my original boss was a guy called Noel Stone, who was an old time engineer from the corporation.  

**Misa:** Noel Stone? Oh yes, one of the famous names.  
**O’Neil:** Yes. And Noel and I got on very well, and he just basically said “tell me when you need something and I’ll get it for you. I’m not going to bug you otherwise.” It was a little less so when Noel left the corporation to join Cray Research and I got Bob Eisenhardt, who’d been a district sales guy, or East coast sales manager, I think; [now] had a component of CDC’s Systems operations, actually, and I reported to him. And what 28 killed ASD was the Corporation told me “we’re not going to have these
small [Systems] divisions anymore, we’re only going to have big [Systems] divisions. By that time, the Australian System Division was manufacturing the terminals and delivering the systems; little later, systems to Vic [Victoria] TAB; we had orders for systems for Queensland; we had orders for the systems, or we’d bid on the systems for New Zealand; we were doing these message switches and were involved in the BHP and AIS complexes. So we’d got to about 170-odd people, I think, at that stage. An awful lot of them were applications programmers. ’It’s the nature of those real time systems, we built a special operating system for the 3300s that was a real time operating system that [had real time capabilities] the basic [standard] Master system didn’t have and we actually had a U.S. programmer writing that. He did a great job, but we built that specialized system for BHP/AIS that worked very well. So we had those activities going on, but this decision was made, we would close Australian Systems Division because it was a “small” division. At the same time, they closed a whole bunch of smaller divisions around the U.S. and consolidated them into these large systems divisions. I think Paul Miller had left by then, and gone to Commercial Credit. Misa: So the Australian Systems Division was absorbed into the [Control Data’s] central systems division, is that right?
O’Neil: Nominally. For months and months and months afterwards, we would keep getting these Telexes from some goofy guy — different guys in the U.S. — saying how come your head count hasn’t gone down by this 170 people that we had in the systems division. And we’d have to carefully explain well, we’re still doing the projects, you know, that we’ve got all these programmers doing projects, and engineers doing projects, and we’re still manufacturing terminals for the TAB. [Laughs.] Misa: Ongoing work. O’Neil: Ongoing work. We have to have project managers for that; I just gave up eventually and we just didn’t bother answering them after a while. Misa: So they thought somehow you’ve abolished the system, and you’ve got all kinds of clients hopping mad. O’Neil: That’s the way it all went. Also by that time, we had sold [CDC] 3300 systems to the South Australian Public Service Board. A lot of the government departments originally would establish a consolidated group throughout the government. And so in South Australia, the state may have said, “well, there’s no way we could afford to have every department having its own system; we will establish a data center, a state data center.” Now, the other thing — I missed this — that was again very important in those early days, the Bureau of Census and Statistics made their systems in the states available to other departments [including State government departments] to do work on, so that a lot of the initial learning and training of departments that didn’t have any IT was through operating on the Census and Stats [computer] sites. Misa: It was the CSIRO that had a central system, but that Census had satellite computers in each one of the Australia states.
O’Neil: Yes, and CSIRO had three satellites. It had Melbourne, Sydney, and [perhaps] Adelaide? I forget where the third was, now; isn’t that terrible? Misa: We can look it up. But Census was in each one of the states? O’Neil: Census eventually had one in every state. Just before I went to the U.S., the other thing that we did was we sold some major upgrades to Bureau of [Census &] Stats, both in Canberra and in the states, increased the size of all their systems quite significantly. And that was the first time that big commissions were paid, and the guy who got the orders was Ken Tiede who was on loan from the Corporation and was our Manager in Canberra. One of the things, again, getting back to the early days, with the large [CSIRO and Bureau of Census & Stats] contracts, we clearly had to set up a Canberra operation, and Trevor said well, it’s important — and talked with [Bob] Price about it — it’s terribly important that we have a really top flight American running that, based in Canberra, to make the customers feel that they were directly on line with Control Data Corporation. And that’s when Price hired Bob Barton. Misa: Bob Barton.
O’Neil: Yes, B-A-R-T-O-N. Bob had worked for universities over there and for Burroughs Corporation, and I think he was working for Beckman Instruments when Bob Price hired him. And he was, you know, a fairly well-known name in the computer industry; and he came out with two other guys, John Stockman and Al Collins. Al was a Texan. There’s a good story about that; one of the senior government guys at one time asked Barton, what’s this guy Collins do? He could see what Stockman was doing; Stockman was going around helping the customers plan their computer operations, but he never quite made out what Collins was supposed to do. Barton, sat back in his chair and said “Well, Al’s a genius keeper, he looks after me.” [Laughter.] Barton came out prior to Christmas that year, not long after we’d set up, and I still remember, in those days, you couldn’t get accommodation in Canberra. The government was moving stuff there; things were happening; they just didn’t have the infrastructure. And so I sort of went up [pause] Misa: Just finding office space, right? O’Neil: Yes, you couldn’t get office space. But you also couldn’t find motel
accommodation half the time. If Parliament was sitting, it was full of politicians and public servants; they had offices out of Canberra; and I remember, I think it was Bob Barton, Al Collins, John Stockman, and myself all staying in one motel room to do these interviews in Canberra. [Laughs.] And we sort of went through an interview process where, for the original analysts and that, Barton, and those three, and at least, either Trevor or myself, and often George Karoly, would sit in and make the decisions [whether] we [would] hire them or wouldn’t we. And we could pretty much have our pick in those days, we sort of took them from all over the place. The other thing that happened there was that you couldn’t find office space, and eventually, with the help of one of the senior department heads, lobbying the Canberra Board that controlled these things, we bought what had been a doctor’s surgery and dwelling in what was really the embassy area of Canberra. And that became our [Control Data] office for a number of years. We actually purchased the thing, and we actually made money on that when we finally sold it. But the government customers loved coming there because we had this big dining area, which, when we bought it had a big dining table in it, which would be a conference room and it was not like going into a normal office. And we called it the Control Data Embassy. [Laughs.] Oh, dear. **Misa:** Just to keep the chronology straight here, you said it was December 1967 that you went to Minneapolis? **O’Neil:** September. I went [late] September. Australian Systems Division was originally [to be] set up in July of the following year; no, rather, two years later in 1969; July 1969. But that was the year the corporation had a “stub” year and decided to realign their Financial Year to a calendar year, January to December, yes, to the calendar year on their reporting. And they therefore didn’t include the start-up of the Division in their budgeting process, and so even though things were starting to happen, we didn’t really start. I got seconded to work with Noel Stone and moved to the old Corporate HQ building, working on plans for the start-up of this division, for six months [from July 69]. And then I came back to Australia in December, just before Christmas that year. **Misa:** That would be December 1969. **O’Neil:** Yes. Sorry, did I say? And the Division kicked off in January of 1970. But by that time, Trevor had already hired a manufacturing guy who’d been looking for places to put the manufacturing plant to build the TAB terminals, etcetera, so there was a lot of stuff actually going on in that six months where we didn’t actually operate as a division. When starting up the division, one of the things that I felt strongly about and was agreed was that the programmers, whether they were doing to work for us, or work for marketing, or work for data centers [they] should be all part of the same organization so the division drew its programming resources from the same pool of analysts, which gave them career paths, if they wanted. And similarly, most of the engineers were drawn from customer engineering. In fact, all our original system managers were typically customer engineers or senior analysts. [interrupted by ringing telephone]. **Misa:** Okay. **O’Neil:** The other thing I suggested to Engineering Services was that we share a logistics function between manufacturing and engineering services; just senseless having two sets of store men and all that sort of thing. And that worked quite well. And also, engineering services, by that time, were starting to do some local repair of cards, circuit cards, and circuit boards. 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And it made sense to base that with manufacturing also initially, while they existed. 34 **Misa:** I wanted to make sure that we ended up covering Trevor Robinson’s departure. **O’Neil:** When I came back, Trevor and I worked very closely together; but also with a third guy Wally Cavill [who] was an Australian who had been working in Canada, who Trevor brought home to run Engineering Services in the time that I was away. Sometime in those years, Wally joined, and the three of us basically spent a lot of time together and got on very well. But one of the things that occurred was that these other divisions moved in, or were brought in, like Cybernet and CDI, with a direct reporting line back to the U.S. and then no reporting line to the local operation, as such, or a weak connection. Even though we, Control Data Australia, took on common personnel services, something that I’d established in setting up the division, I had brought out a couple of Systems Managers [Dale Rostamo and Ben Louw] and a Financial Controller [Jim Mathis]; Paul Miller suggested I bring out a corporate personnel guy, because up to then, we’d had a personnel lady who really kept count on heads and a few things like that but it wasn’t what you’d call a human resources function; didn’t consider human development and these types of things. So the suggestion was that I talk with Trevor and if he was agreeable, that Dave Noer come out and [handle] human resources. **Misa:** And his last name is? **O’Neil:** N-O-E-R. And so Dave came out; Trevor agreed to that fairly quickly, and Dave came out in early 1970 and set up the HR Department. But Trevor; the other thing that 35 happened about that time was that Bob [Price] left international operations and sort of went into that services role
for [Bill] Norris, and he appointed the French country manager, Gerard Beaugonin, to replace him as Manager of International Operations. And I think that, more than anything, got up Trevor’s nose because I think Trevor felt he was a better choice. And at the same time, Data 100 had got going about the time that I left the U.S. Actually, that started up and Bruce Bambrough had left the corporation as one of the founders of Data 100. And Bruce contacted Trevor after a while and said “hey, we need somebody that knows what they’re doing running our European operations. How about you?” Trevor said fine. Misa: So then Trevor Robinson went to run Data 100’s European operations. O’Neil: Yes. When he ran their international operations, actually, he based it in London and he actually — just to finish his story a little bit — after a few years, they asked him to go back to the U.S., to Minneapolis, and become a Vice President of Data 100 there. He was involved in the selloff of Data 100 to Northern Telecom. He stayed on for a year or so. I used to see him regularly when I was over in Minneapolis, and similarly, when I was passing through London when he was there. And after about a year with Northern Telecom, and he decided he’d had enough — he made a fair amount of money out of Data 100 and Northern Telecom — he came back to Australia. He hadn’t been back long and he was very keen to try and start a systems company in Australia. We talked about that quite a lot but somehow never managed to get it off the ground; an independent, you know, high tech. Misa: Independent systems; a startup. O’Neil: Yes. And somehow, we never managed to get our act together on that one. But about that time [Bob] Price offered him the job of starting Control Data Business Advisors in Australia, which is one of the newer services businesses they were going into. Trevor accepted that role and came back onto the board of Control Data Australia. His relationship then lasted right through until the selloff of Control Data in Australia. Misa: Into the 1990s, then. O’Neil: Yes, into the early 1990s. Just to finish Trevor’s story a little, because I think it’s important, he then was offered a job by John Button. The Hawke Labour government came into power in 1994. Yes, 1993-94. John Button was the Minister of Industry, and Trevor and John knew one another, had both been to the University of Western Australia, and he took Trevor into his department as an independent advisor on the IT and communications industry. Misa: John took Trevor into the department. O’Neil: Into the department, yes, because by that time Control Data had gone. Trevor was at a loose end, which he hated to be. And so he worked for John Button for about three years, and he [laughs]; it was often said that Trevor was the only guy that managed to have every department head in Canberra after his scalp because he wouldn’t put up with the public service bullshit, he was trying to get them to do sensible things and to recognize government IT expenditure could be used to effectively get some Australian businesses running. But another thing that we joked about was that the only way to stop the Australian government from buying from overseas vendors all the time, and instead buy from a growing number of Australian vendors, was to offer them two overseas trips if they bought from an Australian vendor, and one only if they bought from a U.S. company; [laughs]. One of the perks on the public service side was they’d all go off on these grand world tours where they’re going to acquire some equipment. Then if they had an overseas vendor they would have to clearly go back and visit that vendor fairly often. So that was wishful thinking. [Laughs.] Misa: Okay. Robinson was quite a notable fellow. O’Neil: He was very bright. His background was in engineering, or physics and math. He’d joined the air force early in 1942 when they were looking for science graduates and undergraduates to join the RAAF and look after these newfangled radar things. So Trevor joined the RAAF and was running radar stations up in northern Australian in the Pacific islands to the north of us. Misa: The Australian Air Force. O’Neil: Royal Australian Air Force. And then he’d come out of that; well, I can give you his history elsewhere; but he’d come back and worked for CSIRO, then was seconded to Weapons Research Establishment, which was out in the desert of; well, it was out in South Australia where they were establishing a field firing range for missiles, and so on. And doing a lot of other things like that and he went out of there to work on a Digital Impact predictor, which is something that would predict the flight path of missiles from a safety point of view. And then he had gone to; wait, come back to CSIRO, and then [been] seconded to Defence Signals Division, which is our equivalent of NASA; NSA, I should say. And being sent to England, where GCHQ [Government Communications Headquarters], which was the British version of NSA, was building a digital computer for cracking codes. And it was when he came back from that that he decided to get out into industry and join Heymanson. Misa: So he had really a notable set of contacts in Heymanson. O’Neil: Absolutely. One of the reasons that he believed that Control Data accepted the idea of giving Heymanson the representation for them...
was that Trevor and — I think it’s in that story — when Trevor and the guy who was nominally in charge of this department at Heymanson’s went to Minneapolis to try and talk the corporation into the [representation]; it turned out that John Lacey was there. And John had been at GCHQ and known Trevor there, and said hey, that guy knows what he’s doing. And so they did agree, which they probably wouldn’t have for that; all these connections are terribly important. **Misa:** Does it always appear in our files, but talking to people like you, you get the connection. I didn’t know that John Lacey was connected to this story. **O’Neil:** Right. Lots of things like that. Just making some more general comments: one of the early customers I should have mentioned was Defence Signals Division, which was this lot that I was talking about. They were based in some old wooden ex-army World War II barracks which is now gone. I sold them a [CDC] 3400 just after it came out because that met their requirements very nicely. I think we bid a 1604 and converted it into a 3400 by the time they bought. The networking in the Australian industry was fairly strong and Trevor later was heavily involved in the startup of the Pearcey Foundation, which is a body that encourages computer professionals, separate from the Australian Computer Society. **Misa:** PSE? Did I get that right? **O’Neil:** P-E-A-R-C-E-Y. Trevor Pearcey. And Trevor [Pearcey] had actually started, or he had actually built one of the first computers in Australia [CSIRAC] when working at CSIRO, in the Radio Physics division in Sydney. And that machine was subsequently sent to Melbourne University, where they got it really working because Trevor wasn’t a very good engineer. He was a very bright guy. Trevor then was important member of the selection team for CSIRO on those original contracts. And then he expressed the desire to join Control Data in Minneapolis, and he actually worked for Jim Thornton for a couple of years. He was particularly interested in relational database systems. And in fact, he then came back to Australia and Jim asked me would I take him on board at ASD. He wanted Trevor to finish this work. And I’d provide the home for him for a couple of years, and Jim provided the funding. And then Trevor Pearcey subsequently left and set up a major computer science department at what was then known as Caulfield Tech, which is Caulfield Institute of Technology. We had, in Australia for a long time, we had three layers, three major layers of tertiary [higher] education. You had the universities; you had the institutes of technology, which typically had degrees or diplomas, I think they gave; and then you had tech colleges. So the tech colleges taught technology at the lowest level, you know? Fitting and turning and all this sort of thing. The institutes of technology brought it up a level. And then you have the university with all the theoreticians. I’m just mentally thinking, what else should I mention that I should cover for you? **Misa:** I don’t think we did Australian systems; we had a brief mention of U.S. Cybernet; did we do much with CDI [Control Data Institute]? **O’Neil:** They came out in 1972, no, it was 1970. It was either 1970 or 1971 they put an Institute originally in Sydney. Then subsequently had an Institute in Melbourne. I think they had one in Brisbane. Not sure about Perth; I just can’t remember now. And again, those Institutes typically drew on the old Control Data personnel for a lot of their teaching staff; they taught engineering, they taught principally computer system operators, computer system programming, and computer systems maintenance engineering. **Misa:** Hands on, job oriented. **O’Neil:** They would typically have a 3200 installed and teach those three types of courses. I thought they did a super job. Their graduates were highly sought after and one of the things that made CDIs work was that they took on placement as part of their process; placement of their graduates. So this is what attracted a lot of people to the CDIs. **Misa:** And the placement could be within the Control Data Company, but elsewhere as well. **O’Neil:** Absolutely. **Misa:** So this is really looking at education, not simply as company training but for the wider world. **O’Neil:** Oh, no; this is for the wider world. Yes. And that worked very well. It was probably better known than Control Data in the following years, in a sense. Most of the graduates went to commercial business, government departments, or other computer companies as engineers. We took a few, but not a lot. **Misa:** So how did you see the relationship, then, between the systems part, the technology part, and then this training part? Were there relationships that needed to be worked out? **O’Neil:** Not really. They really ran fairly independently, except for depending very much on drawing some of their staff from Control Data Australia. It was natural that there’s a lot of that could go on but we didn’t, you know; they sold their courses; they didn’t operate through the Australian sales organization in any way. Telstra had an independent sales organization. In fact, one of the problems that arose in the 1970s; a good example is our telephone company, Telstra By that time, PMG had split into a postal department [Australia Post] and a telecommunications department [Telstra]. And the telecommunications department, the engineering group there became very heavy users
of Cybernet services. And Cybernet services would get irate if our system salespeople went near any of their major customers. And this became very heated at times; and in fact, [we] lost some customers. I mentioned Telstra/Telecom, it’s that they wanted their own system. They had enough work to have their own installation. Cybernet Services, through the U.S., had instructions sent to divisions, to the sales operation here, you cannot sell those people a computer system. Net result was they bought somebody else’s computer system. Isn’t that amazing? Misa: So they could’ve been running something like Cybernet on a CDC machine . . . O’Neil: Absolutely. Misa: . . . There’s a conflict that needs to be managed. O’Neil: Yes. And things didn’t work so smoothly as they should; other times they worked very well. For example. With BHP and one of the requirements we committed to was a linear programming system. And somehow, the development of that [for the lower 3000 series] had been planned and it never really happened. The solution I came up with for that was to give them a 200 User Terminal and free time on Cybernet for their linear programming. And that, in fact, worked quite well. When we set up the Melbourne Cybernet bureau, it originally went into BHP House and the corporate HQ of BHP became quite a big user; mainly for technical type of work. Misa: These pieces would eventually congeal in the internet. There were all these private networks that pre-existed the internet; we tend not to remember them but IBM had its own networks, and DEC had its networks, and CDC had its Cybernet. So in Australia, say, around maybe 1970 or so, could you give us a picture about the different types of computer networks that existed? Was Telstra trying to get into that business? O’Neil: No, Telstra didn’t try to get into the networking business but the engineering of a communications network has got an awful lot of engineering [computation] involved in it, and so that engineering division of Telstra — it’s gone through different names — was quite a heavy user of computing, simply for network planning, network resolution. The first networks here were as TAB operated, as you’ll find when you read its story; operated originally with straight copper lines. Normal telephone was out to the agencies and we used current signalling on those lines. Originally, we proposed telex, which was the equivalent of TTY. So it was based on that sort of network. And later on in New Zealand, to meet their requirements, they had three large centers [Auckland, Wellington and Christchurch] well separated. We put in communications multiplexors between those major centers, and, say in Auckland, we multiplexed in a large number of very simple lines, then a high speed line to the system in Wellington. We didn’t have that need here because Victoria is a fairly small state. With Cybernet services, we clearly had to bring in networks. The first ones were where the customer would take a 200 User Terminal with modem, and a line to our data center. And as we opened more data centers, we interconnected the data centers with high speed links so that we could move stuff around fairly easy. Now, individual office communications in the area, we moved that on teletype and telephone and only later did you use the Cybernet communications network as a means of communicating between them. CSIRO had originally not wanted a network; they had decided that the individual state would be handling it. Some of them were handled on the 3200s, and if they had bigger problems that needed the 3600, they would dispatch a magnetic tape. Misa: Oh, just physically move the data. O’Neil: Physically move the data, physically move the program and the data to Canberra. Later on, they became a network. And Stats originally wanted a network but it just did not make economic sense in the early days. Later on it did and they interconnected their sites. Misa: And that would be forming, actually, a countrywide network within the Census and Statistics Bureau . . . O’Neil: That’s right. Misa: . . . and it’s going from Canberra out to all the states. That’s a national network. O’Neil: The Commonwealth actually, at one stage, did plan; it had a department — forget its name now — small group within one of the departments that initially took an overall responsibility for training in DP [data processing] and oversight of DP throughout the Commonwealth departments. And they came up in about late 1969 with a proposal for the Common User Data Network for the Commonwealth, which would provide data and terminal facilities throughout the Commonwealth public service. And it really was a message switching, intended to be somewhat like a message switching system. We bid on that. At that time, Control Data had recently acquired Marshall Communications (MDM) in Santa Anna and I remember I went down there and visited them and I was communicating with Australia over the [CUDN] bid. I said “I think that’s the stuff you’re going to need for the CUDN [common user data network]. Why don’t you send somebody over to work with them” and a guy called Dave Micklethwaite came over, fellow from Canberra. Misa: So common user data network, CUDN. 46 O’Neil: Yes. That, unfortunately went to UNIVAC and never really
got off the ground to any great extent. I don’t know what went wrong with that; I just didn’t follow it. Others might be able to tell you if it ever really did anything or not. The [government] departments were intensely competitive. Apart from those early years where Statistics made their sites available to any Commonwealth department to, you know, cut its teeth on data processing. After that, they all sort of fought like cats and dogs; all wanted their own systems and didn’t want to have any commonality with anybody else. **Misa:** We think of networks today as linking, but linking also implies a certain amount of dependency or relationships and it can be quite political. **O’Neil:** Trevor again was part of the initiative on this but the other part was Bureau of Stats could see that it would make sense for the government, the Australian government, federal government, to run a large Commonwealth data center operation and have that meet most of the needs of individual departments. And that was proposed; of course, we’d have loved to be the supplier; but again, departments being departments, [it] never got off the ground. Everyone thought it was a good idea for everyone else but them. They had their own special requirements. So every department ended up with its own computer systems. **Misa:** In a certain way, we’ve been talking about data centers, and the engineering services; some of the shifts that the company was experiencing toward a greater emphasis on services. Bob Price took an important role in that; would you say something about that shift here, for Australia? **O’Neil:** Well, we’d seen data services as a natural service to introduce. The training one we hadn’t foreseen and the Control Data Institutes were good in that. Now, Engineering Services, I ran that from early 1975 through 1980, and one of the big things I did there was treat that as a service and recognize that many of our sites have other than Control Data equipment. It was always a bloody nuisance to have an argument about whose system was creating a problem because these were all interconnected. So we went into third party maintenance, where we’d maintain DEC stuff, we’d maintain other people’s terminals. We also had established, under Ron Bird originally, a very effective ability to plan computer sites, computer rooms and their air conditioning, and services, and so on. Physical thing. We had to do that for our customers and then we said “well why can’t we market that?” And so they’d work within engineering services; we marketed a computer facilities service. And we constructed, for example, a major site for Telstra. I should have said Telstra in the early days was a prospect [for a system] - other than just engineering. But again, at that time [1974/75], departments didn’t want to do the same as everyone else and we had our hands fairly full with Bureau of Stats and CSIRO, when they [Telstra] came out and they went with a GE system for their billing, and this type of thing. That’s when the most of them started: in billing systems, like Telstra. But eventually that expanded and they had a very large data center out at Clayton and we did all the design work for that, for them. That was later on. We actually sold them our Knox Cybernet facility, I saw that opportunity in the mid-1980s as Cybernet Services contracted. [In the late 70’s] we’d built a major data center at Knox, which you’ll hear about from Dick Bament. And this was purpose-built from the ground up and Dick’s people and Engineering Services did that jointly. And it was overbuilt. We built it to take a helluva lot of the old Cybers. [Laughs.] And when it was clear that we didn’t need anything that size anymore, we had the bright idea of selling it to Telstra. They were looking for another site. So I thought it was brilliant. [Laughs.] And we were happy to collect on the asset. Now, [other] services, we also sold analyst services here. We sold analysts in to work with customers, where necessary. We had Professional Services as part of data services [Cybernet], where you had analysts who were specialists in linear programming and various types of applications that customers wanted. So we had no problems with the concept of the services business related to the DP [data processing] industry. **Misa:** Services is trying to figure out what people need to do with computers . . . **O’Neil:** That’s right. **Misa:** . . . not simply selling the hardware, machines, programming . . . **O’Neil:** That’s right. **Misa:** They don’t necessarily want to run a computer but they want to have the capacity. **O’Neil:** The mistakes that we made, and the corporation made, are the same as a lot of other companies made: they let these services become too compartmentalized and didn’t really get the synergy out of them they should have. Like Data Services would get upset about the thought that the systems people would try and sell a system to a customer that had grown big enough to be running his own. **Misa:** Telstra would be a good example of that? **O’Neil:** And what none of us saw that became, in these days, that became more popular with users, is facility services, where you basically, you sold a guy the whole facility, manned, equipment, the lot of [it], but you run it. **Misa:** IBM did something quite astonishing with that. **O’Neil:** That’s right. **Misa:** But for a company that’s used to selling computers, this is a different mental framework. **O’Neil:** That
actually was quite funny because when that happened in Australia, by that time I’d left Control Data, although I worked in the consulting industry for a number of years, but not in DP consulting. I was into management consulting with a small group. Our little group got bought by IBM, and the last three years I spent working with IBM; [the last years] of my working life, I should say. And they were just going into this idea of facilities. They had the ability to sell it, but they didn’t have the ability to deliver it. And only IBM could’ve got away with it; they had disaster upon disaster.

Misa: And learned something from those disasters? O’Neill: Oh, they did. Misa: It’s not a story that is well known, but it’s a very important learning experience . . . O’Neill: Huge one! Misa: . . . when IBM went into services . . . O’Neill: It’s the last job I did in IBM, and in our little group, we never did understand why they bought us. I think it’s because we had entrances to some very large government customers through our work in quality and quality management, this type of thing. And they wanted that but most of the time we worked internally, as internal consultants, management consultants [for] IBM. And one of the last jobs I did (with another guy that had been part of IBM’s consulting services) for the vice president running IBM Asia Pacific, out of Tokyo. He asked us to have a look at their operations and see why things seemed to be not going all that well. Their people weren’t talking to one another. I still remember when we went in. We did this by interviewing, basically. We got what information we could on the way organization really worked. Misa: Talked to people. O’Neill: Talked to people, right? And they had layer upon layer; multi-layer staff. It had a name in business terms, in those days; like you had a line that might be the sales line, right? And you had another line that might be the analysts. And another line that might be [pause] Misa: Something that’s called matrix management? O’Neill: Matrix management, that’s what it was. Misa: It looks great on paper. O’Neill: They had matrix overlaid on matrix; and what we really found was that each guy who was a senior manager in that Pacific region, had about four to five people who all thought he had a responsibility to them. [Laughs.] And so their method of solving that was to decide which one they could get on with best, and had a good incentive plan that they liked, and they’d work for him. And he’d ignore the rest of the staff; and, you know, the poor country managers had no power at all in this setup, and they’re trying to juggle all this, and you had the language [and cultural] problems. I still remember we spent a few weeks on this and finally, the last few weeks in Tokyo, put together a report for him; presented it to him; and his face just went [pause]. He said “well, I need you guys back early next year to help sort this out.” We’re waiting for the call; never came. Rang up his staffer and said “I thought you wanted us to come back;” oh, he’s left. He’s left IBM. [Laughs.] He walked out the door; he just decided there’s no way he could solve this problem and he was getting out. Misa: You made a quite strong statement about the company culture at CDC, and you had a bit of contact with the company culture at IBM. Could you compare and contrast them? O’Neill: Grossly different; radically different I should say. Grossly sounds a bit glib. We’d started the culture, I think, the concept of the customer is your first priority. If you’ve promised something to a customer you keep that promise, you don’t walk away from it. You get the people with the right technical expertise on the job, don’t make do with someone that can’t do the job. Innovate, find new ways to do things and we’ll recognize that, and if it’s any good, we’ll move that thought right through the organization. You know one of the things I did with Engineering Services reflects a lot of [this]; at the time I took over, because most of our sites were large sites, they had an onsite team of CEs, customer engineers, and those guys would mainly operate on that site. They would swap some stuff with other sites in the area, but basically they would be at the customer’s beck and call. That clearly couldn’t continue; equipment was getting more reliable; in the early days you needed it because if you had a big 3600 installation there’d be something to do all the time, things
to be repaired. But as equipment got better you didn’t need that and it made a lot of sense to get people off the site. So that was one of the first things I did was consolidate the logistics. We put together basically spare parts kits, tools, according to the type of equipment we were working on, you know, 607-tapes, so on — 1700 — you’d have a kit that the engineer would go out with that almost certainly had what he needed, and he would basically be an on-call engineer from our base for them. Then the customers increasingly wanted to run their systems around the clock and the approach of my predecessor in engineering had been well, we can’t, you know, the customer will just have to pay if he wants engineers there 24 hours, seven days a week; he’ll have to pay for it. And the customer clearly did never manage to see that; particularly if the guy would sit there for eight hours with nothing to do. And you didn’t want him sitting back at base, because most of the time he wouldn’t have a callout as the equipment got better and better. So I really just threw the problem to the branches and districts to figure out how they would meet that customer need; tell me; you tackle that. So they were given not entirely a carte blanche, but pretty much a carte blanche to work out the arrangement that best suited them. Most of them came up with something around the guys would be scheduled to be “on call.” They would have pagers so that we could reach them wherever they were. They were not required to be at home or at the end of a particular phone line. We made sure they had vehicles and they were paid a premium for being on call, but they weren’t paid as if they were working. So go off, enjoy, but don’t drink. [laughs.] Misa: Because you could get called in. O’Neil: You could get called in. And each branch, district, had different variants of that and we were able to provide that service to the customers [at a price they could afford] and still make money. So that was a good example of leaving it to the people to come up with a solution rather than trying to dictate something from the top level down. Control Data in the 1970s started to get involved in Total Quality Management. Rolled it out a bit too strongly procedurally; I don’t think we understood enough about the human dynamics of it; and I did a lot of work, on that later on in [my post-CDA] consulting. Misa: In TQM. O’Neil: Yes. And the key to that, from my point of view, was the human dynamics. You really had to get people understanding how to work with other people for it to come off, but the mechanistic side of it was simple. Misa: The statistical quality control? O’Neil: Yes. And teams developing ideas and testing things out; that was all right. You had to get them being able to talk to one another and respect one another to do that. I think we [CDA] started off with a benefit in that we had a fair amount of that respect between the guys in the company. TQM was brought out and I think it came out from the States, from the corporation; [TQM] was really a program in the States on this, and it didn’t have the human resources components, which was a pity. Misa: Well, human resources could be understood in a couple of different ways; one would be a more formal personnel, policies? O’Neil: Oh no, no; I’m talking about people understanding how to interact with other human beings; how to communicate; how to recognize each personality was different; and how would you cope with that and understand one another, and be able to build a team that really saw its role as being a team. And we’d done a fair amount of that anyhow, so the TQM part of it was sort of, from my view, it came late, about the time I was leaving the company. By that stage, I was trying to get into Government Systems in Australia, you know, defense-type systems. In Australia we had a belief that we knew enough about Government Systems [GSD] in the corporation to realize there was an opportunity here with the Australian Defence Department, and the number of its laboratories, and so on. But we were pretty late starting and that was the time where, you know, [E. J.] Manny Otis took over as regional manager. Neither Trevor nor I had very much respect for Manny so he basically told Trevor I had to be fired. We went ahead with that sort of stuff, the corporation was contracting, and I’d been going down that path for about 12 months. Misa: So this is time 1985, 1986? O’Neil: Yes [1986]. In retrospect, I should’ve left earlier because the corporation was, I felt, on the road to disaster at that stage. We saw too much from this end, of people being hired in that we call pirates. Misa: Pirates? O’Neil: Yes. In senior management roles, they would come in, milk it for what they could make for themselves for a couple of years, and out the door again. And that style of management became quite endemic in the corporation. Misa: Do you think that was [specific to] CDA, Australia? O’Neil: No, no; I’m talking about Control Data Corporation. Misa: The company as a whole? O’Neil: The company as a whole. And some of that, then, was reflected in the choice of people to come in and run Control Data in Australia. Misa: Okay, so you would see the results of that. O’Neil: Yes. It was really crazy, Tom. If I look at it from a management point of view, from the time Trevor left, they typically would send out a guy to run Australia. Because of the divisiveness of
having different groups reporting back to the States, they thought there wasn’t anyone in Australia that could run the country, as such; they’d better have an American running it. So they’d send a guy who’d been a district sales manager, somewhere, out to run a country and he had typically been, you know, computer system sales; know nothing about data services; know nothing about CDI; know nothing about engineering and be sent out here and expected to run this in a foreign country. And they didn’t have a lot of respect from the locals, and so we went through them fairly quickly.

Misa: About how long would some of the U.S. managers last? O’Neil: Two years at the most. Misa: Two years at the most, wow, that’s a crazy time. O’Neil: The only guy that was halfway reasonable at that point was John de Beer, from South Africa, came here. And he didn’t get the corporate support he needed. [Laughs.] Oh dear. I don’t think Bob ever understood some of that. Misa: Bob Price. O’Neil: Yes. Bob, to me, has always been a friendly guy that I liked but somewhere in the 1970s, they sent him off to Harvard to learn about business. And Bob then ceased to be a people person and became a numbers man. And he made some shocking choices of people, I thought. Misa: I think that’s one of the big challenges when you’re running a large organization is how to understand what you’re seeing. O’Neil: That was another thing Trevor taught all of us that worked with him; the numbers are simply the result of what you’ve done, right? You can’t manage by those; you manage by what you’re doing. So you spend your time out with your customers, with your staff; and if you’re doing it right, the numbers will follow. Misa: Right.

O’Neil: Price was trying; the corporation was trying to run by numbers. It’s you’ve got this magic thing; you’ve gotta have these numbers. “Sorry, that target you’re setting is impossible for these reasons.” “No, no, no, that’s it; that’ll be your target.” And so that pisses people off when they know it’s ridiculous. Other times, they set a target too low. You say, hey, that’s too low. You’ve gotta get that up and give us some resources. No, no, no, we only want that. Misa: Then there is a kind of disconnect; that the numbers give you a false sense of security. O’Neil: Sure. But Control Data did a lot of; yes, one of the other things that was very much part of the culture here was that every guy, we tried to give the opportunity to set his own path and then give him the training to do that. And the [HR] guy that followed; the one after Dave Noer, Brian Donnelly, did an excellent job of setting up supervisory, and management, and you know, all the soft training kind of stuff. We’d always done a good job on the technical training. From the earliest days our approach had been to send an engineer to the States, or maybe a couple, for a new piece of equipment we were bringing in. They’d bring it back, they’d run training for the engineers right around the country, rather than sending them overseas - which a lot of the other countries would be sending all these many people to Minneapolis for training all the time. And Minneapolis was never the source of all wisdom, you know, and we got pretty good at fixing stuff that didn’t work, and disseminating that around the country, and then trying to tell them. And they didn’t want to know, half the time. [Laughs.] So the corporation, its biggest problem, I think, with international, is that they’re a fairly parochial deal, run by a fairly parochial bunch of Midwesterners who — and I like Midwesterners — but they didn’t see a world bigger than the U.S. and they could not understand that things might be done somewhat differently somewhere else. Misa: That was a big tension for CDC developing international businesses everywhere. Basically you’re talking about either finding people in France, in Australia, or Japan, or sending somebody who’s from the Midwest out to there. O’Neil: I think Australia worked in the long run; it had built a strong base of people that went on and did a damn [good] job irrespective of what instructions were flying from high above. And I have to say, I always had very good support in most of the things I did. At the time I ran Engineering Services, it came as a bit of a shock to Engineering Services because I’d never had anything to do with computer maintenance. And I think the reason I got put in there really was we didn’t have a manager who cared enough for our customers. He started to run it more with numbers, and by edict, and so the reason they got me into it was they thought I put the customer first and turn it around. You know, people like Ray Blankey are the ones, and they gave me a fair amount of freedom once they got to know me. Misa: John, wonder if you would like to take a moment and reflect a little bit on the longer term culture that we met yesterday [at the monthly lunch meeting of CDA people]? We’re talking about the 1990s, and now it’s 2013 and yet this group of people meeting each month. I’m fascinated by that. O’Neil: You really see it, too; every two years in Melbourne we have a major reunion, where we meet. Misa: Each two years? O’Neil: Each two years, yes. And we typically meet in a pub [with our wives/partners] with just finger food and all that sort of stuff, for an afternoon. We get people turning up, you know, we put a lot of publicity out about that. We try and keep our lists of
people’s contacts; and we will still get [up to] 150. And many of them only spent two years with Control Data, but the one thing they all tell you it’s the best company they ever worked for; that it gave them the chances they needed; gave them the training they needed; had people they respected managing them; they just remember. Some of them who spent a couple of years with us and still say it’s the best company they ever worked for. **Misa:** You obviously had much longer term relationship. **O’Neil:** Sure. And that’s what holds them all together, I think. That group [the lunch group] that you met yesterday was started by the engineers, originally. They just started after Control Data folded, because engineers have to work very closely together, and they probably know one another better than almost any other group in the company. And they just decided they’d meet once a month, and they invited in any other ex-employees and we all thoroughly enjoy it, catching up with one another. **Misa:** That’s funny because you have the stereotype — of course stereotypes aren’t necessarily true — about engineers . . . **O’Neil:** White socks. [Laughter.] The thing in the top pocket. **Misa:** And slide rules for a long time. It is kind of interesting about engineers having very strong working relationships, and that being the genesis of this ex-CDC group. **O’Neil:** Well, part of it too, was that we did an awful lot of project work here at Control Data. Probably most of the other computer companies sort of delivered hardware and software, and maybe would send an analyst along to help them for a while, or as they needed it. But an awful lot of the stuff we did was like the TAB stuff, and the AIS and BHP, and those message switches, where their people got used to working in longer term projects with a bunch of our guys, and an awful lot of our engineers became project managers. Ron Bird, for example, left Control Data; he’d been an engineer, I put him into project managing; and he [later] left and went out and project managed independently. We had a number of ex-engineers like that, that graduated from just being engineers; they had the skills to manage larger groups; larger projects and groups of people. **Misa:** It would be different than if you had a lot of people working, for instance, doing more routine engineering of a factory line or assembly line, but if you’re doing project work that’s more connected to putting computers in action, and then that also needs more people skills. **O’Neil:** We did some other things from the earliest days, I guess; anyone who was around the office would often go out to lunch with anyone else who was at the office. Or they’d go and get sandwiches together somewhere. And then as we got bigger, we would plan a barbecue once a week somewhere, in a park. Most of the people would turn up for that. For Friday evenings, we would have wine and beer and nibbles for a couple of hours after work closed. People from all these different groups would come to that and mix in, and get to know one another. **Misa:** Do you recall that cultivation of sociability, was that something consciously done or just emerged organically? **O’Neil:** I think it kind of emerged organically. Australians like that, they generally like that, I think. They’re motivated to do things together and not to recognize rank with any great deal of respect. And so they’ve learned to get along with one another at all levels. But it just emerged very early in the Control Data story. **Misa:** So the lunch we had [yesterday] is a continuation of this sociability, project-oriented time. **O’Neil:** Absolutely. **Misa:** Still quite astonishing, really, many years later a coherent group of people find enjoyment in it. **O’Neil:** We also had quite a strong company newsletter from fairly early days. I think Bill Austin started the first one, in our first year. And that kept going; it went right across the country and it would carry news of what was happening, customers, individuals in the organization, like, it was probably best known as “Between Ourselves.” A thing that had a lot of influence in my feelings for Control Data were Bill Norris’ newsletters. I think a lot of us could line up with a guy like that because he wrote first person, at least in the early years. And it was Bill sort of giving a company philosophy and that suited that way a lot of our people felt. So he always got a great deal of respect. He came here only once, in 1970, for the opening of the first 6600 Cybernet Data Centre in Sydney. And he came to Canberra, and Melbourne, and so on. One of the things that Trevor put on was a barbecue on Trevor’s back lawn for him. **Misa:** Visiting dignitary. Okay. [Laughter.] **O’Neil:** Yes. [It] couldn’t be everyone, but you know, all the old timers were invited along to the barbecue with their wives. And we did a lot of things with wives, too. We had a social club, and it would organize evenings up in the Yarra Valley. We’d all get in a bus and go up to one of the wineries, and there’d be a spit Roast, and a merry evening up there. So that sort of thing; and the same thing would happen around the states, in many cases. **Misa:** You mentioned that there was this Control Data Australia newsletter. Does anybody have copies of that? **O’Neil:** Yes. I think you’ll find that if Ron hasn’t given it to you; with a lot of this stuff, we now have in digital form. **Misa:** That would be really priceless.
O’Neil: Yes. We’ve a guy [David Lee] in Adelaide that must love scanning documents. [Laughs.] He has scanned a helluva lot of CDA’s remaining documents that we could lay our hands on. And you always find, you know; Allison Dillon, who was part of HR department for many years; she’s collected a whole lot of memorabilia, but also she collected just about every newsletter that we ever published. And so she turns up at these two-yearly reunions with all this memorabilia — t-shirts, and caps, you know — and these newsletters; and pictures from old events, and so on.

Misa: This has been really a remarkable experience, John, so is there anything else that we should record while we’re here? O’Neil: One last look. Misa: I think we got all our topics in. O’Neil: We’ve covered a lot. I didn’t put as much effort into thinking about the later years. I talked about sharing analysts, sharing engineers, sharing logistics; of course we had operations, you know, we had Thailand. And when after I left running ASD, at one stage, I think it was; I can’t remember; the guy after Herb Hughes, he was only here about twelve months, Paul Sibalik, asked me, “where else should we operate in Asia?” Of course, at that time, through the C. Itoh relationship, or the Bendix thing, we had computers [a 3600] in Japan. I forget how Korea started but [later] we used to exchange engineering skills with them, and with Taiwan when they started. And so I had to look at Southeast Asia, and I recommended that the only place that we could do business was Thailand and Singapore. Don’t touch the Philippines because they’re as corrupt as hell; don’t touch Indonesia, you had the same corruption problem; and the Indians didn’t have any money. The other smaller countries in the region, just no potential. In those years, most of those countries didn’t have the money to buy [the] systems that Control Data produced. Misa: There is this one singular machine [in 1964] that goes into [India’s] Tata Institute. O’Neil: Yes, that was a 3600. That went in under a U.S. Aid program. Misa: Special case. O’Neil: Yes. We, you know, I guess the thing I didn’t really mention, we had the wagering systems market pretty well tied up.

Misa: This is the TAB operation? O’Neil: The TAB stuff. Unfortunately, about the time that we went into the third or the fourth system with Vic TAB, and this was going to a much more flexible system. See, the original ones had only a limited number of bet types, and so the TABs were getting more and more interested in more exotic bets and systems that were more generalized. So we came up with the concept of GWS. The division [ASD] disappeared just prior to that, and we tried to get into that without the same sort of structure that a systems division provided. So it ran into trouble. We did the original development with Vic [state of Victoria] TAB by doing it with them; sold the system to Queensland; sold it also to New Zealand; set up the project at Vic TAB; set up a project in Queensland; but it didn’t have any overall management, in a strong sense. Like - the salespeople had sold it; the analysts; the programmers working with the customer, usually, were reporting back into an analyst organization, rather than a strong project management organization. And the big problem — it fell apart after two years — we had not an agreed specification, still, with Vic TAB. And the guy who succeeded the original general manager (Ken taught me a lot about how to work with business) Ken Davis his name was; he told us [around Christmas 1965] we’ve got the nod [for the original TAB system, Carbine] but to go off and use the terminals that Plessey and BATE had put up for the front end of the system; and I like your approach for the rest of it. And we had a knockdown drag-out negotiation. I thought, you know, my first experience with that sort of thing; and I thought God, you’re going to kick us out the door? And we landed it. [Laughs.] In that process, he [Ken] also was in the States; I think we bid 160Gs or something because we really didn’t have anything smaller, and probably could have done it. But he decided “no, I’m not going to have those; I’ll have two 3100s.” His view was if I need something, tell me, and I’ll buy it. What’s important is I need a wagering system doing what its primary role on the day. Misa: This is a great example of a real time systems, you can’t have them go two days late. It needs to be now. Very reliable. O’Neil: Absolutely. And so when we completed the contract negotiations, Ken had us into his office [Trevor and I] — by that time they had moved into the new building, which is just down here a bit — and he said “wait there, I’ve got the board members coming in and we’ll sign the contracts.” After that, he sent them off to the boardroom bar [which they always had beautiful set up for that in the TABs]; and [he] said to Trevor and I, now look, that’s going into my bottom drawer and I never expect to look at it again. [Laughs.] And that’s where the contract went. He said, from now on, [if there’s] a problem, come and tell me, we’ll work it out. 69 Misa: So an informal agreement with a lot of trust and experience between parties, but not formal specifications. O’Neil: That’s right. And we did run into some problems, I’d go to Ken and say, Ken — he had a guy nominally in charge of his end who was a bit of a bastard — Charles Scorgie - hated us; Scoorgie’d be thumping
the table saying it’s gotta have this! Gotta have that on time! I’d say sorry, if we’re going to be selling bets on the day, we’ve got to defer doing this stuff, which was usually administrative stuff. Well, what happened [on the GWS development] with the new GM, we didn’t have anyone like Ken, and I was out of it for quite a while. I got called back in by Peter MacGregor, who was the MD at the time in Australia, to have a look at what’s going on. “This thing seems to be running later and later, and the customer’s not happy.” So I had a good dig around [the project] and I discovered that we still didn’t have an agreed spec; that the specs kept changing; that it seemed to me that anyone from the TAB could come along and demand new features in the system that hadn’t been written into the [initial] spec. And nobody would be able to say no. So I went to Peter after a few weeks and said, “Peter, here’s the problem. Unless we go to the TAB, tell them that if they want a working system in a given time, we’re going to have to back away from some of the specifications, freeze that, build the system, then tackle the other things.” And he called in the guy who was [Australian] Sales Manager at the time, Roy Archibald — was a nice guy — but Roy said “You can’t tell a good customer like the TAB that.” And I said “Well if we don’t, we’ll both go down the tubes.” No, no, no, no. And Peter sided with Roy on that and I just said “Okay, Peter, I can’t have anything more to do with this; I’ll just go off and do my other job. Good luck.” And guess what: the whole thing folded up. And the sad thing about that was that another one we’d sold that system to was the Natal TAB in South Africa. Misa: Natal? O’Neil: Natal Racing Club [in Durban], yes. The system for them was going on as a little project here, and that was delivered about six months after the cancellation of the contract with TAB, and it did all the things that they really needed to do. But not a lot of the crap that they’d been trying to build in for these administrative guys; wanted this report at this time, and that didn’t make any sense at all. So that’s how things can go wrong in systems [development]. And when they [Vic TAB] cancelled, next then Queensland said “Well, as we’re dependent on that, we’ve got to cancel.” Misa: So where did they send the business to? O’Neil: Well, it all became a mess because I think the Vic TAB General Manager thought that he could cancel the contract, get all the payments that he’d made back, we take [back] all the equipment we built for it, and that’d be that. Didn’t work that way. He had to have the terminals. We just said sorry, we built the terminals for you, you’ve got them. And sure enough we had the high card [under the contract]. So they then frigged around for a while. ‘Course their old system was functioning perfectly; and they went out and got some software house that came in and put together again another pile of minis and software for them. But it absolutely ripped the two of our organizations apart, which had a lot of people involved; some very close friendships formed between their staff and our staff. Misa: TAB and CDA. O’Neil: Yes. And the same up in Queensland; we’d had a team actually on site working on their system [for nearly 2 years]. And then it pissed off New Zealand because they were about to order one. And that was another case where the Corporation, they said “No, we’re out of the wagering business; we’re not going to have anything more to do with that.” And here’s New Zealand TAB saying “we believe that system’s going to work; we want it; please!” Misa: Did you ever get some clarity why Control Data back in Minneapolis wanted to be out of the wagering business? O’Neil: Well, I think because they didn’t control the thing. It was a business that started elsewhere in the world, and they didn’t really believe in its potential. Some managers thought well, if we stuffed up once; the fact that we hadn’t stuffed up three times before or four times before didn’t make any difference. A lot of American managers were like that; they make this big, impressive decision without knowing; really stopping and thinking very much. I think Minnesotans were pretty conservative and originally when we got the TAB contract, I gather Bill Norris asked some pretty pointed questions. “What? We’re getting into the gambling business?!” [Laughs.] And when it was explained to him that this was an agency set up by the government, was all legitimate, and there were no mafia involved, it became okay. But Control Data did have some very parochial attitudes in their management, that would walk away from good things happening elsewhere in the world. It was a long time before they accepted the SC 1700, which the Israelis had built. The 1700 was a great little machine except it was [physically] big. It was now a few years after it had come in and it was a bit outmoded; but the instruction set, and the performance, and all that were fine. The Israelis put together an equivalent using integrated circuitry and so on, and we heard about that because we could see we needed that for the GWS) [Generalised Wagering System] systems. The interesting thing about the wagering business is that the money is not in the central system, it’s in the terminals. Misa: That is the profits are in the terminals. O’Neil: The profits are in the terminals, yes, but you got to have the
central system [hardware and specialized software] to run it. And we’d originally said to Control Data when we started on GWS. **Misa:** I’m sorry, GWS is? **O’Neil:** Generalised Wagering System. Because that system basically kept track of all the individual bets so you could have high value bets in the system that you could track. And it allowed you to specify bets in a form that you only collated them when you had to. When you come onto so-called exotic bets; like the most exotic bet that the original system ran, which was a last-minute thought almost, was the so-called quadrella; this was [where] you pick the winning horse in four [designated] races at a meeting. But because of the limitations of the keyboard that we built, you could only [have] ten horses in each [of the four] races, so you doubled around. Horse 11 became horse one; so if you’d bet on 11 you also had a bet on one, and so on. By that time, they wanted much more exotic bet types that occasionally the bookies would play with, where, you know, the winners of all seven races at a meeting, or different combinations of win. **Misa:** So you’d have fabulously long odds . . . **O’Neil:** Oh, absolutely. **Misa:** . . . and fabulous payoffs and some people like exactly that lure. **O’Neil:** And that’s why GWS came about. We could see the need for, you know, other than the simple bets. Because of the nature of [the original] totalisator systems that most of it was based on, it was simple; the original ones were almost mechanical, not even electromechanical. And so they could cope with a very limited range of bets and we extended that. But then you could see, well, these are the types of bets that particular countries like. Some countries really like bets with big, big odds. That’s what attracted the punters [the bettors], not just the little bitty stuff. **Misa:** The possibility of a big payoff that a complicated bet would have, and a complicated program could offer. **O’Neil:** That’s right. And you get system punters that form a pool and they will — I’m getting too much into TAB — but they will put in their money and take a variety of combinations of these exotic bets, all of them exotic bets, so that they’re covering several possibilities in the winning of the races. And that often paid off. A lot of our programmers in the early days were onto the Quadrella, so they recognized that a little bit of systemic effort on this and you probably could make some money. And they made some money. **Misa:** Start seeing the patterns. **O’Neil:** So they got in there before the general public woke up. [Laughs.] **Misa:** Popular line of business here. **O’Neil:** And would get a big payout because they’d cover those.

**Misa:** Well, John, this has really splendid and thank you so much for your time. **O’Neil:** Other things may come up and if you want to get together again with me towards the end of your time here, I’d be happy to do that. But those first ten years were the critical years for Control Data here, and by that time we were going pretty well. We, you know, other business that we got that I haven’t tried to mention here, we got the South Australian government, then when Tax [Australian Taxation Office] came out [with requirements for computer systems] — they’d been running on Stats - so we went in there with 6000s, 6400s by that time. And CSIRO kept upgrading right up to the STAR, and they were about to order an ETA supercomputer when we went crunch. Met [Meteorological] Bureau, one of the last jobs I did was I was given the role of Government Systems . . . **Misa:** This is the Meteorology Bureau. **O’Neil:** . . . yes, and although the Met Bureau; I knew about [Control Data] STAR [computer], I’d spent some time with their people — I knew about the ETA systems, I spent some time with the [ETA] people over there [Minneapolis] — that’s the thing that I need next, you know? We were up against Cray, but that thing [the ETA supercomputer] is going to be good; and we actually sold one to them, after I’d left the sale was made. Unfortunately, the machine got damaged in installation and I’m not sure it ever ran for them. By that time, ETA had gone because the corporation couldn’t keep funding them; banks basically were telling [Bob] Price what he had to do. **Misa:** That was a painful experience. **O’Neil:** It was. Again rescuing disaster from the jaws of success. That was a brilliant machine. Where that stuff up began was on software, and they didn’t have to stuff up. The hardware that came out was good. Software, they hadn’t started on soon enough, and they tried again to make it do too many things for too many people. And some customers, with that, actually did their own operating systems based on UNIX, which ran fine. **Misa:** Expectations about computers had changed then. **O’Neil:** Oh, yes. The supercomputer business kept changing and it wasn’t long before Control Data, at the same is doing this stuff. They had a multiple parallel processor machine. I forget what it was called, but they were planning that. And the real problem was that nobody could figure out how to program these damn things. They started to figure out quite well how to program vector machines; the Australian produced those. But the idea of multiple little processors, nobody could figure out how you got your program done; by hard [work] you could write a program for a particular application that could run and run and run, and use it, but no simple language to write
programs. I still don’t know how they do that, these days. **Misa:** I think it’s still a challenge today. **O’Neil:** … all the supercomputers now are multiple little processors. And it’s funny, I still remember talking about that at a computer conference in Canberra in — would’ve been about 1971, I think — Jim Thornton came out and there were a bunch of us on stage, and I was saying where I thought the future of computers was in real time systems with multiple processors to give you the power, interconnected, but it was a bit too early. [Laughs.] **Misa:** Yes; see it but hard to realize it. **O’Neil:** That’s right. And that’s what we were trying to do. One of the things that GWS (GENERALISED WAGERING SYSTEM) was doing, it really had a whole series of small machines that talked to one another; you brought your terminals into different machines and they eventually all got aggregated. But it wasn’t a master/slave relationship, so any machine could die and you didn’t lose all the terminals at a site and you didn’t lose any of the bets, because they’d already been stored in duplicate on central storage. **Misa:** So there’s a measure of redundancy, then. **O’Neil:** You had to have high redundancy. **Misa:** Essentially, then, very resilient [pause] **O’Neil:** The first ones were just two systems, one running hot and one running hot standby; the early TAB systems. But Rimfire [Victoria TAB’s Remote Input Machines For Investments on Racing Events] had a bunch of 1700s collecting from the terminals, issuing the tickets, and so on; and then moving the bets forward into the Carbine system, 78 the original central system for collation, and then out to the course. But the industry’s changed. Control Data was also extremely slow to start using integrated circuitry when it was clear that this was the way to go. But a lot of it was there was this culture; and they were right, for a long time, the fastest circuits you could make were still made with discrete components. But (a) that was expensive; and (b) it wasn’t going to last. And so, Control Data was really very, very late in producing an integrated [circuit] system. The 3500 was the first major system that they used it in, and that was a very successful machine. But, you know, the Arden Hills philosophy, and the Cray philosophy, that’s Seymour originally, [was] I can make faster stuff if we use little, discrete components. **Misa:** A real emphasis, from what I’ve read, on architecture rather than just superfast transistors **O’Neil:** Oh no, Seymour was both. He was, you know, [trained in] applied math. He understood circuitry design at the hardware level, and system design at the operating system level. But his challenge was that to him, he just wanted to build the fastest machine to solve a particular set of problems that you typically had in the Atomic Energy Commissions, to a lesser extent in meteorology, and then increasingly, in other engineering applications, which really [are] all your systems [to] do simultaneous equations of different kinds. **Misa:** Cray ended up doing work for oil exploration. **O’Neil:** That was the other problem here was that we; you know, seismic processing was a potential opportunity here but it wasn’t the time; and most of the seismic processing associated with oil exploration around the world wasn’t done in Australia, it was done back in the States. **Misa:** Well, John, this has been great. Thank you so much. **O’Neil:** It was good. Glad we got to talk. Time flies. Do you want to come down and have lunch with Jo and I? Do you like Japanese, by the way?

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**Julie James**

[http://conservancy.umn.edu/handle/11299/164971](http://conservancy.umn.edu/handle/11299/164971)

**Misa:** My name is Tom Misa; it’s 20 November 2013. I’m here in Melbourne, Australia; and this afternoon talking with Julie James, who was an employee at Control Data Australia between 1972 and 1986. Julie, just to start, could you please say a little bit about how you entered the computing field? You said it was an accident how you ended up getting into computer applications and IBM. **James:** Okay. My original profession was medical radiotherapy planning, which is planning radiation distribution for the treatment of cancer (with a slide rule, and a light box, and lots of isodose curves I might add). It’s now all automated. I was looking to change jobs because I thought I was going to be a housewife when I got married, but it ended up not to be. I was asked by somebody would I like to take the IBM EDP aptitude test. I said what’s that? And they said, like crosswords. So I finished up doing the test and the manager said that was very good, we must have him, and the person who’d done the test said “her” and that’s how I ended up joining IBM. They didn’t know what to do with me so they put me in the education department. **Misa:** And that was 1961? **James:** 1961. I left after four years to start my own business, and by that time, four out of about six in the
education center were women. So something must have worked. **Misa:** Four of six of the IBM staff? **James:** Staff of the education center in Melbourne. But I never really paid any attention to it, being the only female; I had a lot of fun. **Misa:** Was there something that attracted you to the field of computing at the time? **James:** No, purely by accident. However, my background, the rigorous training and the kind of analytic work, really put me straight ahead because I sort of romped through all the training. **Misa:** Your work in radiation therapy, where you don’t want to have a mistake. It’s a life and death issue. **James:** Well, there’s a human life at stake; there’s no automation. It was all done with a slide rule, a light box and isodose curves: take radiographs, you know, plot a tumor and then work for days planning radiation distributions. And it was a modelling kind of approach so, you know, the early days of IT. **Misa:** So it was very mathematically intensive but not computer intensive, because computing was with the slide rules. It was a human form of computing, not a machine form of computing. **James:** Yes, that’s right. It’s like modelling or analysis, rather than computing. I taught programming for IBM. When I left I had a contract, and I just worked through the IBM 360 peak load, and then on to the Burroughs 6700 at Monash University, and then was looking around for something else and saw Control Data was advertising for programmers. That was how it happened. **Misa:** And that was all done during this period when you were running your own business, you said for seven years. **James:** Yes. **Misa:** And the character of that business, can you describe it? **James:** It was analyst/programmer. Basically, it was whole systems. For example, it was for Mobil, the first IBM 360 in Australia was installed for Mobil, in Melbourne. It was the Agent’s Transhipment System, I think. I also did the whole system, but I didn’t do the analysis; but subsequently, I did all the analysis, the modelling, and design, and everything, and basically had to sort of learn on the job. I had to make sure that it was properly documented so I didn’t get called out in the middle of the night when something went wrong. **Misa:** So you’re setting up the types of programs that people would need to actually code? **James:** And the coding, I did everything. **Misa:** And the coding itself, too. **James:** Everything. **Misa:** What languages did you work in? **James:** COBOL, Assembly Language, RPG; I think they were the languages. I learned FORTRAN, initially, on an IBM 1620, but we started with assembly language. In fact, I started with electromechanical equipment. I carried fuses in my handbag. Because of causing back circuits on the wired boards, the students used to blow a fuse by about three o’clock every afternoon. **Misa:** Were these electromechanical machines? **James:** You know the big control panels, great big control panels, where you wired, you planned it out and you actually wired the electromechanical selectors of the decision process on the board. **Misa:** Those were for IBM or was that while you were running your own company? **James:** They were for IBM training. In my own business I worked through the IBM 360 peak load, and then swapped to Burroughs 6700. It was at the Monash University. There was also a Control Data 3200, and that was connected via teletype—this was Royal District Nursing Service that I automated. The data were transmitted via teletype and we used to take the tape off the 3200 and take it across to the Burroughs machine. And, yes, it was a comprehensive system for medical records. There was also a medical billing system that I did as well. But when that was finished, I did a process costing system for Fibermakers Ltd., a subsidiary of ICI. That was a sort of a bill of materials system. So that was the sort of things; it was basically, whatever was needed. **Misa:** Was that common to have an independent programming and analyst firm like this? **James:** No, not at that time. **Misa:** Not common. **James:** No. But I had all the contacts because I’d been teaching at IBM. So I actually left with a contract and further business contacts. **Misa:** Did you work with other people or was it more or less a one-person affair with yourself? **James:** Actually, I worked with other people. Well, there would always be a representative from the company. In fact, my daughter was born eight hours after the first production run of the Fibermaker system, and I was on the phone with the production team. [Laughs.] It was just the times. **Misa:** Did you hire other people? **James:** No. **Misa:** You were just working by yourself, working with the client, of course. **James:** Yes. Working with the clients, yes. And with the Royal District Nursing Services system, there was prime contractor—don’t know what they call themselves— it was a hospital computer study group at Monash University. They were doing a number of systems and they just subcontracted one of them to me. **Misa:** So you were actually buying or renting time? **James:** That was part of the agreement, I didn’t have to buy the time. The time was always at night, of course, as before with my testing, contractors got the machine after midnight. **Misa:** Can you describe the working conditions? You’d go in late at night and then work through the night running your program? **James:** Yes. **Misa:** Can you describe that a bit?
James: It was an interesting time because IBM was in the red light district, both in Melbourne and Sydney. I used to sort of drive up to the back door at IBM and get out, and ring the door, and the operator would let me in. And at night, the girls, the ladies of the night that were cruising up and down with their lights on in the street, see, to be picked up. And one night, the operator let me in and immediately afterward, a bloke rang the doorbell, the operator came to the door and four policemen hopped out of a car and grabbed the caller. [Laughs.] There’s a night in Melbourne when I went to sleep at the wheel and drove through a red light; no damage done, but I never drove myself after; I always got a taxi. Misa: So what would typically be your working hours then? James: I’d probably rest in the evening. Well, I’d only be a few hours, actually, with the testing; get home and sleep some more. No children in those days, but of course, once the children came along, well then I’d work when they were sleeping. And then I didn’t do the night testing; in fact, I’d have a courier pick up the tests and of course, it was all in machine language, the testing in those days. You’d get a core dump and then you would directly patch the machine language; and I had a hand card punch; and then the courier would pick up and take in and test it. And the next day I’d get the results back. Misa: So you didn’t have to physically be there, with that setup. James: No. Misa: You’d be able to have that run, so to say, remotely. James: Yes. And it wasn’t too much room for error. I think people forgot how to test properly, when we went online testing; the discipline of testing programs in that way, such that you couldn’t afford to make mistakes.

Misa: What kinds of things did you need to pay attention for, in the testing? James: Adequate test cases, I would say, is the most important thing when you learn how to program. My first program was for an 8k (byte) machine, I think, in multiple overlays. So everything was completely modular because there wasn’t any other way to program. And so you would test each individual module. You would test the tree and then you would just add each module, tested independently and then integrated. So it was fairly systematic testing. It wasn’t as if there was any great theory about it, it was the only way to do it because of that very low memory. Misa: And so you had to pay attention that you were using the right data for testing? James: Test cases were the most important. Misa: Test cases. James: Yes. So you had to have some idea of the whole, as well as the parts. Misa: That was a different type of testing than the online? James: Yes, because everything was pre-planned, and you would write up coding sheets, and punch cards, and you would have to test module by module. At one stage, there was a comment like “who is this person who writes COBOL like FORTAN?” Because of the modular approach. Misa: Write in COBOL as though it were FORTAN. James: Yes. Misa: That wasn’t particularly done. 12 James: No. Well, of course, then you got COBOL, you got the languages that weren’t so close to the machine and much more memory, and that rigor was no longer necessary to actually program. Misa: People could write programs without being acutely attentive to memory requirements. James: That’s right. Misa: That’s a big long story, isn’t it, across a large number of decades. Is there anything else you’d like to record? Maybe we can move on to other things. Julie James: No. It just did. Misa: It just did. James: Yes. Misa: It was a question of having the computer time be what Control Data was trying to maximize rather than the data time, I suppose. James: Yes. And...
the things that ran on Cybernet, you know, some of the large mathematical packages and that sort of thing, I suppose they would be relatively economical, but data intensive applications were not. And it was just the way that the algorithm was designed, and the pity was that there was competition between the divisions. That’s where things started to go wrong because Control Data really had a total solution. You know, with professional services division; quite a lot of analyst skill, and data services; and then systems, larger systems, but we were working mainly with large applications. So, yes, that was a weakness, I think. **Misa:** So those three (professional services, data services, and systems) could have been better aligned or better able to work together. **James:** Yes. Professional Services would design their systems, which would run on Cybernet until such a time as they were fully installed and they needed perhaps a system. And they weren’t small systems. The other problem was that Control Data was missing the advent of minicomputers, excepting special applications like TAB. I can’t remember where Diner’s Club took their business; Data General, or somebody else, I can’t remember. **Misa:** So you did analysis for Diner’s Club. 15 **James:** It was the start-up of the company in Australia. So, yes, that was interesting. **Misa:** So I understand that Cybernet was for a time, at least, run directly from Minneapolis whereas Control Data Australia was in parallel, so there was a bit of organizational tension. **James:** I’m not certain; well, this was in early to mid-1970s. I don’t quite know when; it might’ve been run directly. I don’t know about Minneapolis. **Misa:** Sometime during the 1970s Cybernet was brought more firmly within Control Data Australia is my understanding. **James:** There was a machine on the floor at 598 St. Kilda Road, and I can’t remember at what stage it moved to Knox [Data Centre], that was much later. And then, of course, we went online also later. But in the meantime, I tried to keep a low profile. I was informed one morning that you are now the project manager for a commercial application for a food processing and distribution company. I could probably write a book about that on its own; there were some strange personalities working for that company. And I took the role, attempted to bring it under control, but finally, I wrote a lengthy report to the then managing director, copying everybody in the line of management — I think it was Peter MacGregor — saying we’d better get out of here. Pull out. The problem was that the Cybernet salesman had a professional services quota and they would go and bid business; well, I mean, promised to do the impossible for a fixed price. I don’t know whether they were trying to get a system in there or whether it was Cybernet at this stage — I don’t remember — but I got the job and it was interesting. I think there was a Canadian data processing manager, who had an absolute fixation on some method that he wanted to use and there were some other interesting personalities. So we had a meeting, you know, that the data processing manager would be shouting, one of the others would be crying, one would be shaking, and I would get up and start to walk out. And the manager would say, “Don’t go, Julie, don’t go!” [Laughs.] But anyway, after that I was asked to manage the Telecom project which was in deep trouble. But from then on, we got the first system up successfully, and at this point, just grew from there. **Misa:** You say the Telecom project, was that done for the PMG [postmaster general], or was that for Telstra? **James:** It was Telecom. Telecom had been the PMG. The PMG had been split into Australia Post and Telecom, and it was responsible for the whole of the telecom network nationally, and individual areas. It had a very large engineering division; it had a data processing division; there was war between them and engineers used to get their work done on Cybernet and using professional services, Control Data Professional Services people. By this time, was probably into the mid-1970s, and we got the first system, which was a national network forecasting system up and running, but they decided they wanted to get extremely ambitious and they wanted to go have a forecasting system for all circuits, all routes, for all time. This was the mid-1970s. Ted Codd’s original paper on “Data Management and Relational Systems” was only written in 1971. So it was early days. **Misa:** There were different models of database management but Codd’s work became very influential, of course. **James:** Yes. There was a competitive system being developed in Europe based on linguistics, on language, rather than mathematics and that was coming out of Siemen’s in Europe and out of the Data Management Research Labs of Control Data. **Misa:** I’d be interested in your perspective on the differences between the two. **James:** The data analysis comes first. The data, the relational model of data analysis, starts with the declaration of an entity. Now, if it’s an account or a customer or something, it’s quite clear what an entity is. And then a record would be created around that entity, and then it had to be normalized. If it wasn’t in optimal normal form, then you’d get database anomalies. In fact, Ted Codd worked in the IBM research labs and the whole idea was to create database management systems
where there was no redundancy and no anomalies. Whereas in some applications the existence of an entity was not entirely clear. You would think that a telephone exchange would be clear, but I used to attend the planning meeting at Telecom for years and they used to have arguments about what is a telephone exchange. You’d think that was obvious, but not so. So in the linguistic approach, which is what you call fact modelling, you simply record the facts. **Misa:** The label was? **James:** They called it fact modelling. It’s now called object role modelling. It was based on Chomsky’s idea of the deep structure of language, and you would describe the problem, and then it would be reduced to deep structured elementary sentences, the elementary structure of language, from which you would extract objects and roles. It was a rigorous process, in fact, it could be automated and the Data Management Research Labs did do it; they did automate it. So once you had your deep structured sentences stated in a fairly formal way, then the objects or the entities would fall out at the end and thus, your database structure. **Misa:** You said roles and entities. **James:** Objects and roles, we would call them, yes. You didn’t presume the existence of an entity. Some of the things would become entities when we put our tables in the database and some would not, they were simply roles. **Misa:** So is it accurate — I know this is a simplification — was the linguistic model more of a bottom-up type of approach rather than imposing a structure from above? **James:** Yes, but really so was the relational method because you would declare entities. Even in simple commercial systems, you’d start with customers and accounts, and things like that’s fairly obvious anyway, and that method was used in such systems successfully, because there wasn’t any dispute about the existence of an entity. But later, on some of the applications I came to work on, it was not at all clear. I said, they couldn’t agree what a telephone exchange was. So in Europe, I think the NATO logistics system was one of the early systems; there was one for the Dutch government, I can’t remember what it was, but it was something quite obscure; and the South African Electricity Board, and the North Sea Mining of ELF Aquitaine — I can’t pronounce it properly in French. They were modelling seismic data, and these were the sort of applications, initially, and telephone traffic data, of course, was pretty difficult. Attempts to solve the problem had so far failed. So when we got the first successful system up and we were asked would we address this. To me, there was no available way of knowing, how to address this system. But one of my colleagues in Canberra, I think; I’m trying to remember; no, it’s one of my Australian Computer Society colleagues, because that was one of the committees of the ACS, and he drew my attention to some work that was going on in Europe, and it happened to be that it was Control Data. So when I was a delegate to the Professional Services symposium in January of 1978, David O’Connor, who was then Professional Services manager gave me a ‘round-the-world ticket, and said go and talk to the people in Europe. So it was my first overseas trip and I went around the world in 26 days flying east. **Misa:** The conference that you were attending? 20 **James:** It was the Professional Service Symposium. It was in a place, sort of a resort, out of Phoenix in Arizona. So we stopped over at Honolulu and Los Angeles. Remember, this is 1978, this was not like today’s air travel, and then we were due in Minneapolis for a week. I managed to drop out and caught the Greyhound bus to Flagstaff, Arizona, see the Grand Canyon, and then to Las Vegas, Nevada. And then flew to Minneapolis. And from there to London. Theoretically, I had meetings in London, Paris, Brussels, and Stockholm. The London and Stockholm ones fell through, but I had meetings in Paris. My Control Data colleague; he was a Hungarian who had come to Paris to buy a French computer and then [he] stayed. This was the time of troubles in Hungary. He lived in Switzerland, and commuted to Paris and Brussels. He took me to meet ELF Aquitaine management, with my terrible French pronunciation. That was the company, and I was introduced as Madame James, who “was a systems expert from Australia, not one of those dumb Americans.” [Laughs] **Misa:** Oh, okay. [Laughs.] **James:** We were never too popular in Paris. So from there, I went to Brussels to the Data Management Research Laboratories. Professor Sjur Nijssen was the director, and he was brilliant but not very diplomatic, so he was always having disputes with Minneapolis. I can remember meeting him one gray day, and he wondered what on earth this crazy woman from Australia was coming to Brussels for. When I told him I wanted to model and forecast telephone traffic data. He said “my dear, telephone traffic data? Come on, I’ll buy you a drink.” He was looking for prestige applications for his wonderful method. **Misa:** So he had a tool, looking for a chance to exercise it. **James:** Yes. And they had, in the research labs, they had also developed not only method, but a data management language, which was close to English, and in which you could write it. And the software tool (IAST) would automatically produce the fully relational
Meanwhile, in Arden Hills, CDC were thinking about developing a database managing system. And then [in the] end it was war, because I think this was probably a superior product that had not been invented in America. **Misa:** So Arden Hills would’ve been the center of programming research and the center of database management but this quite advanced work [was] going on in this Control Data subsidiary in Brussels. So the two were in contention with one another. **James:** Yes. **Misa:** And you’ve had contact with both? **James:** Yes. **Misa:** You were in Minneapolis; it doesn’t mean you went to Arden Hills. **James:** No, I’d been to Minneapolis. Subsequently I was summoned to Minneapolis; and that was afterward. No, I just passed through Minneapolis and met a few people. Because the Telecom project was growing at such an astronomical rate. I mean, it was pulling in I think about $1 million a year in professional services revenue; I think pulling behind it, about $3 million. I can’t remember whether the total revenue was $4 million, of which that accounted for $3 million; or whether it was a little lower. But anyway, it was the vast majority. It became the Data Services Division revenue and, of course, if you’re modelling the Australian telephone network, all circuits, all routes, it’s an awful lot of data. But we actually used the [Brussels produced] data base management product IMF [Information Management Facility] and their method, and we had a working prototype in six months for the system. But, of course, when it started to come online, what we had to do is try and optimize the Cybernet charting algorithms, so we had to go to a very low level language. By this time, it had become more, not only a project, but a branch and I was appointed the External Consulting Services Manager. We had the internal data processing, we had a few other professional services things, but most of the work was Telecom. We also maintained the exchange networks provisioning aid for Telecom. So the main systems of the engineering division in Telecom were developed by professional services people and run on Cybernet. But the writing was on the wall, as soon as the project started to grow. You know, for what they were spending a year on data services revenue they could’ve bought a system. And this is where the problem arose of the competition between Cybernet and Systems. **Misa:** Okay. So the Systems people saw this as a million dollars in [potential] sales, and Cybernet saw this as a million dollars in ongoing revenue. **James:** Yes, and they had quotas, they had professional services quotas, which as I said, they used to go and promise the impossible for a fixed price and then professional services had to deal with it. [Laughs.] **Misa:** Before we go on, I’m curious to know the approach that Arden Hills took with database management tools at this time. Were they following the IBM approach? **James:** Well, they were intending to develop a relational database management system, which is after Ted Codd’s method. And I don’t remember the details, it just seemed to be taking an enormous amount of time. I think they eventually decided to purchase one of the products that had been developed in IBM, but they attempted to develop one for years. I really don’t know much about the software development, but there were engineers with computational expertise and probably didn’t have much expertise in database management. Nothing subtle about it, but I mean, they’re not really going to know much about it, going on for years and years. And I think also that during that time that Control Data was missing the move to minicomputers and still staying with large systems, which were great systems for the applications they were suited, which were mainly government, intelligence, military, very large companies. As long as they were computational intensive applications, Cybers were well suited. That is my opinion. I mean, Cybers weren’t my expertise. **Misa:** The fate of this Brussels project is intriguing to me, as well. You actually had a system running here in Australia using that technique. You had modified it and implemented it, so it sounds like it was completely viable. I’m curious what the legacy of that might be. **James:** It was a viable system. We were running on Cybernet, of course. It was data intensive, which was the problem, in my opinion. I mean, obviously, this Cybernet charging thing was a trade secret. But this clearly favored computation intensive applications and so the packages that Cybernet marketed — the analysts worked on and then marketed. I think the charging algorithm suited that. Eventually, you know, the business just kept growing. I was saying “look, if you don’t sell them a system you’re going to lose this business.” So a bit of warfare went on. Eventually, Cybernet took over the consulting services branch and I was asked did I want to continue as branch manager and I said no. I presided over the growth of the business I would not preside over its decline. So then I went back to consulting, and I worked with the people in Europe. We brought Sjir Nijssen to Australia, and a few other people, and we ran seminars on this fact modelling approach. I [also] went to Minneapolis to assess a product
for the international market, a software product. This was after the international division had been established. When I first went to Minneapolis it was to the “gold brick,” they used to call it, at corporate headquarters in Minneapolis. They called it the gold brick, it [had] a gold glass windows. Misa: Right, it had a gold sheen. James: Then they established the international division, and it was in a different location. But I had an assignment there to assess a product in the international market, and it was completely unstable. The application was a good idea but not unique. In the meantime, I was sitting in the office and I was listening to the international manager of whatever it was, who had probably been a successful district manager in the Midwest or somewhere, and became international manager. I would hear him on the phone trying to communicate with the European colleagues, which was interesting. Misa: How was that interesting? Culture clash do you mean? James: Yes. You know what Winston Churchill said, “two great peoples divided by a common language.” Misa: Right. [Laughs.] James: Might’ve been our common language. You know, out of Brussels the Europeans were doing very well with professional services with these methods. And then, I don’t know how it was planned, but there was a task force formed to determine systems engineering future of Control Data, which sounds rather grandiose. Probably had to do with all the troubles they were having in Minneapolis with the database management system. So there were meetings in Europe, and people from Minneapolis, from the Netherlands, from France, from Belgium, and one from Norway, I think. Two Americans [pause] Misa: You were attending those meetings, too? James: Yes. Two Americans, and one was female, and then one — forgotten their names now — but there was quite a bit of robust discussion. I actually then experienced the divide of our common language because the other woman thought that I would side with her, which I didn’t always; sometimes and sometimes not. There were communication problems based on language; there are nuances of difference. Misa: Do you remember an example? James: Yes. There was a great argument going on and I sort of backed off, and she said what’s your opinion, Julie? And I said I am “indifferent,” which meant that it didn’t matter; it was not an issue; and she took it as an insult. Misa: Indifferent in your sense was being just neutral, not taking sides . . . James: Yes. Misa: . . . and since she had the expectation, possibly, that you were supposed to be backing her, indifferent was a rejection of some sort. James: Yes. It was one example I remember. Misa: It must have been quite complicated for Control Data, as a relatively young firm, to find itself operating in many different cultural climates and linguistic contexts. James: And Minnesota’s a great state, but in those days, it was fairly inward looking. How could it be summer anywhere else in the world when it was winter in Minneapolis? There were people who didn’t even know where Australia was; they thought it was Austria and they were surprised that I spoke English. Misa: Austria, okay; it’s got some of the same letters. James: Yes. A wonderful place, but very inward looking place and a very closed culture. I guess that it was the very containment of it helped generate those great computer companies. But the international CDC subsidiaries were fairly free-wheeling, I think they were actually embedded in their own cultures. The driving force of Control Data Australia was Trevor Robinson. I mean, he established the culture. There were great things about the corporation in terms of their training programs, and employee selection, and there were many wonderful things about the corporation worldwide. Misa: You’re talking about CDC at large, not just CDA. James: Yes. Misa: Can you say anything about the training or the corporate culture that you found particularly notable? James: Well, they had an employee appraisal system that actually worked; it worked for me, anyway. I could give the staff a copy of the appraisal form for them to fill in themselves and I would make a few notes, and read it over, and we’d agree on it. It had an employee selection system which I think was quite innovative. Of course, as sole female manager in our region, I got all the training. Equal opportunity grants; Equal Opportunity legislation came in in the States. I don’t know whether that was in Minneapolis or whether it was federal. Misa: I think that was federal. James: That was when female managers began to appear in CDC; some of them actually fairly inexperienced for the positions they occupied. Misa: You’d been working in the field for quite some time, so you must have been one of the more experienced female managers. James: Probably. I did just fall into it by accident, rather than by design. Misa: Going back before 1961, so this had been a long term area that you’ve been cultivating and you’ve been active in and had quite a diversity of experience in Minneapolis, but also Australia, and then Brussels, and on and on. You had a bit of a wider view than many people even in Minneapolis could’ve had. James: Yes, although I think that the European view was a bit closer; the culture of Control Data in Europe was really eclectic. Misa: Was what? James:
Eclectic, I suppose. **Misa:** Eclectic. What would you mean by that word? **James:** Well not a fixed view. Perhaps I’m using that word wrongly. I suppose they were very astute negotiators, except for their boss, actually. Sjir Nijssen was no diplomat; he just tried to bulldoze through and it didn’t please people in Minneapolis. Actually, what happened, subsequently, is I brought him to Australia and I can remember picking him up at Melbourne airport and he wanted to drive straight to Queensland. He had no idea of the size of the continent. So I said we’re not going to Queensland but check you into a hotel and I suggest you spend a few days in Melbourne and then you take your time; we plotted a route. Anyway, he got to Queensland and immediately applied for a professorial position at the University of Queensland, and he never went back. **Misa:** This was somebody you were trying to hire? **James:** No, no; no; I brought him as a speaker. He thought there was going to be a nuclear war in Europe so he wanted to get out. So he actually became the inaugural professor of Information Systems at University of Queensland. I’m trying to remember — another guy from Siemens, I brought him out, too. He was also chair of an IFIP committee, the International Federation of Information Processing organization, and I’ve forgotten his name. Think of it in a minute. Anyway, he came and worked with Sjir Nijssen at the University of Queensland, which became quite a center of data modelling. And I was running courses in Australia, as well, in the data modelling method. **Misa:** And the course would’ve been within CDC, or within CDA, rather? **James:** Yes. **Misa:** But would people outside of CDA also be able to sit in? **James:** Yes, we were selling the courses. **Misa:** You were selling them, yes. Trying to essentially launch this method, launch this set of techniques. **James:** Yes, and generate revenue for Professional Services. We were successful with it, but of course, you taught the courses in five-star hotels and brought international speakers out, that sort of thing, it didn’t make a huge profit. In the meantime, the war between Professional Services and Cybernet over Telecom continued until ultimately, Telecom took data services business away and took it to CSIRO net. **Misa:** To whom? **James:** CSIRO’s network. **Misa:** Okay. **James:** And that resulted in the sale of the Knox Computing Centre, Control Data’s Knox Computing Centre. **Misa:** That was one of the centers of Cybernet then? **James:** Yes. **Misa:** I don’t remember where that was. **James:** You haven’t actually heard this before? **Misa:** I’ve heard a version of it. I’d appreciate it if you might give me a version here. **James:** Well, this just simply was the cost of running that data intensive application on Cybernet. It wasn’t that Cybernet, you know, was an unreliable service. Control Data Professional Services developed the systems. It was just simply the astronomical cost because they could’ve bought a system to do the job for what they spent in a year. So it was all rather sad, and then from my point of view, the writing was on the wall for Control Data Australia. But I was asked would I come back as branch manager briefly at the end. I can’t remember whether I said yes or not. Then I was headhunted by Koranya Proprietary, Ltd. Koranya were a Canberra-based IT strategic planning organization. And so I accepted the job. **Misa:** Koranya? **James:** Koranya. K-O-R-A-N-Y-A. **Misa:** And that’s in Canberra. **James:** Yes. Well, I ran the Melbourne office, but we were using the fact modelling method, as it was called in those days. The only one that ever used it on a very large application in Australia, anyway and these were government departments. So we did the Department of Employment and Industrial Relations, and we had teams running around the country doing it. And I did the information systems modelling. Koranya had a method of modelling organizations in order to realize the information systems requirements to produce a strategic plan. I did the information systems part of that. **Misa:** It was Canberra-based but you stayed here in Melbourne? **James:** No, I had an office in Canberra and in Melbourne. **Misa:** You went back and forth? **James:** I went back and forth. That was the first one, I think. I don’t recall; there was also work here in Victoria, you know, Occupational Health and Safety, and Accident Compensation Commissions, was established by the then-incoming Labour government. It was just set up and I project managed that, the whole IT strategic plan. But the then Big Eight chartered account firms decided to move into selling “shrink-wrapped” consultancy reports to large organizations. I could see that it was tough. You’d go and sell the consulting contract, then when you get started working on it, you didn’t do any more selling because you don’t have professional salesmen. And then I was recruited by Swinburne University. That was in 1988. **Misa:** 1988. **James:** Yes. **Misa:** And what was your work there? **James:** I came in as Discipline Head, Information Systems. This was an institute of technology, at that stage, because there was a binary tertiary education system in Australia. We were teaching postgraduate courses, but the students didn’t talk to anybody who had a Ph.D. They wanted to talk to people who had industry experience. And while, I’d
done some postgraduate studies. I actually don’t have an undergraduate degree; I have a diploma, and I had a graduate diploma. So I came in at the highest tenured level in the Information Systems Discipline and subsequently had a stint as Head of School, Information Systems. Misa: So head of school, that would be something like a dean, is that right? In the Australian system? James: Sort of. Misa: Okay. James: When I first started at Swinburne Institute, we did some more strategic planning work. At that stage, I did a master’s degree; I’d promised I would. So, yes I ran sort of modelling type things. But there was a management buyout — you probably know more about that from John O’Neil — there was a management buyout of Control Data Australia. And it lasted for a while. Misa: Couple of years is my understanding. It wasn’t a long term success. James: It was interdivisional conflict. I don’t know what happened elsewhere in the world, but in Australia, you know; and such a pity because it was a company that actually had a total solution. Misa: Interdivisional conflict between the Cybernet division and the Systems Division was really quite a liability here. James: Oh, yes. I don’t know how it was elsewhere in the world. Misa: If we look carefully, I suspect we could find the same tension between Cybernet and Systems back in Minneapolis.

James: Well, being right in the heart of the military industrial establishment there, what was it? The military industrial complex that President Eisenhower foretold? There were applications that suited, you know, the systems and they had some large systems. Not so easy in Australia; I mean, we had defense, what did we have? We had Australian Bureau of Stats. 36 Misa: The Census was early. James: Yes, I’m just trying to think of the Cyber systems. One of the people reporting to me was doing encryption work for what was then Defence Signals Directorate. Misa: Your secret intelligence agency, is that correct? James: Yes. So, in Professional Services, the expertise was very diverse. And, of course, the analysts who actually worked in Cybernet, they were the experts in those packages. Mathematical modelling packages ran on Cybernet. In Minneapolis, there was probably enough work for both divisions, maybe, I don’t know. The other interesting thing about it was the mission at Control Data — I mean, I had full knowledge at one stage — but do you know what the corporate mission statement of Control Data was before 1983? Misa: Why don’t you tell me. James: “To improve the quality of life in the societies in which we operate by the application of technology.” And after 1983, “profitable opportunities by the application of technology.” I started at the hard technical interface, but the real problems were sociological, they weren’t technological. Control Data had the technology to do the job, apart from this problem of the charging of it. I got more and more interested in the sociological side of it. That’s really the Information Systems discipline, is where technology and social sciences meet. And so I did a Graduate Diploma including a few subjects along those lines, and so on. So it was really Information Systems discipline. Misa: And that was then your work from 1988 forward? James: Yes. Misa: You mentioned a couple of times, the Australian Computer Society, and then IFIP. Could you make some comments about the relationship between CDA and those professional organizations? James: IFIP, the International Federation of Information Processing organization, had a number of working groups. One was the database management group; and the guys that were in the data management research labs, they were all on those committees in Europe. In Europe, they were very much at the forefront of the development of data modelling, and the like. Eckhard Falkenberg was at Siemens. Control Data claimed to have really developed the method initially, but I think that Falkenberg had more to do with it. He became the chair of the IFIP data management group at one stage, and I heard him lecture in Australia, too; and he and Sjir Nijssen both joined the University of Queensland. Yes, so there was leadership in data modelling in the forefront. The European Control Data guys, in fact, most of them became professors in European universities, and so on. In fact, Robert Meersman, I really meant to look him up before I came, because he could be an interesting person to contact. He was doing postdoctoral research at the Data Management Research Lab when I first met him. He became the professor at a few universities. Misa: That’s Meersman? James: Meersman. M-double E-R-S-M-A-N; Robert Meersman. A Belgian gentleman. Misa: Belgian. James: Yes. I don’t know exactly what happened subsequently to the research labs after Nijssen left; they weren’t too popular with Minneapolis so probably nothing very good. But those guys went on to be leaders in their field in Europe, and I can remember Robert Meersman; well, the first meeting of that task force, the systems engineering task force, in the Netherlands. And Robert Meersman invited me to his home for the weekend in Antwerp. His wife and he had a two-year-old son. Anyway, I think it was in 1981, and I’d meanwhile kept in touch with the group in Europe. Later I can remember...
sending two of my University staff to a conference, an IFIP conference in Europe, trying to develop skills. Then Robert Meersman decided that he wanted to go to the Great Barrier Reef. So he called an international conference in 1995 at Magnetic Island. The “First International Conference in Object Role Modelling,” and his son was there; I think I had seen him at his second birthday; [by then] he was an adolescent. **Misa:** So the Great Barrier Reef became a site for computer conferencing. **James:** Yes. So I stayed with that approach and introduced it at what then became the university, and worked in it. **Misa:** So IFIP was an important place where some of the people met, and then also you said you sent staff members there. **James:** Well, development of standards for data management and operability and all those sort of things; that was IFIP. So that was IT and IS at the early days of developing some kind of theory, a theoretical basis, and standards, and all that sort of thing. The other interesting thing about Control Data was its social conscience, I was a member of the Australian Computer Society twice. I was a Melbourne member, but left when it seemed irrelevant. Eventually, I came back and thought about doing something useful. I was a member of the national committee, the software committee of ACS. **Misa:** The national software committee? **James:** Industry committee. I finished up leading the Computer Society delegation to the Industries Assistance Commission [in] 1983. Anyway, Control Data financially supported that, because we were representing small software houses. That would be Trevor Robinson’s doing, I would think. **Misa:** And was it connected to CDC’s social conscience? **James:** You know, a national agenda and that sort of thing. So it was an interesting situation because here was a large computer company; in fact I can remember the meeting before the hearing in Sydney, and somebody from IBM had come along and tried to take over the meeting. Being IBM trained, I took it back from him. [Laughs.] But here’s all the small software companies and IBM tries to take over the meeting, but Control Data was supporting the person who was leading the delegation of all these small software companies. **Misa:** Can you explain how you took back control from this IBM person? **James:** I don’t remember, but I was trained by IBM, you know, selling techniques; I don’t recall. **Misa:** So you had some inspired technique. **James:** Barry Jones, the then Minister for Science, was also in the meeting; all the managing directors of software companies sat there and said nothing. Barry Jones stood up, looked around him and said, “You’re all a bunch of wimps” and stormed out. [Laughs.] Yeah, he’s a bit of a character. So, they were great days, and you can see what sort of company it was by the fact that [CDA] people still meet. **Misa:** Yes. Do you have any reflections on what that might mean? It’s quite notable, I mean, it was quite a striking [lunch] meeting last Friday. **James:** It was a sort of very collegiate organization and somebody tracked me down through the university, and asked me along to lunch. I just finished up, still kept coming. But it really arose when guys used to go out for a few drinks, you know, at St. Kilda Road, before they left, and perhaps kept meeting together. And it sort of grew from there. **Misa:** I heard that it was a sort of tradition, when Control Data was at St. Kilda Road, Friday afternoons might be social time, or sounded like there was a once-a-month barbecue, or some kind of social time. Somebody said it was quite important that typically, when an Australian company would do this, spouses weren’t involved. This was an instance where spouses, mostly wives, would be included. **James:** Yes. Well, also, I mean, with the external consulting services, most of the staff were at customers’ offices. I used to bring them back on Friday afternoon for drinks, no matter what company they worked for because they would be completely dedicated to the customers’ needs. You had to just bring them back every week and say “hey, you work for Control Data.” **Misa:** A chance to extend a bit of business. **James:** So that’s my recollection. **Misa:** Any other points that we could record this afternoon, Julie? It’s been quite interesting. **James:** Do remember that my views are my views, not those of the management. I was never above the first level of management in Control Data. **Misa:** It’s important to get a view from as many different levels as we can, and this is the reason I’m here, because the view from Minneapolis is an incomplete view. So thank you very much. **James:** Okay. I managed to get through without my voice breaking.
Misa: My name is Tom Misa; it’s 18 November 2013. I’m here in Melbourne, Australia, talking with Lyle Bowden and Tony Blackmore. We’ll be focusing mostly on their experiences with Control Data Australia Company, and they have a history that goes back and forth and will be complementary, I think. Tony, could I ask you to start, about how you entered the computer industry and how you got interested in that field? Blackmore: You need to know the Australian government advertises all employment opportunities in The Commonwealth Gazette. I was living in Perth, having just majored in economics from the University of WA [Western Australia]. I responded to an advertisement for a job in Canberra as a research officer on international trade. I arrived in Canberra to take up my new job and was told you’re going to work on the 1961 population census processing. I was given a team of about eight elderly women at the time, 1961, with the task of processing early requests for information from the census. That meant collating collections of stenographic pages, 20, 30 or 40 pages at a time, and then stapling them together. I came up with the idea of having a table-tennis table with pages stacked around it, and having my team of elderly women marching around one behind the other picking up page one, page two, page three, page four, page five; and so on. At the end I’d constructed a foot operated stapler so they’d staple the bundle and on to the next. One day the statistician (a very important person at the time) visited, saw this and said, “whose bright idea was that?” One of the women said, “his,” A few days later she said to me, you’re going to be in the Commonwealth Gazette next week. I can’t be because I haven’t applied for any new jobs. She says well, you’re going to be in the Gazette. When it came out, there was Tony Blackmore promoted to the position of computer programmer. Misa: Computer programmer, okay. Blackmore: What’s a computer programmer? What’s it all about? What do you do? Oh, says management, we’ll send you off to a training course. And that’s how I got into computing. Bowden: My entry was also accidental. I had completed a degree in psychology and I had been working towards an M.A. in industrial psychology. But my thesis was interrupted due to some industrial arguments. Anyway, I applied for a job in Melbourne as a senior research officer, and mainly to do with selection techniques. That was at the head office of the PMG’s Department; I was at the Perth office. Misa: Just to be sure, PMG is Postmaster General. Bowden: Postmaster General’s Department, which at the time was both what we now call Australia Post, and Telstra. Anyway, I went to the pub and a guy there who was working for the same organization said you interested in getting into computers? And I said what’s a computer? And the guy gave me an explanation, which I didn’t really understand. Anyway, I think that basically I was also headhunted because he organized me to go on a three-month training course. And after that was completed, I was actually failed by the people, because of something which occurred, which in my view meant that I knew a lot more about what was going on in the computers. What it was about; there [were] 20 exercises to do for homework, five different ones, and the other ones were repeats or effectively the same thing, you just wrote out the code with a different name. Misa: Programming exercises. Bowden: So anyway, I was failed by the supervisors but my sponsor was quite happy to have me, and he organized for me to go and work for head of the department. Sorry, the point was that there were many other departments on this course. The training we did was on a thing called a SILLIAC, it was 1024 20-bit words directing a valve machine, and it had paper tape input and output, and that was my beginning. And it was machine language. Misa: SILLIAC, that was in Sydney, correct? Bowden: Sydney, a version of the ILLIAC, which is Sydney Illinois Automatic Computer, at the time. When we got back, I started working on the computers, and we were using an IBM 1401; no, 1410, it was a decimal machine. Anyway, that was how I got into it. Misa: And [before the recording] you were just relating your joint entry with Control Data, so would you go ahead and record that story for us? 6 Blackmore: I had completed my training at the Bureau of Census, worked there on programmable calculators, been promoted to a higher level job with the PMG in Melbourne, programming the CDC 160A among other things, and was working with Lyle. I joined Control Data, in response to an advertisement Lyle drew my attention to. It was for people with an interest in operating systems. Joining Control Data happened quickly. I had my interview with Trevor Robinson and Bob Barton. Bob Barton I’ll comment on later on. At the end of the interview, Trevor and Bob looked at each other and said well, what do you think? Okay, when can you start? So I had to race off and get a
passport, go home, arrange for my wife and children to go back home to Perth for a few months. And that was it. **Misa:** And you needed a passport for? **Blackmore:** To go to Minneapolis. **Misa:** For training, then? **Blackmore:** Yes. **Misa:** Okay. **Blackmore:** So within weeks, the family had gone to Perth and I’d gone to the USA. **Misa:** So they returned to Perth, you went off. **Blackmore:** Yes. We were renting a house so it wasn’t a case of keeping the house. I was going to be away for three months and they went home to Perth for a while, and I went to the States. **Misa:** Can you say a little bit about what kind of training that involved? **Blackmore:** My introduction to the company was rather strange, but so was my first visit to the USA. We had been directed to Palo Alto and told to report to John Wise. For a few days, perhaps a week or so, we did very little until it was announced that we should have been sent to Minneapolis. There we met up with a few more new CDA hires and settled into apartments on the corner of Marquette and 12th. My training with John Marquet, was all to do with the [CDC] 3600, software mainly, and we were trained to become familiar with how the SCOPE operating system worked, how it could be modified, the sorts of things we might have to get involved with back in Australia. It was interesting. Our course included a group from India, whose names I can’t remember, but there were three of them. That was part of some U.S. Hands Across the Ocean Aid to India, where a [CDC] 3600 was going into the country and these three Indians were there to do the same training that we were. **Misa:** That would’ve been 1963? **Blackmore:** 1964. That would’ve been early 1964. **Misa:** Early 1964. And Lyle? **Bowden:** The three month training course that I had done and was programming and now system design. **Misa:** That was the training here in Melbourne? **Bowden:** For three months. That’s right. A lot of it was in Sydney actually; well, Sydney and Melbourne. Anyway, I was assigned a task, actually an applications task, to design and implement a system to track the faults on PMG lines. That would be what we call Telstra these days. I did that on the [IBM] 1410 and that project went for maybe one year; and turned out to be quite successful. And then in the meantime, the company, the organization had purchased a Honeywell 800 computer and other people had started working on projects on that. I didn’t do any applications but I was put in a software valuation group, you might call it; think we called it standards or something like that. Almost immediately Honeywell released a COBOL compiler. They had been using FACT, which is another language, which used to go from source language to what they coded in, then would code it in machine language. The COBOL compiler went straight from COBOL to machine language. I was given the task of evaluating this COBOL compiler, comparing it with FACT, and making a recommendation as to whether the PMG should start using COBOL. In fact, it was so obviously superior; for instance, compile time would go down from maybe 40 minutes to five minutes. **Misa:** Fourteen minutes? **Bowden:** Forty. **Misa:** Forty minutes to five minutes. Almost a factor of 10. **Bowden:** So I made that recommendation. That recommendation was accepted. The next thing was to analyze the machine language, which was forebear of the COBOL compiler. These were word-oriented machines. Depending on where you stored your data as how efficient it was going to be. If you had to unpack different words to get into a field or a number, that took some doing. And you take and you’d unpack it, then edit, and put it back again. So by knowing how to align the data within the word boundaries it was calling for, and so we just didn’t make a recommendation, you know, that you allocate the storage in this way. And that was what I did. Then I spent quite a lot of time on that; and then I later went on to training exercise where I was training programmers, and training a one-year course. I came straight out of university without any knowledge of computing, and I was responsible in each of three years, [for] 25 people, to convert them into working professionals. **Misa:** That was working for; with the university? **Bowden:** The PMG’s Department. **Misa:** So you were doing training within the Postmaster General’s Department. **Bowden:** It could be because I became something of an — at the time — I was going to be an expert in COBOL because of the fact that it was a new language and I had been allowed time to basically familiarize myself with it. **Misa:** COBOL became a standard language. You said it was a new language; did people have ideas about why it was being used? You said it was quite a bit more efficient than FACT. **Bowden:** Well, FORTRAN would’ve been the scientific language and probably many organizations still use FORTRAN. And FACT, I believe was just a Honeywell language; I don’t think anyone else used it. **Blackmore:** My recollections of COBOL, at that time when it was being introduced was, this is where you could just write stuff and it was believed that you could just write text down. You know, do this; add this word; get this value, which you’d give a name like “take my income and add it to this; take off my tax.” You could virtually write words. That was a kind of belief that you could write a
textual thing and stick it into a compiler and you had a computer program. **Misa:** You had to use the right words. **Blackmore:** It wasn’t quite that easy. **Bowden:** The mnemonic COBOL is one of this common business-oriented language. The emphasis was on business as opposed to science. **Misa:** And then how did you end up getting to work for CDA, for Control Data? **Bowden:** Tony was aware that I was doing this type of thing, and I also, during that process, the Department of Defence had a Honeywell 800 computer and they were using FACT. And then when the Department of Defence found out about this project, which was being done by the PMG, the evaluation project, they became aware of that and I became somewhat notable, you know, as the person who was to be consulted about whether or not they should change over. **Misa:** You went down the COBOL pathway early on. **Bowden:** So I became the COBOL guru. That’s my version, anyway. So Tony also had heard about this thing from me, and when Control Data, they released COBOL compilers for the 3000 series, not at the time but I think sort of after that, the new Cyber series; but at the time it was the new 3000 series. He recommended to George Karoly that I might be a person who should be recruited. **Blackmore:** Up until that time, in Control Data Australia, and probably the corporation, as well, the common languages were FORTAN, Compass, an assembler language and ALGOL, mainly by the Europeans. Nobody in Control Data Australia could’ve written a line of code in COBOL, in my opinion. Well, maybe we were smart enough to learn fast, but if someone said go and cut code, we’d damn near say where can I get the reference manual please? [Laughs.] **Bowden:** Perhaps to go back; the project that I did, which I implemented, was in fact written in COBOL on an IBM, original COBOL; so I had actually used it in that project, in that program, I think; in that application. So I had actually implemented systems using COBOL. Then I went on to evaluate these compilers, and efficiency, all that sort of stuff. I had quite a few years of experience with COBOL by the time that I joined. And then I’d, during my training, when I was training I was also teaching people COBOL. I spent probably five years on COBOL before I came to Control Data. **Misa:** So that would’ve been, coming to Control Data in [pause] **Bowden:** 1967. **Misa:** 1967. **Bowden:** 1962-67 I worked in Melbourne [with] the PMG and effectively on COBOL all that time. And I came to CDC in 1967 and I basically [introduced] the company to COBOL. **Misa:** Was there a particular strategic vision? Control Data had been based on scientific computing, for which FORTAN was and remains an important language. So do you think that CDA was interested in developing business applications and so COBOL then was an important language to get expertise in? **Blackmore:** We had government users doing ordinary government and non-scientific type work; Australia Public Service would’ve been one of those. But even Census, and others wanted to branch out and do things in COBOL, I believe. **Misa:** Could you say just a little bit about some of the projects, just so that we understand their character? **Blackmore:** I probably can’t comment on any of those because everything I was involved with was on the scientific side. Even when I was Victoria manager, it was Victoria TAB, the Bureau of Census, CSIRO, Aeronautical Research Laboratories, Defence Signals [Directorate]; every one of the people that I always dealt with was on the scientific side. So I know that we were being asked for COBOL expertise, and that we had some pressure to get into this area. **Misa:** Would it make sense to talk a little bit about those scientific applications, then? **Blackmore:** Yes. When I came back to CSIRO from my first training because that lead into a lot of the scientific stuff. When I went to Minneapolis in March, I was accompanied by John Marquet. And John and I were the two 3600 software support people; John destined for Census, and I was destined for CSIRO. We went to Minneapolis; did our training; came back. I get back to CSIRO, who had the 3600 in Canberra, and they had three 3200s in other States. I had nothing to do with the 3200s, there were two other people, Len Whitehouse and Mike Keys, were the 3200 people. **Misa:** Len Whitehouse and ? **Blackmore:** Mike Keys. **Misa:** Can you spell his last name? **Blackmore:** K-E-Y-S. It might be K-E-Y-E-S. **Bowden:** No, just K-E-Y-S. **Blackmore:** I get back to CSIRO, and you need to know this was the computing research division of CSIRO, located in a lovely building in Canberra. Everything about it was beautiful. We had the big computer there; and the computing research division was staffed by a few CSIRO staff and a number of ex-academics, or people that had an academic experience in a related industry or a relevant industry. I had a lot to do with Terry Holden, an expert in concrete structures, who’d been with their building research division, now part of the computing research division. But other people from the CSIRO staff were mostly PhDs. The division was headed by Dr. Godfrey Lance. **Misa:** Please spell his last name. **Blackmore:** L-A-N-C-E. Known as God. [Laughs.] He was an interesting bloke. And other people like Dr. Brian Austin from Cambridge University, and quite a number of well-qualified
academics, many recruited from the U.K. I do remember a CSIRO American, Henry Hudson from JPL [Jet Propulsion Laboratory in Pasadena]. A very significant person was Trevor Pearcey, the deputy head and a co-designer of CSIRAC, a very early Australian computer. Trevor was later recruited by CDC and worked in Minneapolis. They may have had trouble dealing with some of his eccentricities, but he really was brilliant. On the Control Data side, there was me, fulltime at CSIRO and just the 3600 software person, and Dr. Robin Kerr, New Zealander, who had done his computing training at the University of Manchester with its Atlas computer. **Misa:** Important computing center. 16

**Blackmore:** Yes. Also Peter Jones, Dr. Peter Jones was an Australian, he’d also done his bit at Manchester on Atlas. One of the CSIRO people, Brian Austin, was from Cambridge where they had Titan. And Titan was an Atlas relation, in terms of where it fitted into things. I honestly wondered what Kerr and Jones ever did for Control Data except engage in all sorts of interesting discussion and debate on the fringe of the real work. I would be busy as a beaver trying to fix software problems, trying to write drivers for plotters, things like that; helping CSIRO customers, convert their FORTRAN programs from the Weapons Research Establishment [WRE] IBM 7090, to run on Control Data gear. So I was a busy little body running, helping their customers get programs and fixing all these problems — something’s wrong with your compiler, it doesn’t work right — I can give you an intriguing story there. There was a Dr. Wunderlich, a renowned crystallographer whose tables had been published globally. One day he said there’s a problem in your FORTRAN compiler. It tells me that I’m trying to square root a negative value and that can’t be right. So, we get to work. Well, I checked through his program, and he is definitely trying to square root a negative number. His response was that he was right and we still had a problem. One of our Control Data support people was Jack Cleary, who’d come from Weapons Research Establishment, and Jack said I know what that problem is: the [IBM] 7090 FORTRAN compiler doesn’t have as good error detection diagnostics as CDC FORTRAN has, and he’s probably had this square rooting the negative value all along. And that was the answer. So these globally published tables on crystallography of the eminent Dr. Wunderlich had their problems. **Misa:** Just to be clear, the IBM machine was doing something that at least (unless you do imaginary numbers) is not possible to do, but somehow skipped over that so there was a hidden error. **Blackmore:** Yes. **Misa:** The Control Data machine spotted that it was a mathematically disallowed move.

**Blackmore:** Yes. And the significant thing I mention about — it’s not just a gripe that I was doing all the work and all these other fellows were having a good time — but it was quite funny that Canberra office was a very elegant office. Canberra had an office at 122 Empire Circuit, right in the middle of the embassy district. I think our next door neighbor was the Dutch Embassy, and over the road was the Israeli Embassy, and we were about a block away from the U.S. Embassy. One of the Americans was a fellow called Al Collins, from Dallas, Texas, who named the Control Data office the Texan Embassy. We actually had a flagpole in the car park; it was a building that had been built to sell as an embassy, like a readymade building for some embassy what wants to set up. Well, Control Data rented it and we had our Texan Embassy. **Misa:** I understood that it was very difficult to find office space in Canberra at the time.

**Blackmore:** It would’ve been, yes. **Misa:** . . . you were lucky, in a way, to get an elegant building. **Blackmore:** Non-existent office space. Yes, this was very elegant; it was good car parking, too. Bob Barton was an American who was said to have designed the Burroughs 5000 computer before he came to Australia, and he had his buddies. Trevor Robinson told me — years later — that when he asked what’s your job, Al? The reply was “My job is to keep Bob happy.” The two Control Data PhDs, Robin Kerr and Peter Jones, together with some of the CSIRO people got involved with an exercise known as Project X. It became one of my main annoyances at the time because you could never find out what the hell are these blokes doing? They’re all working on this Project X and here am I, fronting up at CSIRO every day to sort out the day’s problems, and it eventually came out that Project X was the design of a radical new computer, and the inputs to this were these guys who were familiar with Atlas in the U.K. The almost certain truth of this — and I had it verified from a U.S. Burroughs person — that when Barton returned to the U.S., he went back to Burroughs and that the Project X, which had been developed at CSIRO with Control Data staff, became the Burroughs 6700. **Misa:** Oh, okay. **Blackmore:** Now, George Karoly might know a bit more about this. My source was Jack Cleary, a support person with me at CSIRO: Jack was an almost 100 percent FORTRANer; but Jack went back to the U.S. with Bob and worked for Burroughs; and it was Jack told me that Project X became the Burroughs 6700. 19 **Misa:** Which was a notable machine, of course. **Blackmore:** Yes. So that was my life at CSIRO, just working on supporting
the software. Census had a [CDC] 3200 and a 3600, and a satellite coupler. A satellite coupler is a very elegant way of connecting the two computers. When they connected, 3200 was treated as a peripheral device, just as though it was a disk drive or anything else; worked very well. Although I wasn’t working on that, I became familiar with it. One day I got a telex from George Karoly, who was in Minneapolis at the time, saying they want somebody — me — to go to Tokyo to install the software on a 3600 that’s being shipped to Tokyo. And because Christmas is coming up, tell them you won’t go unless your wife can go as well. I always remember George adding that into the Telex. So I duly said I’m prepared to go. That lead to about three months in Tokyo installing the software on what was then a very large 3600/3200 combination with a 98k 3600, and the [Japanese] had one of everything (peripherals). Again I think it was one of those U.S. Hands Across the Ocean AID things because all the boxes had a stencil of clenched hands and U.S. AID on them. 

Blackmore: Yes. Misa: So you were, in essence, a resident application support person... Blackmore: Yes, but SCOPE bug fixer also. Misa: On the Control Data payroll, but working closely with the CSIRO people on their problems. Blackmore: Yes. I didn’t even have a chair in the Control Data office, but I did get back there pretty often to have meetings. But yes, I was 100 percent located in the CSIRO premises. And my colleague John Marquet was 100 percent located in the Bureau of Census, on Control Data’s payroll, looking after their 3600. Misa: It wouldn’t be common now — but that was quite common then. Blackmore: Yes. I was there [interrupted] Bowden: We used to call it site support. Blackmore: I would’ve been at CSIRO for probably about two or three years. Misa: Three years. Blackmore: Yes. And one of the very interesting things — and I mentioned this the other day, I think — was the acquisition of drums. That became one of the critical things that 21 this was going to be a new peripheral and nobody else had any drums running sensibly on Control Data systems. Misa: Drum memories... Blackmore: Drum memories. Misa: ... as a peripheral device? Blackmore: Yes. There were two million 48-bit words of memory on these drums so they weren’t very big, but they were fast and I recall clearly that a critical part of operating drums was to know the angular position. This requires an angular position register so you could shuffle drum requests, knowing where the drum was at the time and re-sequence the request. Minneapolis announced that they were not going to implement that the register and that resulted in a real yell. For a while Minneapolis persisted that they weren’t going to have the angular position register. I know that Trevor Robinson got very much involved in this because it just meant that drums became silly if you couldn’t work out where they were, they would be severely handicapped. Misa: So a register would’ve turned them into something useful. Blackmore: Yes. You could’ve slowed down the performance a hundredfold because you would just be putting in requests, not knowing where the drum was. Anyway, that was eventually turned around and they put the angular position register in, but SCOPE software didn’t accommodate drums and so there was a very substantial rewriting of SCOPE. I was involved in finding space for a larger resident part of SCOPE which was still a pretty primitive system. When you did a compilation of a FORTRAN program, you loaded the FORTRAN compiler and the COMPASS assembler together into of the available memory and did the compiling. There was no way in which we could implement the drum software that didn’t use some of that space with the consequence that the FORTRAN compiler and COMPASS assembler would no longer fit. So it was my job to compress them, somehow. So it was a case of working through the FORTRAN compiler and the assembler to reduce their size. That was interesting. Misa: To allow them to fit within the memory constraints. Blackmore: Yes. That was my job. It turned out to be easier than I thought and was accomplished. Misa: Can I ask you; this is interesting because there’s innovation going on, not in Sunnyvale where SCOPE came from, but here. Do you know whether those innovations with FORTRAN and COMPASS, as well as the angular position, did that go back to Sunnyvale? Blackmore: Yes. I know that because SCOPE’s name was then called the DAD project, Drums and Displays, because along with the drum people getting a graphics Vista display and a half a dozen character displays, so the DAD project evolved into implementing the drums and displays into SCOPE; and I do know that it was shipped elsewhere. I can’t tell you where, but I remember that it had to be tidied up a bit. Misa: Then that would be something available across Control Data in the same way that SCOPE would’ve been available across Control Data. Blackmore: Yes, it definitely went back to the corporation, and also a lot of software to do with getting these displays to work sensibly, because they were really just bits of hardware with no application software. Somewhere along the...
line, after my little Tokyo stint, which was good fun, I started to get more involved in sales support, and I think it was probably in this time we sold a 3400, which was like a reduced capability 3600, to Defence Signals Directorate and I was given the appropriate security clearances. DSD — you need to know [that it] is similar to the U.S.’s NSA — I was sent off to teach them about software maintenance and programming on that machine. Shortly after, John O’Neil got me to work as sales support on the proposal to the Bureau of Meteorology. Originally, that was to be based on the Control Data 3400s, and I had 3400 and 3600 expertise. I think that during that sales support effort I was instrumental in convincing John that we really should be bidding 6400’s. There was a supplementary bid for 6400s but we were unsuccessful with that [Met] bureau. **Misa**: Do you remember who got that? **24 Blackmore**: It was IBM. I think that we should’ve been wholly on the 6400 on the proposal and not any part of it on the 3400. I did hear back from Trevor Robinson that the Met Bureau had people that said to him, why is the proposal about 3400s and not the 6400?

**Misa**: Because meteorology, of course, is hugely data intensive and computationally intensive, so a 6000 version machine. **Bowden**: If I can just inject there, in my view, CSIRO was already a Control Data customer and remained so after the Cyber series, etcetera, etcetera; and Met Bureau; once Met Bureau had gone IBM, there really weren’t any other scientific organizations around. So that’s why, really the only [remaining computer] market was the racing industry or commercial. **Misa**: **A.H. “Digger” Harding**. **Bowden**: His nickname was Digger Harding, H-A-R-D-I-N-G. And Digger was just an interesting bloke who worked hard for us, and eventually, we did get business in New Zealand. **Bowden**: Well, they got the racing system over there, didn’t they? **Blackmore**: What else was there in that last period of my time at Control Data? There was the TAB; Royal Thai Turf Club was an interesting sale that was made with the assistance of an agent in Bangkok, called Amnuey Kasemsap. That was an interesting sale that was wholly based on what we’d done for Victoria TAB, and it was just to provide on-course bidding and equipment for the Royal Thai Turf Club. I put in the original proposals for that, and through to the point where we actually got the order. **Bowden**: Actually, there is another organization; that was the Defence Signals [Directorate], and that was also a Control Data site. That was quite controversial because we were never allowed to put it on our corporate lists, like we couldn’t mention their name because it was all supposed to be top secret. It was rather ridiculous because in the government gazette, they would publish the fact that Defence Signals had purchased another tape unit from Control Data. It’s recently become [a] topic because of all this spying business. **Blackmore**: This is a true story. There was a computer magazine; at the time when Control Data got the order for the 3400, Data Trend, I think it was called. And it was edited by a bloke called — what the hell was his name? He’s dead anyway. But that magazine came out with the item that Control Data Australia had sold a 3400 computer to Defence Signals Division and the security people jumped on the editor — jeez, what was his name? — who’s leaked this information to you? I was personally interviewed; have I told anybody about this? No. Trevor was interviewed. No, he hadn’t told anybody. I think John O’Neil knew about it but I’m not sure. Eventually, the editor said I can tell you how I found out that Control Data’s made a sale of a 3400; here’s the Commonwealth Gazette: “Sale Commonwealth.” The editor knew that GCHQ in the UK had a 1604 and correctly arrived at the conclusion that the procurement was for cryptanalysis. **Misa**: Big secret! [Laughs.] **Blackmore**: . . . a Control Data 3400 is being sold to the Defence Signals Division for the sum of whatever.” **Bowden**: But do you agree — well I’m sure you will agree — that whenever we put out corporate lists; later on, we had BHP, we had University of Melbourne, we had [SGIO] Queensland, blah blah blah. **Blackmore**: An indication of how crazy they were about security, when I did my initial briefing, and you know, clearance, and eventually shown into their premises, they’re in an old army barracks, which is located not far from here; it was in Albert Park just here. **Misa**: Albert Park is very close, yes. **Blackmore**: The same Albert Park, and down that end of it was a big area fenced off with barbed wire and had been an army camp during World War II. Inside that were a lot of timber huts, timber siding hut-type things, and that was where Defence Signals was. I was strictly told, and John and Trevor were also, you are not to discuss our business in open air at any stage because
people could be lip reading. I don’t know anything about their business anyway, I was just there to teach them programming, and so forth. But it was really very funny. The barbed wire was really around a larger group of Defence establishments, not just DSD, but DSD had their own barbed wire enclosure inside the barbed wire enclosure and all the windows were painted so you couldn’t see through the glass. Bowden: Just to show how [interrupted]

Blackmore: Frank Linton Simkins, that was the editor of Data Trend magazine. Frank Linton Simkins. Misa: Can you spell that? Blackmore: Yes. Linton, L-I-N-T-O-N. Simkins, S-I-M-K-I-N-S. Misa: Great, thank you. Bowden: Just another little anecdote that shows how this attempted secrecy was overdone, you might say. There’s a place called Salisbury in south Australia, where they’re developing various defense things, and one thing was a thing called a Bloodhound, which was surface-to-air missile type of thing. And one day, on the front of the newspapers, was the announcement that they had successfully developed this thing called a Bloodhound, and all the things that it could do. But the people who were working on the development of it were never to mention the word “Bloodhound.” It was just; you just don’t mention it, even in company, in the organization. And apparently — I wasn’t there but I believe it was true, someone told me it is — one guy came in and said oh, I see they’ve announced the Bloodhound and security people just jumped on him because you, he had erred by using the word “Bloodhound” you know, and he . . . Misa: Had spoken the forbidden term. Bowden: . . . and all he said was I see they’ve announced the Bloodhound. It probably all got sorted out but that was the initial reaction of these so-called security people, you know? Blackmore: This has a little bit that has relevance to Control Data history, and it goes back to my first time at Control Data. In about 1969, Lyle and I were both in Florida at the Control Data 100 Percent Club. For some reason I’d taken a carousel of slides about Victoria TAB; I’d put on a pitch about that quite a few times. Anyway, we were at 29 the Hundred Percent Club and on the second to the last day of it or maybe the last day, Bob Price came up and said Tony, you’re coming to New York with me, you’re going to put on a presentation to a company called Ticketron, about Vic TAB. I said okay. And so I thought I’d better check with Trevor, he was there, and he said yes, we’re coming too. So off we go, and I was told that the presentation’s going to be made at this company located in the Seagram’s Building on Wall Street, and the Wall Street salesmen were going to be there. I thought gee, this will be good; I’ll get an opportunity to see how a real hotspot U.S. salesman operating in this very prestigious territory would perform. I’m waiting to be impressed. So I front up and there’s a fellow called Mike Portanova who I think, was the president of Ticketron, and I can’t remember the salesman’s name, which is probably good from his point of view because I had told him that we would need to get extension leads because I had the carousel projector and so forth. Well, he hadn’t done any preparation and when we arrived and the presentation’s to be in the president’s office, he says, hey Mike, is it alright if we drag your desk over? So he drags his desk over near the power outlet so we could get connected. I think well, this is pretty informal relationships. Then in comes a shoe shine person. And the salesman said hey, I’ll shout everybody a shoe shine, and there we are. I just couldn’t believe this performance. Anyway, I duly put on my presentation about Vic TAB. Misa: Did you get your shoes shined? [Laughs.] Blackmore: I can’t even remember. I came back to Australia, I said these bloody hotspot U.S. salesmen, they’re bloody awful. [Laughs.] Anyway, that’s just a little thing that 30 happened on that last trip to the U.S. in my first term of Control Data employment. I think we eventually bought Ticketron and it reminds me of that advertisement you used to see on TV about the man who bought the Remington razor company. The advertisement used to be, “I like the razor so I bought the company.” Misa: Ticketron became one of those interesting assets. I mean, they did tickets, but they didn’t do gambling, so far as I know; any kind of wagering system. Blackmore: Well, by that time, Vic TAB was really selling tickets all over the place, you know, with the remote selling and printing out tickets on the spot, and all that sort of thing. And that’s just what Ticketron wanted to do. Anyway, it was after that that I went to work for Information Electronics, founded by Malcolm McCauley, who was a former member of Engineering Research Associates. Misa: And the name of the company again? Blackmore: Information Electronics. Misa: And that was here in Australia? Blackmore: Yes, in Canberra. Manufactured displays and other gear. Misa: And Tony, you worked for them approximately ‘til when? 31 Blackmore: 1970-72. Misa: 1970-72. Great, thanks. Bowden: Actually, there was a bit of a spinoff: When Control Data was bidding for the TAA [Trans Australian Airlines] there, which we didn’t get, one thing which we did was a demonstration reservation system for the Australian market, where you’d only have maybe six to 10 main cities where
people visit; not like America where there’s everywhere. You don’t fly everywhere from everywhere here. Instead of us typing in PER for Perth, and MEL for Melbourne we had a single key and if you just pressed that, that would enter PER as if you had typed it in the three letters. It was novel at the time. Misa: Melbourne, one key. Bowden: You’ve got to remember that software was a lot more primitive than now. And then it turned out that Information Electronics introduced that onto their terminals. Blackmore: I think that was a real innovation that we probably invented the function key. Bowden: That’s right. Misa: The function key? Bowden: That’s what a function key does these days. Blackmore: When I left Control Data, I left on the 30 June 1970. Trevor had left and we had an acting general manager called Peter MacGregor, who I thought was a pain in the bum. We had an argument one day and Peter said to me, “it’s going to very difficult for us to work together.” And I said, “I’ll solve that,” I quit. Bowden: Was that when you left? Blackmore: Yes, but I’d already been talking with Bill Taylor, who worked for Malcolm McCauley at Information Electronics. They’d been trying to persuade me to go and join them as a sales manager for Information Electronics, and I’d given them the undertaking if I’d work for them I’d guarantee to get the TAA reservation terminal order, which was a huge order for Information Electronics, it was hundreds of reservations terminals. And, anyway; I gave Control Data the flick caught the plane the next day up to Information Electronics, and we eventually got that order. The TAA reservation terminals were all made in Australia, partly based on the work that I’d done on the Control Data TAA proposal. Misa: And TAA . . . ? Bowden: Trans Australian Airlines. Misa: Trans Australian Airlines. Bowden: A government-owned airline, which doesn’t exist anymore. Blackmore: It was a precursor, got assimilated into Qantas, didn’t it? I don’t think it just disappeared off the face of the earth. Bowden: I can’t remember. Blackmore: I think TAA became Qantas, part of Qantas. Anyway, that’s by the by. There were only two major airlines at that time: Ansett which was a private one; and TAA, which was a government one; and they were very similar. They serviced the same cities, they flew the same sorts of airplanes. Ansett was the one Information Electronics got with IBM computers and Information Electronics terminals. Misa: Would you like to pick up this story in the early 1970s, then? Bowden: Okay, really I’ve got to go back because my first task in Control Data in sales support was to respond to the benchmark requirements of BHP, Broken Hill Proprietary Limited. BHP had two, actually three sites; they had the Port Kembla site, the Newcastle site, and the Melbourne Ministry site. I think at that stage most of the emphasis was on the two functioning sites; that was Newcastle and Port Kembla. But they had existing IBM 360 series computers, using COBOL language. Misa: 360s. Bowden: 360s, originally, and using COBOL. They also had 1401s using AutoCAD; and they had a sort of a linear programming type group, I think, up in Newcastle. Anyway, one day they dumped about 100 boxes of punch cards in our office and said that’s the benchmarks, you’ve got to run all those programs and give us the results, and you’re going to assist in your ability to blah blah blah. Misa: So the benchmarks would be standard applications? Bowden: They were programs that had been running; so were running then on their equipment. I’d say Program M takes so long to run on our machine, how long will it take on your machine? And the other thing was that the 3000 series, which was what we were offering; that was the beginning of multi programming, certainly from Control Data’s point of view, I think. And so the exercise was to test both the efficiencies and the adequacies of your compilers — and some things were in FORTRAN, I think, as well — and also the efficiency of your multi programming in operating system. That became quite important, actually, and if I might just hark back to my days at working with Honeywell, in the PMG, I had been taught by the site support person at Honeywell, who was [a] Honeywell employee working with the PMG, about reading memory dumps. And that was a skill that not many people had. Misa: A memory dump would happen if the program hung up. You’d freeze the memory and then try to understand what’s in every register. Bowden: That’s right. And of course, one of the problems there was the thing would often clear its own memory. That was one of the problems with the 1400 series, it would just wipe its own memory. Anyway, it’s only just an aside, but it was my personal relationship with this guy, Kerry something — I can’t remember his name now — that he actually taught me how to do memory dumps because he was an expert and he didn’t want to give away his trade secrets. But I got to be very friendly with him and he taught me how to do it. Of course, I mean I wouldn’t blab it to the world after that; but when it came to Control Data, that was the way it worked out, why programs were efficient or not efficient. Anyway, one of the tasks we had to do for BHP were to run these programs but they were written in a version of COBOL, which was slightly different from
the standard. Control Data had implemented the COBOL standard, which was, you know, one of those [standards] organizations where you would have to run these things. But IBM’s COBOL was not according to that standard and there were some little things about punctuation and a few verbs or something, which weren’t there which should’ve been; whatever. Anyway, I personally wrote a translator, and what that did was read the IBM program and it would eliminate; well, it would substitute certain parts of the program with other bits and pieces in order to allow it to work on that computer. And that was something. I think my thing would be that what was required there was inventiveness, or innovation, or something like that, you know; it wasn’t just a case of selling a product. You had to refine the product in order to make it successful. We also had to learn to run the 1401 simulator, which is to read all their code and translate that into our own code. Anyway, I think [there was] actually a translator. It would read a 1401; might even have been a 1401 machine language program, I’m not quite sure; and then route it on our machine. Anyway, that was quite an exercise. **Misa:** This kind of work, trying to take an IBM COBOL variant and to standarize it, that’s being done here in Australia. Did you have a sense that that translation program was then taken back to Control Data? **Bowden:** I couldn’t comment, I don’t remember. It could well have. **Misa:** Because it seems a very general thing. **Bowden:** Oh yes, it could well have. I don’t know. It was a program written in COBOL, which was really punch card input. And the program’s all in punch cards. And yes, read the punch cards, and punch another deck, which was what we put onto tape, actually, or onto disk. **Blackmore:** I think that there’s two levels where things would’ve gone back to Minneapolis, quite often through a buddy network, you know. If you could do something here you’d always have somebody in Minneapolis you were talking to who was doing similar things, and you’d swap programs or you’d swap tips with them. So it’s very likely that lots of stuff that had gotten done [here] was taken back to Minneapolis because somebody took a deck of cards back with him. Things like that happened all the time. **Misa:** So the buddy network worked. I mean, there’s no e-mail, I understand that. **Blackmore:** There was a lot of intercompany travel. **Bowden:** I worked for Control Data for ten years, and in that time went to the U.S. seven times. At one time, I was there for two months. **Blackmore:** There were always people traveling and there were always people coming out here to CDA to do things or to help you do something, and we’d go back there. It was just a regular pattern of your life; there was always somebody overseas. In fact, [laughs] I remember Trevor Robinson saying to me one time that John O’Neil is never happy unless he’s got a bloody airplane seat strapped to his ass. And it was a problem when they looked at John’s travel. I think it was something like John had spent — I can’t remember now — but it was something like 187 days of the year traveling somewhere on company business. **Misa:** More than half the year. **Blackmore:** Yes. But another comment I could make on this benchmarking I don’t know whether it was the custom in the U.S., but benchmarking was the normal way of doing every sales thing that I was involved in, and I was mainly in FORTRAN related activities. You would always be asked how long does it take to invent matrices of this dimension? How long is it going to take to sort this many records? And things of that nature; there’d be lots of specific things but then there would be collections of small applications. Here is a deck of cards that might be a couple of thousand cards, that consists of seven or eight different programs, or more; how long does it take to run them? And so forth. And those times got to be pretty critical; and in the case of Control Data’s FORTRAN, we were very, very good; we could beat anybody. Our FORTRAN had instructions that didn’t exist in other people’s FORTRAN. For example, standard FORTRAN has a read statement and a write statement. It just says try to read a card; when I’ve read the card, I’ll proceed to the next step of the program. Control Data had a buffer inuffer out that said I’m going to initiate this read and while that’s being read I’ll go on and do this. And then I’ll do an “and if” the read’s complete, go back there, so you could overlap things and that made our FORTRAN a hell of a lot faster than if it involved changing the program, where they had reads and writes, input buffer-ins and buffer-outs, and “if completed” statements. **Misa:** With standard FORTRAN, if you had “read” then the program would be waiting until the read was complete. **Blackmore:** Yes, whereas we could initiate the read, go off and invert your matrix and come back, say is that read finished yet? So we had to change FORTRAN programs, sometimes quite a lot but we’d always win. We could always run miles faster than anybody else’s FORTRAN apart from the machine speed. Machines were fast, and the compiler was faster still. **Misa:** That’s a really interesting thing, too, you zeroed in because people always talked about Seymour Cray’s machines being fast. But I think he ended up having some version of FORTRAN, maybe some of these
characteristics that made the software fast, and the two together were really a winning combination. **Blackmore:** Well in the case of the 6000 series, it got to be even more complicated because the 6000 had multiple arithmetic units and I’ll give a simple example. If I had a program that said that $A = B + C$, and $D = E + F$, I could do those at the same time because I had two adders on the 6000. But if the second one said $A = B + C$, and $D = A + F$, I couldn’t proceed, I had to wait until the first computation was complete because it didn’t know the value of $A$ yet. And that’s an over simplification, but the optimization of FORTRAN on the Crays with that multiple of arithmetic units was very difficult, took a long while to do that. **Bowden:** The 6600 had some of that; the 6400 didn’t have all those. **Blackmore:** No. **Bowden:** That’s why the 6600 was three times as powerful, I think; or one of the reasons, anyway. Getting back to what sort of people you had to have in those days. You had to also be able to get on with their people. When you did these benchmarks, the people who offered the benchmark had an axe to grind because they wanted to make sure that any new computer was bought was going to suit them, right? And at two physical sites, and within each site there was this, you might call them interest groups, and they wanted to get the best deal for their own little projects. In order to understand some of these tasks that we’d been given, you had to sort of, well, we chose to talk to the people who had written these programs, and not always were we able to do things exactly the way they’d done. I can’t remember how it worked out, but the IBM had this independent interrupt system. They’re thinking that when they wrote a program they knew that the machine were going to; interrupt meant something that had to go off somewhere else. But where we didn’t have an identical feature we had to convince them that we had an equivalent feature, which they could quite easily comprehend because they were intending to develop new programs. These programs they were giving us had to continue running, they were sort of bread and butter things that existed. But they obviously wanted to expand it and write new stuff so these benchmarks were really just to satisfy them that they could chug away in the background and then they’d go on and do all this stuff; a great thing, you know. So that was it. The other thing is that because it was multi programming computers, and that was quite important because you had the size of the program but you had to get more than one program physically in the machine at the same time. And you also had to see it in [CPU] cycle. So it was very important that you reduce the program size and also that the number of cycles used was possible. And one example of that was that one of the benchmarks we were given, just used to just do a lot of calculations, and when we ran that program on its own it took quite a long time to run. And if it was with other programs, it would mean that — don’t correct me on the numbers. I think we took, one time, something from 14 minutes down to about 9 minutes when we cleaned up this one program, it was running inefficiently. Because you could imagine that someone wanted to get into the bathroom and you could only get two people in at a time, and this bloke’s here, he’s here for half an hour and everybody else can’t get in. **Misa:** Soaking up the CPU. **Bowden:** So he goes out quickly then other people come, and bang, bang, bang. So what we did, with BHP’s agreement, we showed them that this particular program, if it was written a different way, that it would run a lot more quickly. So we made up a mock-up of the modifications to it; so it wasn’t the original benchmark, but it was the same function, and with their agreement, they accepted it. So we finally had times for the mix, the total mix; we had used a more efficient version, which wasn’t the original one and that was quite important in getting that sale. **Blackmore:** You need to be aware BHP was a very, very significant sale. Should’ve been as significant as CSIRO and Census because it was the biggest industrial company. 42 Everybody just took for granted that IBM would get BHP, well, they didn’t. Control Data got it and held it for years. That was just a major, major sale. **Misa:** So what you’re saying, Lyle, is understanding the customer’s real needs, because the benchmarks were quite formal but that’s not the complete picture. You’re trying to understand and have some insight into the type of programming and, in fact, what you’re doing is improving the benchmarking in some way. **Bowden:** Yes. **Misa:** So you’re improving the standard in some way. **Bowden:** Yes. **Misa:** So that’s an important additional dimension, not just the formal benchmark. **Bowden:** That’s right. **Blackmore:** Then there’s another thing here. It gives you the opportunity to show the client or the prospective client your capability as a support organization; that you can understand their problem, you can find a better way to do it, and to combine that information’s important. 43 **Bowden:** The other thing which I believe is quite significant in that particular contract was the relationship between our people and their people. I wasn’t the only one. I was one person that got on well with their people; and as I said, they had their own little interest groups.
You’d deal with Harry, who was interested in that aspect; Fred was interested in that aspect; and other people were also dealing with people, too. And I think that the people at the ground had got that contract initiated that back to Peter MacGregor. And Peter MacGregor was wining and dining all the executives until we got the contract, and then after that he took them to Hungry Jack’s but then left. [Laughter.] Blackmore: Actually, it wasn’t Hungry Jack’s it was Mick Suttle’s?]. Misa: Somewhat less. Bowden: It wasn’t quite Hungry Jack’s but it certainly wasn’t the oysters and liqueur; but anyway. He was dealing with the corporate side; other people would say I was the [technical] leader of the group. We won the order technically. Misa: So this was a major push for CDA strategically, to be landing a really huge corporate client; taking business that might’ve fallen to IBM. Bowden: And you may or may not include this in the whole history, but what I’m saying is that they wouldn’t have gotten that business without technical people. 44 Misa: And these kind of connections. Bowden: It wasn’t the case of a super salesman, you know. Misa: Right. Bowden: In fact, very last day, you might say, before the decision was made, Peter MacGregor was upstairs somewhere, in some place, wining and dining the executives and I was drinking in the local links club. The links clubs are rugby clubs and I was there drinking with the operations manager from one of the companies. And he actually said to me, now look, Lyle, he said, I think you’re a straight shooter. If you look me in the eye and say all the things that you’re saying about this are true, I will give the endorsement to my management that if what you say is true, we should buy Control Data. But I’d like you to tell me whether it is true. Now it turns out that I’m a straight shooter, but that actually happened. And I said yes, it’s all true, and he went and recommended it. Misa: You always think of money being important but trust is really important as well. Bowden: Exactly. Misa: It sounds to me that you ended up building up trust and having a personal relationship with this person from BHP that counted for a lot. 45 Bowden: That’s right. At the technical level. So that was BHP, so we can go on to other things, if and when you wish. Misa: Okay. Bowden: I suppose the next was really the launch of what was called the Cyber range. BHP was probably the last 3000 we installed; after that, they were all Cybers. The Cyber was really the SCOPE operating system with additional features. Misa: And the additional features, were any of them particularly notable? Bowden: Yes, there were. They added a business processing unit, which would handle byte-oriented stuff. And also they had a register. The 6000 series and the Cybers had these triple processors that all used to talk to each other through the memory paths of the central processor; and they introduced a register in the mainframe, which is basically, actually, equivalent to the IBM interrupt system. And if peripheral processor A wanted to have preference to do something forward, it would post basically a bit, say I’d like you to talk to me and do something for me. That sped up the process. I mean, I couldn’t comment on the different; I know it wasn’t a significant change. To get into the memory of the central processor, you had to wait in the queue as well. Whereas, say, I wanted to tell you how I’d talk to you, I’d have to wait to even put my message out there; whereas this register, they all had access to it and then that central processor used to say does 46 anyone want anything done? You know, that’s the thing. I don’t know if you have come across that before, anyone talking about it, with the Cyber, technically. Misa: I don’t know that I’ve seen that register concept. Bowden: It was quite important. Quite important. Okay, the next thing was that at the same time, they released a program called Intercom, which was a time share system based on a product they had called KRONOS. Misa: KRONOS, yes. Bowden: KRONOS was a product they had developed for another organization. K-R-ON-O-S it was; I think it had something to do with the god of time. Misa: Intercom. Bowden: Intercom, I-N-T-E-R-C-O-M, that was the name of the time-sharing software. You could also get KRONOS operating system, if you wanted to. That was separate. You could spend all your time on interactive and not do any batch work. So anyway, that led terminals to do various bits and pieces. At the time they released that, they also released a copy of subroutines, which were called Multi User Job, MUJ for short. And what this meant was there are actually subroutines which are part of the Intercom operating system, you know, the Intercom software. And once again, this is important in my view for why Control Data was able to get all these customers in Australia. I looked at these things and said oh no, because I’m obviously a very technically oriented person; what’s this all about? And there was a guy that was much more; he was into COMPASS and all that sort of stuff, you know; and because I’d been trained in machine language the very first day, and also when I worked on the 1410, we knew exactly what would happen if we said this in COBOL, or what would happen at machine level. Misa: It was more deterministic, you’d say. Bowden: And so I said to him what’s
this all about and can we use it? It turned out you could write what we called a kernel. This guy created this kernel in COMPASS code, and somehow interfacing with these Multi User Job subroutines. And then that could be embedded into a COBOL program, and that allowed you to write COBOL programs, which would control multiple terminals. Basically, an online inquiry system. And I think the first one we sold was to State Government Insurance Office in Queensland. Pretty sure. And once again, I think they had IBM, too; not sure. I know that I personally wrote the program which was equivalent to something they were running on their system. I don’t know whether I took some of their code and converted it; anyway, I wrote a demonstration program and that was the beginning of that. We eventually sold these online inquiry systems to Western Mining, Main Roads Department in Western Australia, Western Mining was [also] in Western Australia. And Main Roads Department was actually a government service-type thing, they had other clients that were using it on the 48 service bureau concept, and the Town Planning Department was one of them. Who else did we sell Cybers to? Melbourne University. Blackmore: We got a few universities with Cybers. Bowden: Adelaide had already had a 6400, didn’t they? Blackmore: Yes. Sydney University or University of New South Wales; one of those. Bowden: Just trying to think who else. One other thing, which was important in getting the University of Queensland was the [unknown?] devices, at the time. We mickey-moused it but they were superb devices[?]. Blackmore: Yes. Bowden: And Control Data had a dump routine, which would dump your programs. But it didn’t discriminate between the databases and other programs that people were using to develop. SGIO, they had their own backup procedures, and they didn’t want to spend hours dumping their database every night. They said we need to go, say dump this and not dump that. The official Control Data answer was we don’t have such capacity. All data areas had a sequence number, like a volume number, and I said to SGIO Queensland, if you are prepared to allocate all your main databases, say between one and 100, we can write a program which doesn’t dump if its number is one to 100. Misa: Yes. Bowden: So we worked out it would take either two or one instructions added to the dump routine to achieve this, right? Misa: Because the original dump was just the whole thing, regardless. Bowden: What I’m saying is you make a change to the dump routine, which just says it’s this volume. And depending on the way only one instruction or two would do that. But we had people at the time who said we can’t offer any software without it goes to Minneapolis, and we were given a quote of a quarter of a million dollars to make this software work. We hadn’t given them our piece, okay? We would ask, because that’s the way things worked in those days; and I’m pretty certain; well, I am certain it was about a quarter of a million dollars to make this modification. So we, being rather rebellious people, we made the change, tested it out, and said, you know, well sorry fellas, that’s the way. Misa: You’d done it. Bowden: We’d done it. Blackmore: It’s a done deal. Bowden: And we’re gonna do it. And I think in actual fact, we never got official blessing. I think we actually implemented that in Australia. Misa: And with the wide use of databases, again, that capacity would’ve been useful across Control Data. Bowden: Quite possibly they did take it up; but I’m just saying that we never got their blessing at the time. You know there’s a lot of rivalry goes on in Control Data and people, you know, protecting their little bailiwicks. When these guys came out from, at one stage from Minneapolis, there’s about six of them, and each of them was there to make sure that their part of the organization didn’t get doubted by all the other ones, you know? And there was one African American guy, who sat there and never said anything the whole time. I said to him, which part of the organization are you from? He says oh, I’m the token black man, or something like that. Because they had to have, you know, what was that called? Affirmative Action, the quotas they had to have at the time. Misa: Tony, how are we doing on your list? Blackmore: I dealt with term one. I’ve just got my time with the company after 1981. Don’t really have anything more to say about my first term. And there was a period when I just lost track of Control Data, really, when I left June 30, 1970. We would’ve had drinks together; I’d just really lost track of Control Data but kept in touch with Trevor Robinson, of course. I went and worked for all sort of odd companies; started my own business a couple of times, unsuccessfully; didn’t get rich. Then Trevor Robinson asked me to join Control Data Business Advisors in 1981, which I joined on December 1, 1981. A note that I put down here about Control Data Business Advisors is “what was it all about?” because I don’t know whether you’re aware of Control Data Business Advisors . . . Misa: Yes. Blackmore: . . . but we were supposed to advise businesses. And in Australia, it consisted of Trevor and his secretary; a finance person, Les Smythe; and myself. There was a hint that we were going to have; not a hint, it was actually said that
we’re going to have access to venture capital and we were looking for investment opportunities, and things like that. There was one occasion when the money came close but then it disappears, the company had more difficulties. The corporation had more difficulties. Business Advisors, to the best of my knowledge, didn’t get very far; we made a couple of small sales. I remember one of our assignments was to see if the Malvern Star Bicycle Manufacturing Company could be saved from becoming a totally importing company; could we save the manufacturing capability? What the hell was that going to do with Control Data, you might ask. Well, Les Smythe and I went out to the factory, which was owned by the Philips Company at the time. We got paid for it, Control Data Business Advisors gained some revenue, but it was one of those things, there was no way you could maintain manufacturing. It was the case that the cost of importing components into Australia was greater than the cost of importing completed bikes. So I had to stand up in the staff room in front of about 500 members of the union and announce I’m very sorry chaps, but we can’t save your company. And they thanked me for it. Anyway, that was Business Advisors. Misa: I think it was one of those visions that came out of Bill Norris, and maybe other people as well. I think it had a checkered experience even in the U.S. Blackmore: We had some interesting companies that we went to talk to, but we really didn’t have much to offer them. It was hard to see; we didn’t have any money; what were we going to offer them? One of the companies, very significant, was a little Melbourne company called Mold Flow, that was a prospective supercomputer client — and I think they eventually did buy a small Cyber at one time. Mold Flow was very interesting because it was founded by a guy at Royal Melbourne Institute of Technology who got into the business of designing injection molds for plastics injection. The things they try to do there is increase the cycle time, get more units done per cycle, reduce wastage, and improve quality of the product. When Mold Flow finished up, they had clients all around the world. Most of the automotive companies were Mold Flow clients, also Fisher Price, and we spent quite some time talking to them but they never accepted our services to help them at all. Eventually, as the corporation got to have more and more financial troubles, we just folded up our tent and left. I left early and moved back into the computer company. That was back into the Control Data Australia in 1982. For the next six or seven years, that was a pretty unhappy time as far as I was concerned because many things had changed. I’ll give a good example; we had a major proposal effort to sell equipment to the Defence Department, called the Desine Project. An illustration of how things worked, I went to Minneapolis to get a lot of questions answered, technical questions about security and equipment. We didn’t have operating systems that were rated; you know, A1s, A2s, A3s, B1s, etcetera. Misa: The Orange Book series was really important. Blackmore: The Defence Department, this is not for their secret work but for their ordinary business-type work, they wanted B2 security capability. I went to Minneapolis, and because I was familiar with how things worked there, I went to the ordinary troops the guys who worked on the project, and they assured me that there’s no hope of getting a B2 [computer system] in the next couple of years. The best we can offer is a C3, whatever it was; can’t remember it now. I then went to the general manager of that group, fellow called Norm someone-or-other and I told him I was disappointed to find that we weren’t going to be able to offer B2 or even a date earlier than two years away. He said oh no, it’ll be done before then. I said not according to the troops that are working on it. Being a former coder, I understood what the problems were, and they explained how it just couldn’t be done. So I was then getting ready to head back to Australia and the — I forget what his job was, but above this guy Norm was a fellow called Bill Williams, a British former Sandhurst Military graduate — Bill Williams, who’d been a brigadier or a general somewhere, and he asked me if I was satisfied. I said no, I wasn’t and told him about the security thing, and he said what did the general manager tell you? I said he told me that it would be available. Then that’s the answer. But I said it’s not the truth. That’s the answer, he repeated, and I said it isn’t the truth and the people aren’t going to be able to do it until X year. “Read my lips, that is the answer.” Misa: You’re getting an order. Blackmore: So I did not convey that. I just said well, you can get stuffed. I came back to Australia and we just said we couldn’t offer it yet, but we could offer it in a few years’ time. It wasn’t such a terrible problem because IBM couldn’t offer it either. But that was a kind of a thing that had come in, and I’ll come back to something Bob Price told Trevor about that. We were part of the Pacific region, for management purposes. Previously, the first term, we looked after ourselves with a certain amount of control from Minneapolis; now we’re part of the Pacific region with management in Tokyo, even to the point where there was a regional manager, there was the marketing manager, and quite a little cluster up there.
Misa: So you were essentially being managed not with a direct connection to Minneapolis, but via Tokyo.

Blackmore: Via Tokyo, right. And one of Trevor Robinson’s whinges was that we were paying $3 million a year for management fees to Tokyo, which would’ve been a tax thing because we were profitable in Australia. So by moving those management fees to Tokyo, it took some of the Australian profits from being taxable in Australia, to now being expended in Japan, operating the Tokyo office and it was useless. I used to visit up there every year for three or four — I can’t remember how many visits. Go up to Tokyo, you just sit down and have a bit of a yap for a couple of days, get in the plane and come back; that satisfied the $3 million of management. But you did always have to communicate things via them, on technical issues we just went straight to Minneapolis. On one occasion, I’d gone to Minneapolis and attended a marketing managers conference where the Europeans were very concerned about Control Data’s approach to UNIX. Control Data Corporation appeared to think that UNIX was nothing very important, and the corporate effort on UNIX was puerile, it was just some little pseudo-UNIX attachment to the Cyber operating system. I came back to Australia and reported on this, and became convinced that the people in Minneapolis didn’t understand the coming importance of UNIX, that they weren’t doing anything about it. We weren’t proposing to produce a real UNIX operating system. Anyway, one day I’m having a meeting with Trevor, we’ve got the new vice president international, who was a West Point graduate, another military man, one Tom Roberts. Tom Roberts, vice president international, who came out and I’m putting on my presentation on marketing things we’re doing in Australia. I said I was concerned about the UNIX operating system position, but Minneapolis clearly didn’t understand what it was all about. He jumped up and he says, what do you mean Minneapolis didn’t understand; and he really gave me a serve. I said well, I was there three months ago and unless they’ve done something since, Minneapolis doesn’t understand what UNIX is all about. And he really gave me a serve; and I thought well, I might’ve pushed that a bit far. Anyway, later that afternoon Trevor came to me and he said well, I’ve saved your job. Now, the relevance of that was there were two of these 56 military pricks, neither of them knew anything about computing, hired because of some belief that these well-trained military men might have some kind of management ability. It must have been about 1990, I’d left Control Data by then — I had a lunch with Trevor Robinson and he said, he’d just had time with Bob Price, just come back from Minneapolis. Trevor wasn’t working for Control Data but he met Bob somewhere. Bob was telling me how he really blamed himself for a lot of corporation’s problems and he hired so many wrong people; and he mentioned these two military guys. It was very interesting that Price had said that — you’re getting this third hand, but — Price had told Trevor that he blamed himself for the wrong people he’d hired. They were just non-productive; were counterproductive people; they just didn’t understand anything; useless. Misa: Funny, my reading of Control Data is that they needed people with military background in the late 1950s and early 1960s, but at this point in time they really needed people connected to the wider computing world, essentially to businesses and then to people out in the research field. So these military guys were a little out of synch, I guess. Blackmore: Yes. They did not know what UNIX was all about; not knowing about how major it was becoming. There were so many Minneapolis people with closed vision. The worst part of these visits to Tokyo, for the last couple of visits before I eventually retired or resigned again, each time I’d come back and there’d be a five percent budget cut. We’d fly back on the plane; there’d be Doug Dent, who was the engineering manager; and me; and Trevor. And you’d be thinking well, we’ve cut everything to the bone, it’s just more people cutting. Anyway, on the last time I sat said to Trevor, I’ve got one of the five percent cuts that I could think of and it is me. He said, what, are you thinking of leaving? I said well, yeah, I just can’t think of any other way to cut five percent out of my part of the business, except me. Misa: Except yourself. Blackmore: Yes. So that was it. I left. Misa: That was when? Blackmore: 1989. To me, the company in that first period, and the company in the second period were just different organizations. The first time it was all success and gung ho, and everything was yippee, we’re technology leaders, we’re doing everything right. The second turn, I felt ah, gee; I got very enthusiastic about the ETA computer and the demise of ETA contributed to my low morale at the time. Bowden: I’m just writing in a couple more Cybers I didn’t tell you about. It might be worthwhile recording them in one place. Misa: Sure, would you? Bowden: Okay. University of Melbourne I think was the only one in Victoria. Am I correct there? I’m not sure; did BHP ever buy a Cyber as well? 58 Blackmore: I don’t know. Bowden: Perhaps you could ask somebody else that question. SGIO Queensland. Misa:
And can you say, S Bowden: State Government Insurance Office Queensland. These are Cybers I’m talking about. They were 3200s in that; but they were all sold before I got around. And there was one university in Western Australia. Anyway, in Western Australia there was University of WA, and [Department] of Health, which each had a Cyber and they were run out of the same site, and UWA used to do the management for them. And Main Roads, which is a government department, which also operated as sort of service bureau to other departments. Western Mining Corporation [and] Australian Taxation Office in Canberra. And one which we didn’t sell but CSIRO bought, was the Cyber 76. CSIRO used to ring up and say we’d like to buy one of your computers. That’s the way it was done.

Misa: They would contact you with an order: we’d like to buy a computer. Bowden: Yes. CSIRO actually had a 7600, which existed before the Cyber was released and the Cyber was a bit more powerful when it was basically half the price. CSIRO basically said look, we’re going to cancel that other order and order one of these. The way that the commission system worked at that stage, the commission salesman was due to get commission on delivery; sorry, it was so much on signing and so much on delivery. Anyway, this particular guy called and he was going to lose most of his commission, so he resigned before they could . . . Blackmore: I think he’d already got half and then he quit. Bowden: . . . I think they were going to try and get it back off him, anyway, so he resigned. Misa: The initial signing was much larger than the delivered machine. Bowden: But I know that he resigned because he wanted to [pause] keep it. Anyway, Australian Taxation Office is another important one; one I didn’t even mention before. And it’s important because you’ve got, once again, we talked about the trust in getting the order from BHP. When we got to Taxation, we had another difficulty. They bought a computer, which had relatively limited memory, it wasn’t one of their more restrictive memory size. They had been told by the salespeople they could run two copies of operational programs at the same time, and blah blah blah. They then wrote that — these were programs that hadn’t been written — they wrote these programs and lo and behold, they wouldn’t fit; two wouldn’t fit in. So, I know the numbers sound ridiculous, but they actually requested Control Data give them another computer worth, at the time, not worth but would cost a million dollars. And everybody started to sort of throw up their hands and saying I need help. They came to me, as the programming guru — I’m sorry, I was 60 the programming guru — and I said look, I’ll go to Canberra and I’ll see what they’ve done. So it turned out that they were using what was a trendy thing called “structured programming.” It was a sort of an approach to programming; don’t know if you’ve come across the word, but it was a very inefficient method of programming. It might’ve made programming easier, but it certainly wasn’t efficient. And we certainly didn’t endorse it as a company. Sorry, I didn’t endorse it. [Laughs.] Blackmore: On behalf of the company, you didn’t endorse it. Bowden: So I went up there and I spent one week up there, and I rewrote; I didn’t rewrite the whole thing; I took out this destructive programming philosophy and did it a lightly different way.

Misa: This is the “perform” function that we were talking about the other night? Bowden: Yes. It’s all to do with they had perform, perform, perform, perform, perform, perform, perform, perform, perform, you know; they had ten lines of performs. I rewrote the program, it all fitted in, and I saved the company a million dollars. Misa: A million bucks. Bowden: Yes. Remember how I told you I was failed on my original training course, that was because of my attitude. I was reported to my superiors that I had been uncooperative with the local analyst manager because he wanted me to come in every afternoon and report to him on how things were going. I said Barry, I haven’t got time to come report to you. I’ve got nobody; head down, ass up, writing this code; and you can go and get nicked. The end of the week, I stood up before the Taxation Executive hierarchy, the executive kingpin was there, the big boss; and said well, the short story is, gentlemen, that you chose to use structured programming and I’ve shown by the fact that I did it a different way, that that’s not an efficient way to behave. They said well, we accept that. So once again, it was a little bit of diplomacy as well as technical knowledge to get them to accept that. Blackmore: Probably a little thing I should say on the personal angle about the feeling and atmosphere of my second time at Control Data towards the very end, concerning the very last managing director of Control Data Australia. We had the feeling that everything was being controlled by Minneapolis, even though we were nominally part of the Pacific region. In one sense, you had to report to Minneapolis and Co., but in other respects, these people like this Tom Roberts, vice president international, they were calling all the shots. And the new managing director was recruited by Control Data to be – in effect VP Australia, and only for a year or something like that. An unpleasant person. Control Data Australia had a board and
they were significant people and it had worked well, and it was a kind of a courtesy thing. Anyway, when they actually were selecting a new managing director for the company, it wasn’t to be anybody from within Control Data Australia. It had to be the result of a good look around the industry. So this person pops up, and got recruited. Now the bit that Trevor filled me in on was that the person had worked for a company called Tech Way, a company founded by Dr. Peter Jones, former Control Data employee, and everybody knew Peter, I’d done things for Peter, and I knew him very well. He told Control Data, well, he told Trevor, that he’d had to sack this person for cooking the books for advancing certain sales forward to maximize his own bonuses and so forth, very much to the disadvantage of Tech Way, and that he’d been given the shove. So far as that was known to Trevor, it was known to Control Data Australia’s board, and when he became the favorite choice of Minneapolis people, we said look, we don’t want him. So even though the guy was known to be suspect and Control Data Australia’s board advised against his appointment, he still got appointed by Minneapolis. Misa: So that’s a signal, then. Blackmore: Why would you do it? You’ve got this story; the guy is essentially fired by his previous company for cooking the books to his personal advantage, and you hire him to be the managing director. I only got this from hearsay — but there are all sorts of unhappy Control Data employees over the superannuation system. Superannuation monies got manipulated. People like — I don’t know who would be able to tell you about this out of the people that were still there — some of them that did. I know George Crawford was one that told me about it. Misa: Basically, that’s a pension fund, I would say; but you would say superannuation. Blackmore: Yes, it was a pension fund. There was a management buyout of Control Data Australia. The MD, and perhaps others, bought the business of Control Data Australia. That’s when the corporation was in full retreat. And in that purchase there was involved some fiddling of the pension fund, to the disadvantage of employees. That was sort of pretty widely reported to me whenever I’d have lunch with somebody there would be these sorts of grumbles. That’s all hearsay, but it’s reliable hearsay. Misa: Worth recording, again, is your perspective and knowledge that was circulated. Blackmore: I’d left Control Data. I sort of said well, the five percent cap can include me so from then on, I just worked for myself. Had a ball. Bowden: Just getting back to my belief that the reason that we did reasonably well in an area which other parts of Control Data didn’t do so well commercially, or I don’t believe they did. It was technical stuff, and I don’t know whether it’s because Australia’s a small place but we used to go on; we’d have to stand up there, and all these guys that were recognized as computer gurus would try and shoot you down, you know, and all that sort of stuff; you’d really get a bloody grilling. And going back to the BHP, that was what, you know, giving sales pitches; going back to the BHP, I told you the night when Peter MacGregor was winning and dining executives and I was talking to the operations manager. Come to think of it, I also made a sort of a tentative agreement. He said we’ve decided that we will buy off you, but we want to put you through a few more hoops. So I actually had to go up there, me personally, and they had all their executives and all their offsite, you know, all the sort of leading men, it’s probably about 10 people or something; and they’re all shooting these questions at me. And anyway, we survived. Blackmore: Has anybody talked to you about the Data 100 spinoff? That sequence of events? Misa: I think somebody this week. Bowden: Ron Bird. Misa: Ron, tomorrow afternoon. Blackmore: It comes to mind, thinking about BHP, that we used to have Bruce Bambrough as the Sydney manager. When I was located in Canberra with CSIRO, Bruce would continually get me to come down to Sydney to go and make calls on BHP either at Port Kembla or Newcastle, because the sales effort certainly started in 1965 with BHP. Anyway, Bruce eventually got to Minneapolis and he was the one that set up Data 100; and of course, Trevor eventually joined him and several people left Control Data to go to Data 100. Misa: So it’s a classic spinoff. Blackmore: Yes. Bruce apparently made a pile of money before he died. 65 Bowden: We haven’t mentioned the RAAF Message System because that was nothing to do with me, but you’re aware about that? Misa: John O’Neil said a few words about that. Bowden: That was a system up in Darwin . . . Blackmore: John Marquet would know all about it, if John Marquet’s one of the people you are meeting. Bowden: . . . but anyway, that was written by Control Data. That was interesting, too, because — I haven’t mentioned this — I spent the first few years of my career as what I call a senior analyst. You know I was actually the applications manager for Australia for about four years; or something. See, Peter MacGregor used to refer to me as a pirate chief. He said you’re not a manager, you’re a pirate chief, because I was always at cutlass, see, because I was still the best programmer, commercial programmer, that we had. Not scientific, I wasn’t in that. So it
seemed sensible to me, you know, if we got a tough one, I’d just go and do it. Then the last three years I spent as a consultant, and anyway, during the time when I was analyst manager I was called into a meeting with this guy from Asia. He sort of said to us, all this need-to-know stuff in there, he said, go ahead. And was it Doig? Blackmore: Doig was the finance manager. Bowden: Yes, he was the finance manager. Graham Doig is the man in Control Data, and he will tell you who you can talk to and who you can’t talk to. Anyway, after a while, I said before we go any further, can you show me your credentials and why it is that you’re here telling us what we can and can’t do. Where’s your ID? What do you mean; what do you mean? I said, well you come in here and say we’ll throw out this that and the other and what we can kind of do; you know, where’s your paper of authority? He couldn’t understand what I was saying. Misa: You’re supposed to respect his authority, I suppose. Bowden: [Laughs.] Anyway, it didn’t go anywhere. Misa: Gentlemen, are there any other topics? Blackmore: No. Bowden: No, no, no. Misa: This has been so splendid. Thank you so much. Blackmore: I’d mentioned about all the big industrialists that used to come out for the demo of the Vic TAB system. That was a lot of fun because you’d always have a great lunch. TAB had a beautiful board room with wonderful lunching facilities, well set up. I mean, it would’ve done a major U.S. enterprise proud to have seen what they had there and Ken Davis, the GM, used to relish the opportunity and Control Data would be forever sending these VIPs out. I mentioned the head of Yale Locks, and I can’t remember others, but there was always some really very, very senior businessmen with a couple of these vice presidents, being shown this amazing money-collecting system. Bowden: Going back, Tony and I both worked for PMG. We did what’s called a cadetship, four-and-a-half years of personnel management stuff, and during that time we were together and we traveled a lot. We’ve been to training courses, and job rotation in various departments, so we’ve been sort of joined at the hip for quite a few years. [Laughs.] Misa: For quite some time. It’s nice that you still have a chance to [interrupted] Bowden: And our families, of course, very close as well. Blackmore: He’s my daughter’s godfather. Bowden: I’m an atheist and I’m a godfather. Misa: And a godfather. Okay, well thank you so much for a great conversation.
Misa: It’s the 21 November 2013. My name is Tom Misa; I’m in Melbourne, Australia and talking this morning with Richard “Dick” Bament. Richard has a background of working at Honeywell in Canberra, beginning in 1965. Our interview today, will be focusing on his Control Data Australia time, 1973-1986. So, Dick, to start with, can you say how you became interested in computing and how you became active in the computing field? Bament: Tom, my career initially started in the U.K., where I worked for a company called Hoffman’s Manufacturing Company engaged in the manufacture of ball and roller bearings. And I did an apprenticeship there, which was followed by a period of national service, and then immigrating to Australia. On arrival in Australia, based on my background and training, I had electrical mechanic and electrical fitter qualifications. I worked in Australia initially as an electrician for a short period of time, and then joined the Electricity Commission in New South Wales and completed a training course as an instrument fitter. This position I held for probably two years, and then moved into power generation and subsequently saw an advertisement for trainee computer engineers with Honeywell. I applied and was appointed by Honeywell in March 1965. The career commenced, obviously, with Honeywell. It was a full time training course that extended for six months. Misa: Six months? Bament: Six months, full time; understanding the Honeywell H800, from the bit level up. So every aspect of the hardware and peripherals was taught in that six-month period. The work involved shift work and it was with the Department of Defence in Canberra, where Honeywell had systems. Honeywell H800s with the Department of Army, and Navy. The Air Force had a Honeywell H1800 and Defence themselves had an H8200. Subsequently, there were Honeywell H200s added to the configurations and a Honeywell 316 was installed at Royal Military College Duntroon, a military college in Campbell A.C.T. Misa: And you commented to me just before we started the interview, that in fact, the H8200 may have been a non-standard machine. Bament: I tend to feel that, Tom. I haven’t seen reference to an 8200 subsequently, so possibly it was a specific machine developed around the Department of Defence. With the period that I was with Honeywell, there was a merger between Honeywell and GE, and for the folks in Canberra, that was really a non-event. Misa: A non-event? Bament: A non-event in the sense that the GE involvement in Canberra involved two persons looking after keypunch machines at the Bureau of Stats. So the Control Data Bureau of Stats site obviously had a holding of General Electric keypunches, so an extensive range of keypunch equipment there and two employees looked after them. Misa: The Bureau of Stats was also the Census? Bament: Same thing. Now, the merger between Honeywell and GE Australia, in general, was the fusion of two similar size companies, with similar installed number of machines, and structures that reflected that installed base. So we’ve got managers, and various hierarchy in both companies. But two different philosophies from an engineering standpoint. Honeywell was a proactive support organization, in the sense that there was systems that back up from the engineering level right through the ability to put a U.S.A. engineer on a plane and fly him to Australia, if the problem became large. Whereas the GE approach was very much more disciplined in the sense that there was paperwork systems that directed that all machines would be identical. For example, if there was a peripheral device and it had a stainless steel screw and it was found that this stainless steel screw was causing a problem, there’d be a field change order FCO that would change that stainless steel screw for a brass one and that would be done on every machine regardless whether there was a problem or not. There was also a support structure similar to Honeywell providing U.S.A. escalation on problems. Misa: So each machine would be similar or even identical around the world. Bament: Identical, correct. Whereas the Honeywell approach would be the problem would be identified and the fix would be known that the screw needed to be changed, so if you experienced the problem, you would replace that screw. That’s obviously a 6 simplistic view, but that’s how it was structured. So consequently, you’ve got two engineers with different background philosophy that causes difficulties. The GE engineer would not function without that piece of paper authorizing, whereas the Honeywell engineer would jump in and tackle the problem, whatever it may be. Now this didn’t impact Canberra at all, as we just absorbed the two ex-GE people. However, Sydney and Melbourne did undergo serious difficulties in terms of bedding the merger down. As a consequence, I was transferred from Canberra, where I’d been the engineering manager, and I was moved into...
Melbourne as engineering manager to assist in resolving some of the difficulties. **Misa:** Do you want to make any observations about the nature of those difficulties? **Bament:** Well, when I arrived, the engineering group had set up a room that was identifying hot sites, so a room dedicated to tracking really difficult or unhappy customers. So it really became an exercise. I was going out and meeting clients that were unhappy with the service levels. And at the same time, readjusting the focus of the engineering personnel to meet the challenges and react there. We had more problems than we had people, so I did things like take the most junior engineers and have them go and physically reinstall machines. Honeywell had developed a system whereby peripherals could be upgraded in the field. So you could take a disk drive, for example, and it'd be designated an X-Y-Z model, and the customer would pay $10,000 for it, for example. At a later stage, when the customer required higher capacity or something, it was possible to apply field changes to the equipment, such that you change the model. So again, in simplistic terms, you might change pulley sizes so that speed would change in the device, and then you had to adjust the electronics to match the new speed parameters. So in a simple sense, you are upgrading a device in the field. **Misa:** It becomes a new model. **Bament:** A new model, absolutely. And consequently, it was possible, if that wasn't done carefully, you could create a model that didn't really exist. If you only managed to do three-quarters of the change, you've now created a hybrid that just doesn't work properly and there was a measure of that in the problems that were existing. It came about, I believe, through the different approaches of the two organizations. So that was the style of the problem that we faced, and fortunately, this approach resolved some issues reasonably quickly, and we were able to address the balance in a controlled manner and go back to business as normal. But it really was a reflection of the two different cultures coming together and not quite fitting like a hand in a glove, you know, with an extra finger or something. Just didn't quite fit. **Misa:** Some problems that you were in charge of trying to resolve or manage. **Bament:** Yes. That's what motivated the transfer. I was the engineering manager down here, and then, I guess in 1973, I was approached by Control Data to join them. On 25 June 1973, I became the Southern District Customer Engineering Manager for Control Data. And then in February 1974, I assumed responsibility for Western District Operations as well, so that took me across to Perth. So at that stage I was looking after Victoria, South Australia, Perth, and Tasmania. **Misa:** And was that broadly, similar type of work that you'd been doing at Honeywell-GE? **Bament:** Very similar. I mean, slightly different groupings; very heavy university involvement down here. University of Melbourne, Monash University and R.M.I.T. all had Control Data equipment, whereas Honeywell was somewhat more commercial. But still, very similar, Tom. **Misa:** Were there any notable aspects of the Control Data culture? You contrasted Honeywell and GE; were there things that struck you about coming to work for CDA that were novel or interesting? **Bament:** When I first joined, located at 598 St. Kilda Road here, and it was at a time where the company still had tea ladies providing morning and afternoon tea, and biscuits, etcetera, you know, very nice, very sort of dignified. And the company also had a lending library of technical books, which sort of surprised me. That didn't last for long, but it was certainly there when I first joined. **Misa:** The merged Honeywell-GE didn't have a lending library? **Bament:** No. With Honeywell, there was some innovative things going on. The principal business was Sydney and Melbourne during the 1960s, and obviously Canberra, with the defense system. But a system was put together to dispatch engineers in Honeywell from a central office in Sydney, so it's at a time when pagers were just starting, had just been invented, really. And the very first pager that we had was a device that was the size of probably two house bricks. **Misa:** Two house bricks. So pretty good sized. **Bament:** Yes. And it came in a leather case, you know, a stitched leather case, and was only capable of beeping. You could dial a telephone number and that specific pager would beep. The system was set up with engineers in Melbourne and Sydney [to] be deployed. So a customer would phone into a local telephone number in Melbourne, and that had a dedicated land line to the Sydney office and a couple of female operators sat on that telephone line [and] could receive a call from a customer. They had a database and they could look up the engineer with the appropriate skills to address the problem, and through the use of a pager they would use this landline again to activate the pager, and the individual with it, whoever it might be, would have this very large device that would just beep; that would say you need to call. **Misa:** Call and find out the problem. 10 **Bament:** That's right. So he would use the landline, probably use the customer's phone, wherever he may be; dial into a tie line and be dispatched to the problem. **Misa:** And that was during the Honeywell time? **Bament:** Honeywell time, but that was very early on
1966, and at the time, considered very smart. Sorry to distract like that. I then moved within Control Data into data services and Cybernet. And that occurred in 1976. **Misa:** That strikes me as being a fairly large change in your job responsibilities. **Bament:** It was a change. I look back and Control Data was organized in very strong vertical segments. Engineering and marketing were almost separate entities. Each group performed their specific functions, but there really wasn’t much crossover between the units. I think it probably was a weakness, in hindsight. The focus wasn’t on the customer; in the sense the salesman is addressing the needs of the customer. The engineering function is looking after the needs of the machine. They could’ve done better by bringing those two functions closer. That applies across, I think, all those product families, you know what I mean? Each seemed to operate in isolation. **Misa:** Was data services an attempt to bridge those two? **Bament:** No, I don’t believe so. Tom Kopp, who was the regional manager for data services at that time, he’d been selling and was responsible for a number of important sales that Control Data had; I think he sold to the Tax Office, and certainly around Census. So, Tom Kopp had been ex-IBM and he’d come to Australia from Yugoslavia, I think. He’d worked on the Snowy Mountain scheme, which was a very large project. So his background had been in engineering. Anyway, Tom headed up the small team; there were two sales people; Steve Samson was the southern district sales; and I was the operations manager; and Gus Myer based in Sydney was the northern district manager. And that was the data services management team. **Misa:** What do you think was the purpose of data services for CDA? **Bament:** It was a method of giving a small slice of a large machine to an end user. So we had developed quite a sophisticated network and people could connect via acoustically coupled Texas Instrument terminals and dedicated batch terminals into data services. It was used as an entrée for companies that were contemplating buying a mainframe, so the two were tied together, but really in the marketing sense. **Misa:** Now, there was data services, and there was also Cybernet services. Those aren’t one and the same, though. **Bament:** Well, data services was really probably an umbrella-type term, whereas Cybernet tended to be probably viewed as real time. You know, we had batch offerings running the SCOPE operating system and time share, and also Kronos. **Misa:** My understanding was, at least in the early years, Cybernet was organizationally connected to Minneapolis and over time brought into organizationally reporting more to CDA. I think it was the early 1970s that it was more directly connected to Minneapolis. Did you have any sense how the relationship to Minneapolis worked? **Bament:** There was a machine in Sydney, in the Sydney head office, and that was used for time sharing, so it would’ve been linked down to Melbourne. About the time I joined Data Services, there were two machines in Melbourne, as well. There was one in the BHP house, at 140 Williams Street, in the city, and a second in 598 St. Kilda Road CDA office. **Misa:** Big commercial mining user. **Bament:** Yes. It’s BHP Billiton, a very large mining; Broken Hill Proprietary, it stands for. **Misa:** So in terms of running a Cybernet type of network, there would be a machine in Sydney, there were initially links to Melbourne, then two machines in Melbourne. **Bament:** They continued to be discrete, in the sense that you’ve got a Sydney machine — this is the time I became involved — so you’ve got a Sydney machine with access points radiating out from it. I’m not sure there was a link between Sydney and Melbourne, I really can’t remember. And similarly, the machine in BHP was a batch offering. So again, around the CBD (central business district) area, there would’ve been batch terminals. Again, some may well have been in a user’s office, where they were a fairly heavy user, and we would put the equipment there free of charge, providing they allowed public access, as well. So you’d get a situation where a room would be set up as an access point, so it was a line printer, telecommunications, and so on. They were connected with 200-user terminals, so the common name was 200UT. **Misa:** So it’s a way of taking a client and turning that into an outpost, or a CDA office within this physical building of BHP. **Bament:** Yes, it’s a little bit like you might view an ATM today, you know, an ATM will turn up in a shopping mall or somewhere else. It’s the same sort of thing. So it’s access to the system. [I] joined the data services in 25 October 1976. There was, at the time, some sort of difficulty and I really can’t identify what it was. People were obviously not happy or something because I’ve got a note from Tom Kopp here saying, “I’m very pleased to hear everywhere the positive attitude outcome from the Hobart Convention. In retrospect, it was a great success. It is my belief that greater employee satisfaction will result, which after all was the objective. The idea was yours and I congratulate you.” Now I can’t tell you what that was about, but obviously it had positive results. **Misa:** So it was a meeting in Hobart, in Tasmania? **Bament:** In Hobart, Tasmania. It was a meeting where we took the sales people, the analysts, and wouldn’t have taken all the
operations people, you know, but there were some operations people. And it must have been an occasion to clear the air and set a new direction or something like that. Misa: Responding to some disagreement or some uncertainty. Bament: It’s hard to know what the situation was, you know? It was a fairly turbulent time and some sort of difficulty. Now you’re probably aware of the Hundred Percent Club. Misa: Yes. Bament: And what that was all about. I got an invitation as a special guest, not being in a marketing role, but as a special guest of the Hundred Percent Club in Acapulco. Misa: To Mexico. Bament: Yes. Misa: Do you remember what the cause of that was? Bament: It would’ve been as a reflection of the success of Cybernet. It’d have to be. You know, as the business grew very rapidly, through that second half of the 1970s, it was the precursor to putting in the Knox Data Centre. You know we were facing growth of something like 30 percent a year, so there were real challenges just meeting that sort of demand. Misa: So doubling every three years, or so. Bament: Right. Misa: That was especially so the latter part of the 1970s; 1975 onwards. Bament: Yes. Now the difficulties that we had with discrete systems, that really you couldn’t use [them] to back up or support one another, and each requiring power, air conditioning, specialty sort of services. Misa: These are piecemeal computer facilities with the expectation or aim of them being wielded into a single system. Bament: Yes. It became obvious, you know, that we’d got to do something by 1977 to 1978; you could tell that we just wouldn’t be able to cope. So it was sort of resolved that 16 a single center with a network was the answer because we could put infrastructure around a single center that we had no hope of doing with the pre-existing centers. Misa: That was the genesis of the Knox Data Centre. Bament: Yes, that’s where the new central system finally was located. Misa: You’ve written quite extensively about that but just for the completeness here, could you say just a bit about the facility. It was purpose built and quite notable in terms of thoughtfulness, scale, details; we don’t need to go into all the detail that your essay does. Bament: Sure. The need was clearly there and we went through planning to determine sizing and so on, and produced a report to support the need. And I actually hand carried that to the U.S., probably in 1979, and there was interest. I’d arrived with a manuscript to take around and seek approvals, and I couldn’t find anybody to tell me the approval process. Just really couldn’t. Misa: So you met with a half dozen or more people, but there wasn’t a single. Bament: No. You’d expect they’d say Bill Norris must sign off on this, and Bob Price must sign off on this, and others. But I arrived and started seeking approvals, and it was interesting. I actually took some Australian lapel badge flags. Remember those little enamel . . . Misa: Oh, yes. Bament: . . . well, the Australian flags. So you know, I’d sort of wander around the CDC headquarters tower trying to find the next person I needed to get the signature. After the signature, I’d sort of ceremoniously award the pin. [Laughs.] Misa: Walk around with these Australian flags saying I got this one, I got that one. Bament: It sort of caught on, you know, in a few days. Anyway, we managed to get the approvals, or not approvals, you know. Norb Berg was one of the people, and in fact, I didn’t really understand why, but he was extremely helpful in getting me through that process. He obviously decided, or knew, who should sign off on our thing. Misa: Norb was famous for being able to expedite things through this more informal structure. He knew what was important. Bament: Yes, there’s another example of him doing just that. Anyway, I was on a visit about that time . . . Misa: That was for, I think it was $A 3 million. Bament: Yes, it was $A 3 million and we actually got it in on $A 2.8. We actually did it for 2.8 but the budget was for three. So the actual was 2.8 on a three million projected cost. An interesting aside: it could’ve been that visit, but it was about that time, I met with somebody — honestly, I don’t know their name — but he was working in a staff position to Hank White. And Hank White, I never met the man but he had a reputation of being a pretty firm operator. And this person reporting to him, in a staff position, was responsible for data services. And PCs sort of emerged in the late 1970s; basically single floppy disk drive, small amount of memory, perhaps 256k of memory or something like that; that was the typical PC of the time. And Control Data bought Zeniths and Columbus, and with a name like Columbus, you can imagine it being fairly early on. Now, I’d had a discussion with a guy by the name of Bob Easson who worked in Control Data; E-double-S [pause] Misa: E-double S? Bament: I think it is. Yes, he was in Control Data, and he was working really in a role of finding new applications for services and, he set up a system of what was Teletex; you know the sort of thing you have on television. Misa: Yes. Bament: So, we actually ran the teletex, the very first teletext service in Australia. And Bob sold it to farmers. They got information about crops, and weather, and those sort of services. Misa: Crop prices? Bament: Yes. So, you know, we were utilizing the network
that we then built to deliver other services, really. Anyway, we digressed, I think. Misa: You had PCs emerging and that was one of the things that Control Data and almost all mainline computer companies were quite weak in seeing.

Bament: Yes. I had this meeting with this individual, and it was over a cup of coffee. He was sitting there, what do you think for the future? And this discussion with Bob Easson had centered on giving users a PC so that they would prepare their job submissions — we were talking about timeshare, really — and they would be able to prepare offline and then just submit the job, and receive the information back. Misa: So cutting out printing, and some of the data handling, I suppose. Bament: Well, we provided services with a fairly complex pricing algorithm, such that connect time would be metered, and keystrokes would be counted, etcetera, etcetera, to form the profile of the input from the individual. Now what that meant was that you were paying a lot of money in between keystrokes and whatever else you might be doing yet your compute time was very small. So really, customers were paying a premium to connect to the system rather than the amount of computing they were doing. Misa: Right, the point a couple people have mentioned is that Cybernet’s pricing structure ended up punishing data intensive uses and favored computational intensive uses. Bament: That’s right. Misa: Because if you sent a small amount of data and it needed three, four, five units of CPU time, that was one thing. But a more database or commercial-oriented application would typically have a lot of data but not necessarily a lot of CPU time. Bament: Yes. Misa: So there was a pricing differential. Bament: You see, getting it there, you’re sitting at a keyboard typing, so you’re actually connected to the system in the sense that you have a telephone link. So it’s counting that, your connect time, you know, and effectively all you did was keyed in 2,000 words or whatever, and you paid for that connect time. So the idea was that if we gave them a PC, they could [do] that offline. Yes, it would impact your revenue but you’re able to hopefully retain the user. Misa: So that would be a different model about how to set up, essentially, a computer network, how to set up Cybernet. And I suppose there’d be quite a discussion about whether you’d have users with their own personal computers. Bament: That’s fine, too. You know, I mean we could accept a hook up from anything. It could’ve been somebody with a larger machine even. I mean, what we’re interested in is processing data, the method of connection is not important to us, really. So when asked what do you think we should be doing? I told that story and said I think we should be giving away PCs. And this guy just looked at me and said you’re 180 degrees out of synch. I mean, four years later that entire business was gone. Misa: Yes, wow. Bament: So I mean, there’s an individual that’s pointing the direction from I think it’s on about the thirteenth floor of the Golden Obelisk [CDC headquarters] there in Minneapolis. Misa: He’s reporting to Hank White, one of the senior CDC executives. So unfortunately, if that decision had gone a different way, well, Cybernet could’ve been something quite different, a more distributed network. Bament: To me, it just sort of reflects the isolation almost of the executive from what was really happening out in the main world, you know? Misa: That was a discussion you had in Minneapolis, based on experiences here. Bament: That was simply; yes, a perspective from down here, but obviously not the view from head office, you know? They’re seeing it differently. So that was interesting, and at that stage. Misa: Were there any other differences? Could be cultural differences or differences in outlook? Bament: It was at the time when Australia was wanting PLATO as an addition to the other offerings. And I met with the PLATO folk, and the difficulty we had at the time was cost to introduce PLATO down here. And I went and suggested that it should be run on the same mainframe as the time-sharing. Misa: So the Network Operating System [NOS], was that right? Bament: Yes. I mean, you know it’s another application, at the end of the day. Why not run it concurrently with something else? And I was told that was impossible. No, you’ve got to have a dedicated mainframe to be able to do this. And, anyway, I came back to Australia. Roger Dickson was the analyst manager we had out of Knox [Data Centre], so he headed up the group of analysts. We probably had four or five program analysts out there. And I really gave Roger the challenge of getting PLATO to run concurrently with NOS. And he and the other guys did it in about six to nine months, they had done it. Misa: Six to nine months to achieve the impossible. Bament: Yes. What it highlights is this vertical isolation between the product families, and this idea that you’ve got to have a mainframe, for example, to run it. Misa: Now, the PLATO plus the NOS operating system, did that run in Australia? Bament: Yes. With the new center, we were able to get a new machine so we finished up with three machines running in the data center and we combined the batch offerings that had been in Sydney and Melbourne on the one machine; we had time-sharing on
another; and we had PLATO on a third machine. **Misa:** So you just split the machines then? **Bament:** Yes, they were physically split machines. But it was only possible because of adding a new machine to the mix, pinching off one of the old ones. That actually gave us the flexibility as well to migrate between the various systems. So you could start off with a brand new building, put in the new machine, leave everything else operating as it always was, and then gradually migrate the offerings to the new machine; and then freeing up another one, bringing that in to the center, and so on. So we were able to plan the thing so that we didn’t give disruption to clients while we’re making the consolidation. **Misa:** A question I’ve been asking is whether things that you may have innovated here in Australia — and it could be the use of the machine, or the structure, or the programming — do you have any examples of how those innovations here were shared beyond Australia? So it could’ve been to the Far East, or Europe, or to Minneapolis? **Bament:** No, we actually did support the Pacific Rim countries from down here, once the center was operational. It was a change. It ceased to be data services, Cybernet, and the service division had become International Comsource. I was the Pacific Area Manager for Comsource, so we had responsibility for Japan, [pause] **Misa:** The name came from computer and resource? **Bament:** Yes, Comsource. **Misa:** So you had managerial responsibilities then also for the Far East. **Bament:** Yes, it was Japan, Korea, Taiwan. **Misa:** Care to make any observations about the experience of operating in those countries, in addition to Australia? **Bament:** It was interesting, in the sense that we developed a fairly complex network down here, and the people in Japan wanted their communications guy to come down and experience what we had in Australia. A young guy arrived and spent all his time with the people around the network, and so on. He had only been in the country I think three days, and he produced a complete schematic diagram of the network. Now that was something we didn’t have ourselves. **Misa:** Really? **Bament** [Laughs.] So you know; and it’s just a little aside, but he’d drawn the entire network and did it in that period of time. **Misa:** By the network — just so we’re clear — that’s all the different computers that were forming the network in the Far East and Australia? **Bament:** No, no. The only links, really, outside of Australia connected to our network, went to New Zealand. So we provided services directly to New Zealand, so any data services were actually coming out of Knox. We had a link to the Call 370 to the IBM product that had been acquired by Control Data through . . . **Misa:** The Service Bureau Corporation purchase. **Bament:** Service Bureau. Initially it was called something like Call 370. But the Service Bureau, we had a direct link to the U.S., so we were selling that product as well out at Knox. The amount of involvement, really, with the countries was fairly minimal, in the sense that it was new and we provided technical support by telephone. In fact, I remember one time, I’d been trying to get people to try and understand the different cultures and with the view of mating this sort of cross-culture fertilizations. If we’re going to support them we’ve got to understand some of the aspects of the cultures that you’re dealing with. Earlier on, an engineer actually died in Hobart; a guy had a heart attack or something and died. **Misa:** In Tasmania, then. **Bament:** Tasmania, yes. I approached a guy here to go down to cover the situation, because there was just one engineer down in Tasmania. And the guy’s background was, I think he might’ve been Thai; and I asked him if he’d go down to Tasmania and he was fine; he said why? What’s happened, I said, the guy died. He noticeably, went pale and said “I can’t go.” It was because of respecting the spirit of the person that was deceased. So there was a lesson in that for me. You really do need to understand culturally the people you’re dealing with. So that was just a little experience. An incident that I didn’t mention and should have was back in the Honeywell days, and it was part of the Vietnam War impact. At the time, there were two incidents that stayed with me. The first was we used to receive paper tapes from Vietnam. Now these were punch tapes done on Teletype FlexoWriters and the paper tape readers were simple optical devices. And they worked with oiled tape. Now, oiled tape and dry tape, just by looking at it, you can’t tell the difference; the amount of oil is very, very small. We received these tapes and obviously, it’s sort of important these be read in. If you put a dry tape in it might run for a minute and then just slow down and would actually stop. What was happening was the clearance; you can imagine a paper tape being transported past an optical reader, and a brake set very finely so that if you read the tape and you stop and then start again, you don’t want to lose a frame so you would set it extremely fine so that if it said stop, it would stop on the frame that you were currently reading. So the machines would be set up very closely, and a dry tape would actually generate enough heat to stop the movement of the tape. To get these tapes — and they’d come in boxes mixed oiled and dry tapes — would be in a batch. **Misa:** So you
couldn’t tell if they were oiled or dry tape. It was consequential for how it would work. **Bament:** Yes. You’d have somebody standing there as it started to physically slow, would spray it with oil. You can imagine running through hundreds of paper tapes and the machine would be literally running in oil at the end. Give it a squirt, you know. But the amusing part, you go through all this effort and you think you’re doing something marvelous for the troops that are out there that are desperately needing supplies or whatever it is. The processing would go on for two hours and then printers would start up and out comes the fanfolds and printed material, and you look at it and it’d be golf balls, and ballpoint pens, and condoms, and aspirins, and you know... **Misa:** All the requirements of military forces. **Bament:** ... all that miscellaneous stuff. [Laughs.] Just miscellaneous stuff, you know, so, interesting. **Misa:** You said there were two notable parts going back to your Honeywell days. **Bament:** The other one associated with the Vietnam conflict, I think it was just prior to my time coming to Melbourne that a protest went down St. Kilda Road here. They stopped at 400 St. Kilda Road, which is the Honeywell head office, and somebody with a 12-gauge shotgun that was loaded with a single steel ball, went in through the front entrance and there was a data center immediately behind the front entrance doors. It was a GE mainframe, with a 1648 front end on this machine; and the person levelled the shotgun and fired this steel ball through a plate glass window and the cabinetry of the Honeywell CDCC 1648, and there was a receptionist sitting adjacent to this. The outcome stuck in my mind because of the sort of threat that you can come under because of activities of Honeywell are in, say, their work in defense and so on. And that got translated into attacking Honeywell Information Systems down in Australia. The amount of damage was negligible, actually, apart from punching a hole through the cabinetry, it really didn’t do anything because there wasn’t much inside that part of the box; it just sort of went through and out the other side; didn’t injure anybody. The cabinetry had a piece of cardboard covering up where the steel ball went through. It was like a patch over a blind eye. **Misa:** You mentioned in your essay that one of the lessons you took from this, though, was the need for caution and physical security for the Knox Data Centre. **Bament:** That’s right, so it was a lesson learned from that experience. I mean, Control Data had military connections, probably not in the same sense as Honeywell, but producing ruggedized computer systems and things that I was certainly aware of. And, I mean, Honeywell produced sighting systems on the helmets of helicopter gunships, such that wherever the pilot looked that’s where the guns would aim. So that was one of the sort of things that was publicized. I think it was some sort of linkage with napalm, as well, which at the time all added up to this attack on the office. **Misa:** Back in Minneapolis there was the Honeywell Project especially active during the Vietnam War from 1968 into 1990 or so. Honeywell really did have a unusual high profile as a military contractor and generated a lot of controversy because of that. **Bament:** You made mention when we met last week that you’re interested in the advanced sort of things that Control Data might’ve been doing. I only visited once to one of the high security labs over there. Something that really fascinated me was they had a mural on the wall of a pod of whales. **Misa:** Of whales. **Bament:** Whales. So there’s large ones, small ones, and so on. And the ocean had been removed, so this is just a picture of whales on a wall. I commented about it and whoever was showing us around said oh, they’re real and it was taken from Landsat imagery; Landsat being the satellites. They’d stripped off the ocean and there’s whales. And you think, well, you wouldn’t want to be a submariner, you know? And this is back in 1980. So some clever stuff going on, obviously. **Misa:** So this wasn’t an artist’s depiction, it was an actual Landsat image? **Bament:** With everything else removed. **Misa:** ... everything else in the ocean can be seen, too. **Bament:** No simply whales **Misa:** I think you said you worked through 1986. Do you want to say anything about your experiences or observations in the middle or latter part of the 1980s? 31 **Bament:** Well, the late seventies in some ways created a pinnacle, I think, in Knox. We really did have an excellent relationship and everything was working extremely well. I’ve got a note here that Tom obviously gave me at the end of 1979, when he was leaving data services to go back to systems area. I’d just like to read this. “The greatest satisfaction in my four years with Cybernet has come from colleagues like you, and it was by no means an easy decision to quit a job so fulfilling and an environment as friendly as the one you helped create. I feel that you and the others in our small management group have built something very worthwhile - a sound profitable business, and a well-motivated professional organization, which is the pride of Control Data in Australia. Looking back on the past years, one thing I see clearly, my greatest fortune was to surround myself with men like you who have the drive to make things happen.” So that was Tom leaving data services. “I’ll always
treasure our close working relationships and the good times we had together. Thanks for all the things that you have done for me.” Tom Kopp. **Misa:** So you’re reading a handwritten letter? **Bament:** Yes. That was it; that was his parting gesture and it was great. Here’s something else we should probably read. Bob Brandenburg was in Cybernet services U.S.A.. Our matrix management was very strong back in the 1970s in Control Data. You’re familiar with that I guess? **Misa:** Yes, it works perfectly as long as it stays on paper and can be quite elegant, but in practice it can be a nightmare. **Bament:** It can be quite difficult. Bob was my contact, if you will, in the U.S. so he’s my product family link to the U.S. and he wrote on 12-30-1980 — he’s written and then copied numerous people, in head office, Marv Swenson, Dale Rostamo, Peter Van Beek, are a few names you know, but they’re head office folks. Anyway, Bob’s written from reflecting on PAPFE, which is Pacific and Far East Comsource activities during 1980: “I think it may be one of the understatements of the year to say that the accomplishments of you and your team have been remarkable. Construction of a new cluster center building, installation of a new large scale system at the new center, introduction of NOS/CE consolidation existing centers to the cluster center, installation of PLATO, all on or ahead of schedule, with minimal user impact. Congratulations on a job extremely well done.” A similar thing from Vern Sieling in October 1981, “I wanted you to know that I appreciate very much your efforts in bringing the Australian PLATO Cybernet NOS/2550 project in on time, within cost, and better than its performance goals. It is an exceedingly important new baseline product for International that will help us bring country profitability in Services sooner and will let us even think of starting new service opportunities in small countries in the future. I’m proud of your contribution. I wanted you to know how pleased I am.” Now that’s referring to that NOS PLATO exercise that we never actually implemented, but he’s talking about it being possible to take it into smaller countries. **Misa:** So you wouldn’t have to have a fully separate computer . . . **Bament:** Dedicated mainframe. **Misa:** . . . but one mainframe shared. **Bament:** I mean, the sort of thing that you’re accustomed to seeing. Anyway, in 1984, I moved from Cybernet, and data services, and so on, and took on the role of production manager out at the manufacturing facility in Moorabbin. **Misa:** Pardon me, where was that again? **Bament:** It’s Moorabbin, M-double-O-R-A-B-B-I-N. It’s a Melbourne suburb. Now that commenced on 30 November 1984, and probably ended in 1986; think it was 1986. I got a phone call from somebody in the U.S. saying, we’d like to see you in Silicon Valley for a meeting. I went across there on a Tuesday, I think it was. It was for a meeting that I didn’t know the purpose of on my way out. In fact, I went into this room of probably eight people, and they’d already been discussing the topic, which was still unknown to me. But I went in and was introduced, then I asked the question what was the purpose of the meeting and was told that the business had been sold. So the floppy disk manufacturing business had been sold to a company called XIDEX; it’s with an “X” actually, not a “Z”. And really, there was little or no discussion, you know, all pre-decided it was sold. I asked what was the role for us? We were being merged or what was happening? The answer was no, the only people they wanted were the sales group associated with the manufacturing and so the plant was to close. Now this was, I think, the 8 December or around that time, and in Australia, effectively, January is the height of the holiday season. And my question was when, and they said by “Christmas.” At that stage, I didn’t take that too kindly and we managed to negotiate that 50 percent of the people would go by Christmas and the balance by the end of January. Bearing in mind that we had probably $4 million worth of floppy disks sitting in a warehouse, so I looked after the logistics part of that as well as running the plant that was employing probably 70–75 people. So it was a significant blow. I flew back into Australia, I think, on a Thursday, so I’d been out of the country like a handful of hours, it seemed like. **Misa:** 48 hours, or something. **Bament:** Yes. You felt like you bumped into yourself on the way back. Anyway, on the plane coming back, what do you do? You’re put in the situation of telling 70 people you’ve lost your job, prior to Christmas and prospects of getting another job in January are pretty slim because effectively, the country goes on holiday; it’s the holiday period in January. So, a difficult task; but came back and resolved, in main, no more making floppy disks, that was the end, we’d made the last one, effectively. So I went in, got everybody together, said well, I don’t have any good news, but what we’ve got to do is stop making floppy disks as of now, and concentrate on shutting the whole place down, and finding as many jobs from other people as we can. And that’s, in fact, what I did; spent the next six, eight weeks, whatever it was; shutting it all down, selling off the plant, and effectively closing the whole thing. **Misa:** That can’t have been an easy couple of months for you then. **Bament:** Yes. It’s not good, it’s time to move on, you know. It
seemed to be out of character with the way Control Data normally operated in the sense that this was taking an axe to a part of the business that seemed to be functioning very well. We were making money, and at that stage, we were selling 50,000 disks to IBM [each] month. So it was going pretty well. **Misa:** The floppy disks were actually done OEM? **Bament:** Well, they were sold to 3M, for example. There was a company down here, Imagineering, that at the time was selling into the public arena. We weren’t selling directly to anybody, you know, to end users. But our business products were the group responsible for selling the product. **Misa:** And so once that finished up, where did you move next? **Bament:** I went out and started my own company. I started a company called Leader Technologies, and that company was engaged in integrating monitoring systems in computer rooms. You know the technology changed, in that instrumentation was no longer coming from single companies, you could interface things like data loggers with PCs and create systems to fulfill any role. And that’s what we did. And then Tom Kopp had moved on; and Tom set up a company called Leading Edge. Leading Edge actually went into the seismic arena and Tom formed a business relationship with a name you may even recognize, Bill French . . . **Misa:** Bill French? **Bament:** Did you see Bill French at all? I’ve got a feeling he was a Control Data executive. **Misa:** The name is familiar. **Bament:** The company was, as I said, Leading Edge and it consisted of two of the world’s leading companies in seismic processing and software development. In conjunction with Leading Edge, they established the first seismic processing company in the Southern hemisphere, based on the Cray X-MP. **Misa:** Now, the seismic processing, was that connected to oil exploration? **Bament:** It was oil and gas. The companies involved in that was Tensor Pacific, T-E-NS-O-R Pacific. And the then president was Bill French; Dr. Bill French. So I actually set up the computer center for Tom on a consulting basis, and I acted as the center manager for the place. Initially, it was the X-MP, and subsequently it was upgraded to a Y-MP 37 computer and it was a dual processor machine. That’s where Tom went and I worked on a part time basis for him. **Misa:** So you did some similar type of design work but then also operations? **Bament:** Yes. It was getting the facility together to house the machine. These machines have fairly unique requirements. You don’t think of computers. Normally, you think in terms of fans blowing air through to cool the electronics. With the Cray design, the systems out at Knox were directly connected to chilled water, so chilled water is actually pumped through the mainframes to take the heat out. With the XMP, they actually immersed all the electronics in something called fluorinert, F-L-U-O-R-inert, that’s it. And that was manufactured . . . **Misa:** Artificial blood. **Bament:** You know that. **Misa:** Yes. **Bament:** The 3M Company produced it. It really was a product produced from a formula, in other words, you’ve got a chemical formula and you know, we could probably make this stuff. It looked like water; clear; it had very unique properties. It has very high dielectric properties so it’s a great insulator; it also has high boiling point; and it’s totally inert. It doesn’t attack plastics, or paint, or anything else. It’s an inert sort of material. However, very difficult to contain. You know, you can’t just run it in conventional pipes and fittings because it just weeps through, you know, just works its way through the molecules. **Misa:** It actually can move through the plastic. **Bament:** Yes. **Misa:** What kind of piping did you use? **Bament:** It was all provided, obviously, I mean they’d solved the problems of how to contain it. But that was one of the problems with it in the early days, was how to contain it. The X-MP had that as its direct cooling medium, and then it went through a heat exchanger, and then to water, I think; and then you cooled that water. So it was a two or three stage process to take the heat from the electronics out. That was getting pretty high density electronics, at that stage. **Misa:** Cray sometimes laughingly called himself an overpaid plumber, because of the need, not only for fast computing, but also to get rid of this tremendous heat. Absent both of those, you have no supercomputer; it melted. **Bament:** That’s right. We mentioned earlier about the U.S. view of the world. I mean, the early days, all due respect, but Americans viewed the world very much from the American perspective, and the early machines would ship out 120 volt 60 hertz configurations into a world that’s 240 volt 50 hertz. So, you know, that mightn’t sound like a huge problem, but it actually is. **Misa:** Huge problem. [Laughs.] **Bament:** Yes, you then have got to have some sort of rotating machinery to convert 240 to 120 – 60 hertz, as opposed to 50, because you know that frequency affects things like motors. Motors are synchronous and they actually run off the frequency. **Misa:** Sure. Now, let me understand this detail because it’s an important one. The Control Data machines that came out [interrupted] . . . **Bament:** No, Control Data was somewhat different in that they produced; one of the requirements is obviously DC voltage to power the electronics. So you’re talking about five volts but a significant
amperage. The way that Control Data solved the problem, they had motor generator sets manufactured by a company called Kato, K-A-T-O, and these produced 400 hertz, 400 cycle voltage that was carried to the mainframe and then simply rectified or transformed to the value you want, and rectified in the mainframe. So that removed that problem of generating the DC through power supplies or whatever it was. Honeywell had dedicated generators that produced the DC, so you actually had large cables carrying the DC to the mainframes. Misa: So a separate unit essentially [tapped] into the local current . . . Bament: Yes, separate. Misa: . . . transformed that into direct current.

Bament: Direct current and then straight into the mainframes. It just reminded me of the situation I had once in Perth. There’s a company called Mayne Nicholas and they were responsible for payroll. They did payroll for companies so they were time sensitive. They had a Honeywell 200 and the power supply went down. They didn’t have a spare in Perth; to air freight one across, you know you’ve got like four-hour flying time, plus getting one to the airport, and so on. The engineer in Perth went out to a battery supply company, filled a utility [truck] with batteries, and literally cobbled together a very large battery. Misa: To get DC. Bament: Couple of cables through the window and run the Honeywell 200 to get the pay run through. Misa: Wow. Bament: A little anecdote, but it certainly happened. Misa: In terms of timeliness, it’s quicker to get the batteries to get DC. Bament: That’s right. [Laughs.] Misa: Wouldn’t have lasted for two weeks; maybe two hours. Bament: That’s right. Misa: Richard, any other comments or observations that you’d like to share with us? Bament: No, I think I’ve pretty much covered it. You know I’ve run my own company for about 15 or so years, pretty successfully. So that’s been the career. It’s been good; it’s been rewarding, and I’ve enjoyed it. Misa: Could I just ask for any comments you might have on the CDA group and its continued meetings decades after the company, CDA, ceased to exist? Bament: There certainly is a culture that exists; people are happy to still relate to what must have been very good times in everybody’s memory. There was never a feeling that you weren’t part of the family. Trevor Robinson is credited with being the person that created that environment. Obviously people enjoyed working with the company and are still happy to meet periodically and enjoy one another’s company. There is certainly a collection of memorabilia that one of the females and her husband look after; there’s a collection and it’s quite a bit of material held by them. In the history of Control Data Australia, I think the Australian unit performed very well in many sort of different areas. In the data center, we moved into housing other peoples’ equipment, so we were actually running computers for other companies. Misa: This was at Knox? Bament: Yes. There was certainly one while I was there. Then we had another one coming along. And we were distributors for time division multiplexes for a company out of the U.S. We used quite a lot of TDMs but the technicians were actively selling and maintaining equipment outside of our own gear, so we were at the stage where that could have diversified into another direction. You know really, in a lot of ways we were at the basis of something resembling an internet, although it was a private network it was certainly one of the largest running in Australia at the time. Misa: We tend to forget that there were many, many computer companies — IBM, DEC, CDC — that had networks that spanned immense geographical spaces. Bament: Yes. Misa: We tend to think that the ARPANET was the first network but that’s far from true. Bament: That’s right. So, you know, a lot of good things going there, and it’s a pity it didn’t continue on. I would’ve happily stayed with Control Data had the situation been slightly different. I think by the time I left, there was obviously some difficulties that we weren’t fully aware of that were impacting the business. It was a change of direction; it was a rapidly moving target. And at that stage, I think, as a corporation, we’re so large it’s very hard to turn it around. It’s so much easier to start up a small unit and grab a niche market than try and turn around a very large corporation. Misa: The personal computing story is a story of small companies. IBM set standards, but that didn’t really change IBM itself. They set the standard but they didn’t turn that into a commercial success. That was a big challenge for all of the large computer companies; Control Data, everyone right across the board. Bament: That’s right. Misa: Well, Dick, this has been great. Thank you so much for your time. Bament: That’s good, Tom.
Misa: It’s the 19th of November 2013. My name is Tom Misa. I’m in Melbourne, Australia, talking this evening with Rob Robertson. Our main focus will be on Rob’s years with Control Data Australia, 1966 to 1984. Rob, just to start, can you say a bit about your background and how you got interested in the computing field? Robertson: Sure. I started off by doing a science degree at University of Adelaide, specializing in physics and applied mathematics. I really didn’t like it, I was bored, as a result I didn’t do terribly well. So, my introduction to computing was really a kind of strange event at the end of my university career; well, my science degree. We went out to celebrate the end of the year, a group of us, and we went to a bar and we were sitting and drinking and talking. Not drinking very much. And there was this guy sitting on his own; big, charismatic-looking guy with a beard; rather frightening looking individual sitting, drinking double scotches. And gradually, over the period of an hour or two, we started to talk to him and he turned out to be pretty interesting sort of a guy. And the group that I was with drifted away and I found myself just on my own talking to this guy. We talked about all kinds of things, and finally, he said to me — he, for some reason, started calling me Robbie [which, as a result, was a name that stuck with me right through my Control Data career]. Misa: Took you under his wing, or something. Robertson: . . . and he said, “So what are you going to do with your life?” And I said, “I have no idea.” And he said, “Well, I think you should get into computers,” and he said, “I think you might have it.” And so I was totally mystified by this. He said, “Come and see me in the morning; I’m in the Computing Science Department of Customer sites:University of Adelaide, and we’ll talk about it.” So I very tentatively appeared in the Computing Science Department the next morning, thinking, “Well that guy was drinking an awful lot of double scotches. He’s probably not going to have the faintest idea who I am.” I walked in and I spoke to the secretary, and I said I’m looking for John Ovenstone (because he’d given me his name). She said, “Oh, you must be Robbie.” [Laughs.] [Robertson adds: John Ovenstone was a pioneer or the Australian computer industry, developed a close relationship with various Control Data people including Trevor Robinson and Bob Price, and was a major factor in Control Data’s success in the Australian market.] Misa: Must be Robbie! Robertson: “Go straight in — the Prof is waiting for you.” We hadn’t arranged a time or anything, so I just walked into his office, and he looked at me and said, “Now, Robbie, I’ve been thinking about this. What I think we should do is depending on your exam results — which hadn’t come out at that stage — if you do well, then I think we’ll take you on and have you do an Honours degree. If you haven’t done so well, that’s going to be a problem doing Honours. What I can do is put you into a Diploma course, which is a one-year course, and then from there on, we can talk about what you do from there. If you do okay, you could go on and do a Master’s degree, and we could look at you doing it part time — perhaps working in the Computing Centre. In the meantime, what I suggest is I’ll take you on as a trainee programmer over the Christmas vacation, and see how you go. Can you start tomorrow?” So I did. [Laughs.] Misa: Okay. So the door opens and you walk through it. He had a . . . Robertson: . . . huge capacity for whiskey; he certainly wasn’t in any way majorly intoxicated the night before. But I was a bit taken aback by this whole thing so I went home and talked to my parents. But I was starting as a trainee programmer the next day. And I did. Misa: Now, that was not so common then, a traineeship in the computing field? Robertson: It wasn’t all that common, and certainly getting offered a job in a bar at the first meeting was, I don’t think, very common at all, but it happened to me. So basically, I entered the computing industry because I met a guy in a bar and he offered me a job. And he became my mentor over the next four years. He was a very charismatic, forceful sort of a guy; huge knowledge of computing. He ran the Computing Science Department and he also ran a computing bureau on behalf of the university. So I did the diploma; I did very well because I was now motivated and I then enrolled for a Master’s degree, which I was doing part time, and he employed me part time on the staff for the next four years. Misa: Is this 1966 to . . . ? Robertson: 1966 to 1969, so the end of 1969. So, I didn’t complete the master’s degree because I found myself falling between two disciplines. I got to the stage of writing up the thesis, realized that there wasn’t enough innovative computing in it. It was actually computing applied to anthropology, studying the marriage laws of the Northern Territory aboriginals, using computer techniques. And it was very difficult; in those days there were very few anthropologists in Australia, and there was no
department in Customer sites: University of Adelaide. So I wasn’t getting recognition from the anthropologists, and didn’t have enough original computing to make it a Computer Science Master’s. I thought that was the case. So I went and saw John Ovenstone, who was my supervisor for my research project, and said, “I’m having this difficulty.” And he said, “If you’re unhappy with this, I can get you a terrific job at Control Data.” So I said, “Well, maybe that’s what I need to do.” So that’s how I joined Control Data. I had, in fact, already been interviewed by Control Data, along with four or five other people in the Computing Science Department — we were all interviewed by Control Data about halfway through 1969, because the Cybertnet Data Services operation was opening up in Australia at that time. At that stage, it was independent — pretty much independent — of Control Data Australia. It was Control Data Corporation Cybernet Services, reporting back directly to Minneapolis, and it was just a courtesy communication between Control Data Australia and Cybernet. And so they were looking for people. Misa: So, Cybernet was more directly connected to Minneapolis than to CDA? Robertson: Yes, at that time. There was a reason that they were interested in us. In 1966, Customer sites: University of Adelaide managed to get funding to buy the first Control Data 6000 series computer, a 6400. And this was, again, a major coup by Ovenstone, who was very creative in organizing funding, and he managed to get funding from all sorts of sources — convinced the university they should spend far more than any other university had ever thought about spending on the biggest computer in Australia, the most powerful computer. Misa: The 6400 was a pretty impressive machine. Robertson: It was certainly the most powerful machine of any brand in Australia at the time. So, we’d all had experience on the 6000 series computers and we were the only people in the country that had a knowledge of the 6000 computers. Cybernet Data Services was planning to put a 6600 into Sydney and they were looking for people that had 6000 series skills, so they just . . . Misa: Scooped you guys up. Robertson: They didn’t scoop me up immediately because I still wasn’t sure whether I’d try and finish this Master’s degree. So I was attempting to write at night, sleeping in the day, and then would start work again around lunch time. And I was in the shower about midday one day, and there was a knock on the bathroom window. The shower was over the bath, the bath was right next to the window, and it was a guy [David Haycraft] from Control Data who said — and I was still in the shower — he said to me, “Mr. Reed from Control Data wonders if you would like a job from Control Data.” And I was a bit taken aback, so I said, “Yeah, okay.” He then said, “Mr. Reed wonders if you could go to Minneapolis next week.” So I said, “Okay.” “Mr. Reed wonders if you could go to Melbourne tomorrow for a meeting.” “Okay.” I then realized that I hadn’t consulted my wife on this — she had no idea of this. So when she got home I said, “I’ve just done something very strange. I’ve just accepted a job with a computer company and I have to go to Melbourne tomorrow, and I have to go to Minneapolis next week, and we have to move to Sydney. And I think I’ll be in Minneapolis for one or two weeks, can you move us all to Sydney while I’m doing this?” [Laughs.] So she said, “Okay.” Misa: Sydney was where Cybernet was? Robertson: That was where Cybernet was putting its 6600 in. Misa: I’ve heard several people say that, oftentimes, your first assignment was to come to Minneapolis. So it wasn’t as uncommon as you might think. Robertson: There were two reasons why Control Data made me the offer. One was that I had the 6000 series knowledge. The second reason was that I had had some experience in linear programming, and Cybernet was looking at a major contract with BP [British Petroleum] to do oil refinery scheduling. And it was a massive linear programming exercise, and they didn’t have anyone that knew anything about linear programming in 9 Australia. And so they heard from Ovenstone that I had dabbled in it; I really had only dabbled in it, so I didn’t know a huge amount about it. The reason they wanted me to go to Melbourne the following day was to have a meeting with BP to convince them we should be considered for this contract. Misa: And here you were the evidence at hand . . . Robertson: I was the evidence at hand, and I was to collect up all their data, take it to Minneapolis, and run benchmarks in Minneapolis and prove that we could run their refinery scheduling model faster than anybody else in Australia. So, you can imagine how I was pretty nervous about this, because I really didn’t know what I was getting into. Misa: And at the time, the 6600 was a machine, I gather, that had a certain aura about it. Robertson: It was, yes. Misa: It was the world’s fastest computer, you know, IBM contested it with Stretch, but it was really something of a machine. And here you are going off to Minneapolis to get this contract on this supercomputer. Robertson: That’s right. There was another service bureau company that opened up in Sydney just about a kilometer away from Cybernet to do exactly the same sort of servicing. And they opened up in the same
month and they were also competing for that 10 business. I forget the name of the company [Compunet], but it was shortly after taken over by Computer Sciences, and they continued to run it for many years. We were competing with them, and we were also competing with IBM, and there were a couple of others that really weren’t in the race. And so I turned up in Melbourne, flew into Melbourne; was met by David McAdam, the new Analytical Services Manager for Cybernet, who’d just been appointed, and Roy Goldman, the Melbourne sales rep for Cybernet, who’d just been appointed. They met me at the airport very nervously and said that, because nobody [from Cybernet] had met me, nobody knew what they were getting into. I met them, and they visibly heaved a sigh of relief when I got off the plane because — I was wearing a suit, I had a tie on, I had a short haircut. Misa: It looked like you were very respectable. Robertson: They admitted that they had — this may have been a made-up story — but they said later that they had a pair of scissors in the trunk of the car so that they could give me a haircut on the way to BP, if necessary. So anyway, we all very nervously headed up to BP, went up in the elevator. The meeting was in the boardroom on the top floor — it’s the building just down St. Kilda Road there on the 20th floor. I drove past it [on the way here tonight] and I counted the number of floors to make sure. And we nervously walked into the boardroom to meet the linear programming guru for BP; and he looked at me and he said, “G’day, Rob”; stuck out his hand; shook it — because I’d been at high school with him — and from there on, it was easy. Misa: It was somebody that you actually had known. Robertson: Yes. So that was how I came to join Control Data. Misa: How did it happen that you had experience in linear programming? Robertson: When I was casting around to work out what I was going to do for the Master’s degree, one of the projects that was suggested to me was a linear programming project. University of Adelaide — Ovenstone — had got approval for the funding on the condition that he would set up a bureau and sell his services outside the university. And so they were trying to build a market for linear programming in South Australia, and I got involved in that. We did a little bit of linear programming work. I decided it wasn’t what I wanted to do the Master’s on, but I did have some experience. Misa: You had some background from that. Robertson: So I flew to Minneapolis; spent two weeks in Minneapolis running benchmarks with the linear programming guys in Minneapolis. They were one of a couple of groups that were specializing in linear programming [Bill Paradis’s OPHELIE group]. Got the benchmark running and we were pretty sure that it was going to run much faster than anything else anybody else was going to throw at us. I brought it back to Sydney. By that stage my wife had moved there to Sydney, and settled in, and we signed a contract and set about doing that process. Misa: So what was it like you coming from Adelaide to land in Minneapolis, at the time? Robertson: My first impression was it was dark. I arrived about 10 o’clock at night; it was November; I rented a Volkswagen because that was what I was driving at home and I knew that I had to drive on the wrong side of the road and I figured at least I’d drive a car that I understood. Drove to Howard Johnson’s down on 494 and 100, I think, or thereabouts; checked in; got up the next morning, went to have breakfast in the coffee shop, and my impression then was it was all white. It was the first snowfall of the year and I was sitting there in the coffee shop, and outside the window was the exit ramp from the freeway, from 494. And nobody had snow tires on, it was the first snowfall of the year, and it was mayhem. I was sitting there watching all these cars; there were traffic lights at the bottom of the ramp; all these cars were crashing into each other. There was one car right in front of me that came down, put his foot on the brake and spun around completely and ended up facing that havoc. And I had to go out and drive. [Laughs.] Never driven in snow before. So that was my first impression of Minneapolis. I love Minneapolis; I loved it in winter. I had two weeks there, then; I had three months there, later; and the people were friendly and helpful and the guys that I was working with in the linear programming group were great. Every night, got to see a little bit of the city and surrounds here and there, driving to and from work mostly. And then went back and settled into Sydney. Which wasn’t a major problem. I’d lived in Sydney as a kid, growing up in Sydney before I moved to Adelaide. Misa: So, I take it then that the BP contract went through successfully. Robertson: Contract went through successfully and so I was involved in supporting that. We ran that as a regular repeat business for some years after that. Misa: Was there already a 6600 in Sydney? Robertson: A 6600 had arrived a month or two before I got there. It was still being set up. It was brand new and three or four others came from University of Adelaide, there were a couple of guys from Minneapolis and between us, we got it going and supported it. And they had a new sales staff that was out selling services. So it was a whole brand new team, basically; management; the Director of Cybernet...
Data Services was from Minneapolis. He was a guy from the U.S., I think growing up in Minneapolis. The rest were Australians. Misa: So it connected mostly to Minneapolis, rather than to Control Data Australia. Robertson: Yes. The guy in charge was Dick Ernst and he reported directly to somebody in Minneapolis. Of course there was friction because Control Data Australia had been in operation for some years and they couldn’t understand why this new group came in and were a law unto themselves. Dick and Trevor Robinson got on reasonably well, but it was, as I said before, a courtesy communication. And about that time, Trevor left the company anyway, and I think he’d been partly instrumental in setting up, Cybertnet Services. Misa: He left CDA about 1970. Robertson: Just after 1969, I moved over there. I never met him at that stage. I knew of him because his mail and my mail used to get confused because Robinson and Robertson was too hard for the company and I started getting things addressed to this guy, Robinson. And I didn’t really know who he was because I wasn’t really working for him at that stage. I met him and became friends with him years later when he returned to Control Data. So anyway, I worked with Cybertnet Services for three years, I think, and I was partly doing the linear programming stuff and I was doing a lot of support of technical programs. I was also supervising a small group of support analysts, applications analysts we called them, who were supporting a variety of packages. Misa: Was your job mostly a managerial one or were you actually doing programming? Robertson: Mostly technical, but with a sort of supervisory role, reporting to David McAdam, the Manager of Analytical Services, who was one of the Australians that had been appointed when the 6600 came in. Misa: In the document you prepared, you ended up moving in 1972 to Control Data Australia. Robertson: Correct. Misa: To Computer Systems Sales Support, and that was in a supervisory role. Robertson: That was in a supervisory role. Also I was asked if I would consider moving out of Cybernet Services and getting involved in assisting in selling Cybers. Well, particularly Cybers — other equipment, as well — but the focus was on selling Cybers into sites in Australia. So that became a sales support role. There were three of us, and at times, four of us involved in that. And I guess the major thing that we did in that role is we — I and another technical guy [Peter Fitzmaurice] — introduced the KRONOS operating system to Australia. By this stage there were a couple of Cybers around. Melbourne University had bought one. I think the University of Western Australia had bought one at this stage. But they were running the SCOPE operating system, which was the major operating system and there was this other strange operating system [KRONOS] that had been developed as a skunk works, you know — “behind closed doors” operating system. Misa: It would do time sharing, though. Robertson: It would do time sharing. That was KRONOS. And so there was a big discussion about whether KRONOS should be allowed into the country but it became clear that the contracts that we were looking at — and the two ones that we were specifically looking at were Sydney University and the University of New South Wales — both wanted big time sharing systems. It became apparent that SCOPE wasn’t going to handle the load. So we set about learning what KRONOS was, bringing it in, doing benchmarks, running test, producing papers on the performance of KRONOS with varying numbers of terminals — 30, 50, 100 terminals — and trying to convince, first of all, Control Data Australia, and secondly the [sales] prospects that this was the way to go for this kind of application. Misa: SCOPE could take some level of time sharing? Robertson: Some level but it was really, in those days, we were really talking about a maximum of about 30 concurrent users, and it would start to struggle at that stage. It was excellent for processing of large scientific and engineering applications. Misa: Do you remember how you got KRONOS? I mean, physically did it come as a tape? Robertson: Physically, it came as a tape. It came as a tape and we also brought a girl [Pat Aikman] out who was a KRONOS expert from Montreal. She was the site support person at what was then Sir George Williams University, now Concordia. We brought her out for two weeks to teach me and to teach Peter Fitzmaurice, the other guy that I was working with, and to help run us these tests, again, every night, all night. So, it was Pat Aikman and I sat up every night simulating different loads of terminals over and over again, getting statistics, producing reports, presenting them to Sydney University at that stage — primarily. We got to the point where Sydney University said they were definitely interested but they wanted more tests run, and they wanted them run on the computer that they would be installing, which was now a Cyber, because 6000s were being replaced by the Cyber 70 range. So I was sent to Minneapolis for one week, possibly to be extended to two weeks, to run these benchmarks. I came back three months later. [Laughs.] Misa: Three months. Robertson: Through a number of different circumstances. I ran the tests for Sydney University, again taking over the computer in the
benchmark center in the Mod C Building of Control Data every night. I would take it over from about nine at night to six in the morning; and I would run these tests. Now the tests consisted of multiple simulated terminals, up to about 120; two live terminals where I had to time the responses into these terminal sessions, and time the responses with a stopwatch, and record the times. I had two printers printing full speed, continuously; and had the card reader reading cards continuously. Well, the card reader and the printers were down the other end of the computer room; the computer was in the middle; but the terminals that I had to time the responses on were up the other end. As soon as I started timing the responses the printer would run out of paper or the card reader would run out of cards and I’d have to run back and load them again. I ended up taking my shoes off so I could get better traction, so I could run backwards and forwards up and down the computer room. The thing that stands 18 out in my mind was the card reader. If you were too quick, it would jam and that would shred all the cards and concertina them and throw them all over the floor. Because I couldn’t afford to do anything but just throw more cards at it, I’d just leave them on the floor, load up another box of cards, and let it run. And I remember one morning I was standing knee deep in concertina-ed cards, and the guy that had the next shift walked in and he looked at me and he said, “My God, what a total disaster!” And I said, “It’s all right, they’re all blank.” [Laughs.] He obviously assumed that this was some major program that had just been destroyed.  

Misa: You could reconstruct it but that would take a great deal of time.  

Robertson: So, we successfully ran the results. Sydney University was pleased. I said, “Can I come home now?” They said, “No” — Control Data said, “No, we’ve got a guy [John Hill] coming over who is the sales rep for the Department of Defence, and he has to travel around and visit defense establishments in the U.S. and talk about computer technology. And we need a technical guy to travel with him, to keep him ‘honest’ and to interpret for him. It turned out that this was fairly useless because it was all defense and secure; I didn’t have a security clearance. He did. So my support tended to consist of my sitting in Reception while he was taken off to talk to the defense guys, and then he would come out and say, “Well, that was interesting.” And I’d say to him, “What did you learn?” And he’d say, “I can’t tell you.”  

Misa: Of course.  

Robertson: Anyway, he and I got along pretty well. We traveled around for several weeks; and we went to Sunnyvale, California; we went to Minneapolis; we were due to go to a couple of other sites in the East Coast. And I got a call to say, “The technical guy from Sydney University would like to come to Minneapolis and see these benchmarks run on the computer that they’re going to buy ...”  

Misa: They were really [inaudible]  

Robertson: “... could I get back to Minneapolis?”  

Misa: They really wanted this to go right. The timesharing was a really tough application ...  

Robertson: Oh yes. Misa ... especially for a big university.  

Robertson: This was real pioneering for Australia. Nobody was doing that in Australia, or had thought it was possible. So, now I had to go out to California; meet Bruce Haddon, the guy from Sydney University; take him to several sites. So we went to the Cybernet Data Center in Palo Alto. We then went to Minneapolis; I demonstrated the benchmark to him; he was happy with that; he signed off on that. And then Sydney University suggested he go and visit some other sites in Europe — KRONOS sites; would I travel with him? So I ended up traveling with him to London, to Imperial College in London, to look at KRONOS operating there. That was interesting because in London, there was a guy called Greg Mansfield — and Greg Mansfield actually invented KRONOS. Well, he didn’t invent KRONOS as such — he was a computer engineer and he developed an operating system that engineers could use for testing and maintenance. It was called MACE. But it was basically the forerunner of KRONOS, and KRONOS was built on it. So one of the important things was to meet Greg Mansfield, then doing a Ph.D. at Imperial College — so we met him. We went to Paris to talk to the installation in Paris. We were then asked if we could please go to Rome and find a site in Rome because the guy that was the senior; the Director of the Computer Center at Sydney University, had trained as a priest; had been a very talented organist, and had played the organ in the Vatican for a period. And he was very keen that this technical guy [Bruce] who worked for him should see Rome. Well, we couldn’t find a site in Rome that was running KRONOS. So in the end, it was decided we’ll go to Rome anyway. So he and I had a couple of days in Rome, and then we flew back around the world. So I arrived back three months later.  

Misa: Was that normal for a university contemplating a major system, to do this full court press? Control Data really made sure that it wasn’t merely a salesman’s promise but having site visits at more than one site, on and on and on.  

Robertson: I think it was moderately common, to a greater or lesser extent in the United States. I missed out one step — to Minneapolis, because in the middle of this, the University of
New South Wales decided that they would like to run some benchmarks, and they agreed with Sydney University that they could take their benchmarks — but they wanted to do different numbers of terminals, and different amounts of memory in the machine. I had to go back to Minneapolis again — rewrote all the benchmarks for a different university, with different configurations. I think that was another two weeks, of the three months. So that was my round the world trip for three months. There was one thing that I mentioned to you. I don’t know whether you want to deal with it now, but in the course of that trip, we managed to get into NASA Ames by just walking through their security. Misa: We didn’t record the story. Robertson: I don’t know whether we can. [Laughs.] Misa: I bet it’d be safe now. Robertson: Probably would be. The story was that this guy, Bruce Haddon, from Sydney University — when we got to California, we took him to Sunnyvale, which is the Control Data development establishment in California. We took him to Palo Alto Data Center to see systems running, Cybers running. And I said to him, “Is there anything else you’d like to do?” We actually had a Control Data customer relations guy traveling with us, so there were three of us: the Sydney University guy, the customer relations guy who was based on the West Coast, and me. So he and I said to Bruce, “Is there anything else you’d like to do while you’re here?” And Bruce said, “I’d really like to see ILLIAC IV.” Misa: Oh, the famous ILLIAC IV. Robertson: I didn’t know much about ILLIAC IV but the Control Data guy said, “I think it’s impossible. Nobody could see ILLIAC IV — it’s totally a secure site. It’s the hub of the ARPANET. Nobody gets to see it.” Bruce said, “Well, I’m very disappointed about that.” And ILLIAC IV had been at the University of Illinois, but because of student unrest and revolts in various places, I understand that Defense considered that it was too vulnerable, so they moved it out to NASA Ames, a secure site. Misa: I’ll tell you a back story when we’re done with this. I talked with somebody who was at Illinois [i.e. John Day]; it’s a great story. Robertson: “Bruce,” we said, “Well, we can’t organize that.” Bruce said, “I might be able to; I’ve got a friend who’s doing a Ph.D. and he’s working on ILLIAC IV.” He was an Australian that was at Stanford. And he said, “I’ll contact him and see what he can do.” So he called Tim; Tim said he’d never seen ILLIAC IV, he was working on it but he was working remotely, he didn’t have access. But he said, “I have a friend who has a security clearance, and he could get access; we might be able to arrange something.” So Tim comes out with his friend Dave, and Dave said, “Yeah, sure, no problem.” So we had a big Ford LTD rental car that I was driving, and we arranged for the three of us to pick up Tim from Stanford, and then pick up this other guy, Dave, who had the pass. So we picked up Tim, we picked up Dave. Dave, who had the pass, was the ultimate revolutionary. He got in the car — he was wearing baggy shorts, a dirty old t-shirt, he had a long beard down to his waist, and sandals. As we drove to the Ames gate, he explained to us that he had the pass but because he was a pacifist he didn’t believe in using it. So he just drove through. So he briefed me. He said, “Now, when you get to the gate there will be an armed guard. Just drive straight through.” So we drove up to the gate, this guy came out, and he had some sort of machine gun in his hand — it was a huge thing, whatever it was — and he put up his hand to stop us. I started to slow down and Dave said, “Drive on, drive on!” So, I speeded up, drove on — drove straight past this guy. Dave said, “Now drive over to that building, park, everybody get out, walk over to that door and don’t look back.” Misa: Just assume that you were to be there. Robertson: Yes. So we’re out of the car and we walked on, and I think it was the longest walk I’ve ever done; it seemed like 15 kilometres and my legs had turned to jelly because there was this guy behind me and, as far as I knew, trying to decide whether he was going to shoot me or not. So I stumbled to this door, and this is the entrance to the ILLIAC IV establishment. There was a desk inside, and a man at the desk said to us — there were five of us — “Would you sign in please?” “No, no, that’s all right,” said Dave; and we walked straight into the computer room. There was the ILLIAC IV. There was computer peripheral equipment you just wouldn’t believe — a lot of it was Digital Equipment Corporation and Burroughs gear that had never been announced. There were disks, and drums, and communications equipment that didn’t appear on the open market for at least 12 months after that. Because we were in there, nobody questioned us, so we wandered around for something like two hours, talking to the technicians. Misa: Wow. Robertson: [Laughs.] Walked out again, drove off. I still cannot believe it. [pause] Misa: ILLIAC IV was huge. Robertson: It was huge; it was like a freight train — it was just this big, long bank of computer, with lots of other stuff. Misa: Big. Robertson: So that was my [pause] Misa: I hope you got lots of stories from this episode because it’s very unusual. Robertson: I don’t think you could do that today. I think the security is probably a bit better. But it was just extraordinary. Misa: Yes.
Robertson: So that was my three months’ tour around the world. We wrapped up both Sydney University and the University of New South Wales, and shortly after that, as they were being installed, I was offered the position of Professional Services Manager in Adelaide, South Australia. So we moved back to Adelaide. Misa: And that was Professional Services Manager, 1974-77? Robertson: 1974-77. The Adelaide office in South Australia [was] small. Adelaide was a population of about a million people and Control Data had been extremely successful. Obviously, they started with the 6400 that Ovenstone bought for the University. They’d also sold a couple of CDC 1700 systems to do pathology laboratory testing, one for the Institute of Medical and Veterinary Science, which was affiliated with the Royal Adelaide Hospital. The Institute of Medical and Veterinary Science developed software that they then installed in other 1700s in other hospitals around Adelaide. So we had the 6400, several 1700 sites, we also had processing going on at CSIRO because they had a 3200. CSIRO had a network of 3000 series computers, with a hub in Canberra; and a 3200 in each capital city. So that was there; and there was some computer processing for the state government, but about the time that I moved to Adelaide, the state government decided to buy Control Data Cybers, so they had very big Cyber installation. When I got there, the big marketing activity was to sell a computer to the South Australian Institute of Technology, which was effectively the second university in Adelaide. Again, a KRONOS system, and because of my KRONOS expertise I was able to not only have a supervisory or management role, but also get involved technically and bring some of the other guys up to speed on that. We had a lot of stiff competition at the South Australian Institute of Technology because at that time Digital Equipment Corporation was coming out with the VAX 11/780 and there was a lot of support for the VAX within the university. The Head of Computing Science, who was also Director of the Computer Centre, didn’t believe that the VAX was capable of handling the workload, but he was having great difficulty convincing his staff and other academics that that was the case. Misa: They really liked those high end VAX machines. Robertson: Academics loved them. And so we did actually sell that computer but it was always troublesome because there was always this feeling that maybe they should’ve got a VAX, just because they liked the concept of the VAX. So we had to put a lot of work into supporting that machine. One other thing that had happened was the guy that was the Sales Manager [Branch Manager] in Adelaide, was this guy, Roy Archibald, who was also extremely entrepreneurial, and he opened up Western Australia for Control Data. So Western Australia and South Australia were run out of Adelaide. Misa: Opening up, that is opening as an area where CDA was very active. Robertson: Yes. So Roy had successfully picked up an order for a Cyber from the University of Western Australia. He’d also picked up an order for a Cyber from the Western Australia Medical Department, to run the WA hospitals. And this was based on software that was partly developed in Australia, and partly developed by Control Data software group in La Jolla, California. So I had a team of four people in Western Australia supporting both sites, and along the way we picked up another site, which was for Western Mining Corporation, now part of BHP, I think — a major mining company at the time. And later, another system for the Department of Main Roads. So I had a team in Western Australia, at one stage, about six people, and I had something like eight or 10 people in South Australia, supporting South Australian operations. That number gradually ran down because Control Data’s policy became to minimize the amount of onsite support that was provided, in order to reduce the cost of support. So we were trying to sell the services of these people to other companies as consultants, rather than just show them the door. Misa: The traditional model was, basically, when you sold a big computer, you also had somebody that would come for six months, or 12 months, or whatever the agreement would be, and be an onsite expert. But Control Data was trying to wean itself from that because it was expensive. Robertson: Yes. And that happened just as I took over this job in Adelaide — so that was a bit nerve wracking for me because I was trying to maintain morale of the people that were there, while at the same time knowing that the overall plan was to reduce the 28 number of people. I knew that too, so I was trying to find other consulting work that would keep them busy. I was able to do some, but gradually, that number reduced in both South Australia and Western Australia — which meant that I wasn’t particularly comfortable in that role — because I liked the guys. But I did like working with the sales people in South Australia and Western Australia. They were very creative. Roy Archibald, about the time that I moved out there, moved to Melbourne as the National Computer System Sales Manager, and his role as the sales guy in Adelaide was taken by Rob Hain — my predecessor, the guy that had been the support manager. So I stepped into his shoes, and he took over the sales role.
Misa: Can I just make a comment? The people that Archibald was signing up; well, the universities could be considered a classic Control Data customer, but the mining company, the Department of Main Roads — those are all things outside traditional scientific computing. . . . Robertson: They were. Misa: . . . like commercial. Robertson: The one that was most commercial was the South Australian government, South Australian Public Service Board, which was a very big installation and they were basically commercial. They were a major factor, for example, in the Australian Taxation Office buying Cybers later on in Canberra, because they were aware that this was 29 happening.

Western Mining was more technical because it was technical mining stuff, although they were doing a lot of administration. Main Roads Department was doing a lot of administration, some technical work; and the Western Australian Medical Department was very much non Control Data-traditional computing. One major project we did was develop a payroll system for all staff in all hospitals in Western Australia. It was a massive task because you’ve got everything from cleaners to doctors, with all kinds of shifts, and award payments, and so on. And that was definitely not a classical Control Data application. So, yes, that was a three-year effort or so. And then Rob Hain, the Branch Manager in Adelaide moved to New Zealand to become Country Manager in New Zealand, and I was offered his job which, after a bit of soul searching, I decided to take. Misa: That would involve more supervisory functions?

Robertson: Branch manager was running the branch, taking total overall responsibility for the branch, but also was the sole sales guy there — so I had a quota. Misa: The sole sales person there. Robertson: Yes — so I had a quota of somewhere between one and two million — varied from year to year. We ran the branch as a sort of democratic committee. Geoff Ellis, the Engineering Services Manager; Steve Davies, the Professional Services Supervisor, who took over what I’d been doing (but at a lower level, because we had less 30 staff by that stage) and I ran it as a committee of which I was sort of the senior person because everything hinged on sales, and if we didn’t sell then there was no business — so I was looked on as the senior guy if there was a decision to be made. But basically we ran it as a committee, and it worked pretty well. Misa: Your work before had involved sales support but not actually being the sales person. Robertson: Correct. So I was pretty close to the sales but I hadn’t carried a quota, I was supporting the sales guy. Misa: So it was quite a shift in your responsibilities and outlook, I suppose. Robertson: It was. And this was why I didn’t take the job at first; I did quite a lot of soul searching before I decided that that was what I wanted to do. And I’m probably not a good salesman. I’m not that pushy sort of sales guy that finds closing business easy but I did know the business in South Australia by that stage. I knew the people. I knew the customers and, because I’d lived in Adelaide before and it’s a small town, I knew a lot of people and I had a lot of contacts.

Misa: Did you end up doing sales training at all? Robertson: Oh, yes. There was continuous and, I think doing sales training as a sales support guy, because we got involved in that, so I’d had continuous sales training — and there was a lot of sales training going on in the company. So yes, I did a fair bit of that. And I was moderately successful, although one of the issues was that about that time, Cybers were starting to look a bit “old hat.” VAX 11/790 had come in — there was other stuff around; Burroughs was making a lot of noise about new technology that didn’t necessarily work very well, but it looked good on paper. And we were having a lot of difficulty moving new Cybers, so a lot of my success was really add-on business and replacement of older machines with newer machines — helped along the way a little with a few odd things. I recall got a phone call one Friday night, late, to say could we arrange for some engineers to go into the South Australian Public Service Centre because they’d just poured water all over their computer. So we said, “Yes, sure, we could do that” — sent them off with hair dryers, and so on. Then we got another call saying, “Could you ask your engineers to be a bit careful because it’s not water, it’s acid.” And what had happened was the computer room was very old, and for some unknown reason they put all the water pipes through the ceiling rather than under the floor. Now, Adelaide has very bad water, it’s very high in mineral content. All the water pipes develop a sediment, whatever you call it, growth from the minerals in the water and they gradually seize up. The Public Service of South Australian government’s policy was to pump acid through the water pipes to clear them of this residue. Misa: From a chemical laboratory, makes perfect sense, though for a computer facility, maybe not. Robertson: Yes. But the pipes were old; they burst — and not the mainframe — but a large amount of peripheral equipment was doused in what we were told was sulphamic acid, and could we please work out what we could do about this. Well what we would do — in those days we were using telex exchange, and we were using telexes
frantically back and forth to Minneapolis over the weekend, saying, “What do we do? What’s the answer to a whole lot of very large equipment — big boxes — doused in sulphamic acid?” And the answer was, “You could get a crane, a very big bath of caustic soda, lift the boxes in and put them into the caustic soda and soak them.” However, you’d have to have done that within about half an hour of the spill, so it was already lost. Half of my quota for the year was achieved with that because it was a total replacement. [Laughs.] Misa: Replacing the acid soaked machines? Robertson: So I thought this is a good plan — if I could do this fairly frequently, I’d have a good sale. Misa: Can’t count on it, exactly. Robertson: I hadn’t quite worked out the mechanism for doing that. So I did that job for several years. I had more success than I deserved. I actually got to be a member of the Bill Norris Shark Club, without really feeling that I deserved it, because all I was doing was maintaining and upgrading existing sites, but I did — we — put a lot of effort into it — bringing people out from the U.S. to talk to the government at high levels, and to establish relationships with — not the Premier, but the Deputy Premier. The Premier is equivalent of the Governor of a state in the U.S. Misa: The 100 Percent Club is pretty well-known, but the Shark Club is not. Robertson: The Shark Club was for top performers — there were usually about 20 worldwide each year that were selected for outstanding performance. They weren’t necessarily sales people; they could be engineers or software people that had done something outstanding to achieve additional sales. And my award was because I put this effort into stabilizing the South Australian installations, particularly the government, in the face of very strong competition from IBM. But really, as I said, I never really saw myself as a salesman — it wasn’t a super sales effort, it was just beavering away and getting the right people to come out and talk at the right levels. Misa: It seems to me that the company back in Minneapolis was really paying attention to Australia. To be selected for a company-wide honor like this, somebody was looking out for you. Robertson: Yes, I think there was a lot of focus on Control Data Australia because for the size of country, we were being very successful. We were selling a lot of Cybers, Australia-wide, and we probably had more than our fair share of “Sharks” over a period of some years. We were doing a lot of interesting things that hadn’t been thought of elsewhere. One of them was moving into the commercial area and things like the Australian Bureau of Statistics, Australian Taxation Office, the South Australian Public Service, significant involvement in the Western Australian Public Service — when I said “Public Service” I meant the State government — we were in the forefront of database management applications in Control Data. Misa: Can you say a little bit more about that, the database management? Robertson: Yes. In the commercial area, there was a huge interest in setting up databases for tracking all kinds of information. And it was at that stage that there was a shift — the database technology when we started was CODASYL-based, which was the standard at the time. There was a move toward relational database systems, and there was an initiative going on with a guy called G.M. (Sjir) Nijsen, a Dutchman I think, who was developing relational database concepts, and Control Data was funding him. He was a professor at a university. He was well known in academic circles for his work on database technology and Control Data was interested in picking that up and building on it. With Cybers, you had the real processing power to be able to do that. I don’t know that it got terribly far, but we were certainly pushing that very hard. I mean, Control Data was traditionally a FORTRAN processing company; we were pushing COBOL. We were pushing FORTRAN to academics, but COBOL for the commercial applications. We were being very successful in convincing various sites, particularly the Australian Taxation Office, that our COBOL was very good and we were doing quite well with that. We had a bit of a setback because a consultant [an ex-Control Data employee called Ron Henry] came out to Australia, looked at the Australian Tax Office, and told them, “Look, why do you want to do this in COBOL? You can do all of this in FORTRAN.” And so suddenly, the Tax Office was telling us, “Why are we doing this in COBOL? You’re good at FORTRAN. Why don’t we do it in FORTRAN?” Well, that’s the last thing we wanted, — because we had all these other sites and prospects that were clear COBOL sites. So somehow we had to convince them [the Tax Office] that COBOL and database management were the answer — and that was quite a challenge. But, in the end, they accepted it and were Control Data users for some years after that. That was a good site because that was in Canberra, but they had two duplicate sites, one on each side of Canberra, buried in the ground. I went to a presentation by the guy that was the head of computing in the Tax Office, and he started off his presentation to Control Data people — he said, “We’re a little bit different from all your other customers. We have six million customers. And every one of them hates us. So we got to be very conscious

of security. [Laughs.] So it was good business for us, because everything that they bought they duplicated to put it in the other site in Canberra. So, yes, that was my role in sales. Misa: And that was as Branch Manager. . . . Robertson: That was as Branch Manager. Misa: . . . but you were then National Sales Manager for Electrical Utilities from 1980-1981. Robertson: Yes, that was a change. Control Data had been very successful in the U.S. and other parts of the world, installing major systems for controlling electrical companies. Misa: Electrical grids, grid management? Robertson: Grid management, and also a lot of stuff for the electricity generators. And so we were very keen to try and tap into that business in Australia, because every state had its own power company or power companies. The power guys in Queensland had one generating company and multiple distribution companies. And we had the best system in the world. So, it was decided that we should set up a separate group to focus on that business, and that separate group happened to be me and one technical support guy [Steve Davies], both based in Adelaide — seemed to everybody to be crazy. [Laughs.] But we weren’t moving and they wanted us, I guess. Misa: It was nationwide at that point; Adelaide was where you were living. Robertson: That’s right, but the focus at the time was actually Queensland. Queensland because of its mining applications, because of major growth, and because there was a move of the population to warmer climates. There was a lot of expansion going on in Queensland and we were beginning to attempt to sell them computer systems; to multiple organizations to do distribution and also control the generating function. We failed. We failed, I believe, for political reasons not for technical reasons. Queensland at the time was a complicated political animal. I mean, it’s gone down in history as being extremely unstable, and business was done in a completely different way from anything Control Data was used to. Misa: It was going into a state-operated grid system — then you’re really dealing with the State of Queensland. Robertson: You’re dealing with the State of Queensland, you’re dealing with the politicians in Queensland, and selling was not based on technical considerations at all. It was based on who was getting paid off by whom — and it’s a well-known fact that at that time, Queensland had a major problem in that area. So that role really only lasted for a short time, I think we were involved in that for about 18 months. Really enjoyed it — the technology was terrific, but Australia just wasn’t ready for that technology, I think — except maybe Queensland, and Queensland was too hard to sell it to. Misa: Correct me if I’m wrong, but that was a line of business that Control Data had been doing a lot of work on back in Minneapolis . . . Robertson: Yes. Misa: . . . so this was not new, Robertson: No. Misa: . . . but it was taking something that people at Control Data had done.... Robertson: We had no technical expertise in Australia — it was all coming out of Arden Hills and Minneapolis. It was a combination of Cyber equipment and smaller equipment that handled all the instrumentation and what they call SCADA [Supervisory Control and Data Acquisition] applications. So anyway, at the end of that time, I was offered the job of Southern District Manager for Computer Systems, which now merged Southern and Western Districts — so I took over sales management for Victoria, South Australia, and West Australia. So I had a group of sales guys in Melbourne, I had one sales rep in Adelaide reporting to me, and I had one sales rep in Perth reporting to me. And again, we were struggling a bit to sell Cybers by this stage. We were getting plenty of add-on business but new installations were few and far between. We sold a couple, but we were focused really on add-on business. Misa: It sounds to me, at this point, this was mid-1980s or so? Robertson: Yes — well, it was early 1980s. Misa: Control Data really needed some kind of a new or different product. Robertson: Yes, but not much was on the horizon. It was the Cyber 990, I think, which came out after I left the company — and we sold one of those to Melbourne University as an upgrade after I left. In fact, the day that I left the company — and I left at lunchtime — and I had a busy morning, because the first thing I had to do was go to Melbourne University with a technical guy [Alan Conrad] and announce that the Cyber 990 was coming. And they then, after I’d gone, bought that machine — not because I convinced them that that was what they needed — but that was the first time that they’d heard of it. And then having done that, I had to go across town to the Royal Melbourne Institute of Technology [RMIT] and agree to final changes to the contract to replace their old Cyber with a new Cyber. And then I left at lunchtime having done those two things. [Laughs.] Misa: And you left in 1984. Robertson: Left in 1984, yes. Misa: So two big pieces of business in the morning. Robertson: I’d resigned in about May of 1984. I was asked if I would please stay on because the sales rep that had been handling the program over at RMIT had left, and I was handling the contract negotiations — and I was asked if I would please stay on until the contract was ready to sign. So I resigned to join another guy in a partnership.
to start up a software company. I resigned in May. I think I actually left in September. And every day I’d get a call from this guy saying, “Are you really coming to join me? I don’t believe you. I don’t think you’re ever going to come join me.” [Laughs.] So that was significant, that morning, because that was all done and I could walk out the door. Misa: Why was it the case that you ended up leaving for this partnership? You said it was difficult to sell Cybers; were there others things that you saw going on? Robertson: There other things that I saw going on, yes. There were a couple of other significant things. First, it was getting hard to sell Cybers, and I was very conscious of that. The guys that worked for me were very conscious of that; and there wasn’t a lot we could do about that. The second thing was, at that stage, there was a significant standoff between Cybernet and the Computer Systems Division. Some of the major prospects that we had in computer systems were major Cybernet users and if we sold them a Cyber, then Cybernet business would tail off. So — not at my level, but at the next level up — there were endless arguments and discussions about how we would handle this situation. My guys were getting frustrated because they weren’t allowed to talk to some of their major prospects. Misa: Because the major prospects were also Cybernet clients? Robertson: Because they were also Cybernet users. And I’d been insulated from that in Adelaide — I hadn’t seen this. I was now involved. Although I was the next level down I was very much involved in the discussions going on at the national management level, and I found that quite distressing, because I felt that decisions were being made that were not necessarily, in the long term, progress. Misa: Now, was Cybernet still basically connected most directly to Minneapolis? Robertson: No. Cybernet was Control Data Australia. I’m not sure when, but probably in the early to mid-1970s. It started off in 1969, but it started off completely independent and, at some point, it became part of Control Data Australia. Misa: So it was more of a functional split, not a Minneapolis versus Control Data Australia split. Robertson: Yes. But the issue was — you had the Australian Managing Director, under him you had a Cybernet manager, and a Computer Systems Manager, an Engineering Manager, Sales Manager, and so on. These Cybernet and Systems guys, in particular, both had quotas set by Minneapolis, and so they had a business to run. The Managing Director was trying to balance this with these two guys. The people changed over time, but the situation didn’t change and there were always these two divisions that were at loggerheads, because building one business would hurt the other business. The lines of [financial] reporting were straight down from Minneapolis and there wasn’t much flexibility then. So I got a bit depressed with that. I thought it was not a good way to build a business. The other thing that happened was when we moved from Adelaide to Melbourne, I bought an Apple IIe for the kids. And I started playing with it, and I became fascinated with this. I also borrowed a standalone PLATO machine, which was a microcomputer in a terminal, to do some study using PLATO. So I had experience with two microprocessor-based computer systems and I thought, “This, I think, is going to be the way of the future. And this is going to be a real problem for Cybernet, and if Control Data doesn’t embrace this as part of its systems offering, then it’s going to be a problem for Systems, as well.” So I made a few attempts to get that message across — having played around with the Apple IIe. I knew the Apple IIe wasn’t the answer, but I knew that that would lead to other things. I didn’t get that message across. A friend of mine approached me and said, “I want to start this company.” He had expertise in manufacturing software; he wanted me to do the sales and give him some help with the technical side, and it was all microcomputer-based. I jumped at it. Except that I didn’t leave for three or four months after I resigned. [Laughs.] Misa: What was the name of that company? Robertson: It was called Albion Computing Pty Ltd, and we ran that for about the next 10 years. We ran into difficulties in the recession of 1990–91, because at that stage we were selling to small and medium manufacturers to run their business and, during the recession, no small to medium manufacturer in Australia bought a computer system. We survived by the skin of our teeth on our maintenance contracts, and then took an offer from a Canadian company, and just sold the whole company to them. Misa: Sold it off. Robertson: And went off and did some consulting. So that’s the Control Data story, I guess. Misa: Any other things you’d like to record this evening? Robertson: There are a few other things that we’ve not touched on. I was going to comment on the arrival of the 6400, which was pretty interesting. Are you happy to continue on? Misa: Oh absolutely, yes. Robertson: I was a student in the Computer Science Department at the time, and … Misa: This is in Adelaide. Robertson: This is in Adelaide. This was 1966, and there was great excitement because we’d just bought a 6400 and that was coming into Australia — the biggest computer in Australia. And so a couple of us asked if
we could please go down and meet the computer when it arrived, and we were given permission. So we went down to
Adelaide Airport because it was being freighted in on a 707, a freighter 707 — the whole plane packed with Control
Data computer equipment for Customer sites: University of Adelaide. So we went down to Adelaide airport to meet it
and greet it, and it was just the worst day for weather, ever. And I’m not sure whether the plane actually got diverted
to — I can’t remember — there was talk of it being diverted to Melbourne because they thought it wouldn’t be able
to land in Adelaide. I think possibly they did divert it to Melbourne, and then when things cleared in Adelaide, they flew
on to Adelaide. But when we were there, there was a big — torrential — rainstorm, so that you couldn’t see anything.
Then the rain cleared, but the wind was terrific. It was horrendous! So we watched this 707 come into Adelaide
Airport, and it really looked as though it was going to touch a wingtip on the ground as it came in — it was just flying
all over the place. Misa: And you’ve got this big computer aboard. Robertson: [Laughs.] It managed to get onto
the ground; it taxied over to where we were standing, and because we told the airport staff we were the Computer
Science Department people that had come to supervise the de-planing of this computer, they let us onto the tarmac
and we were able to walk over to the plane. And having got it on the ground, they opened the front hatch which was a
big lift-up door, and the wind caught it and broke it off, and it flew right over the fuselage of the plane and crashed on
the tarmac on the other side. If anyone had been there, they would’ve been killed. If it had hit the wing, it would’ve
destroyed the plane. As it happened, it just destroyed the door. So we were standing there as this plane sort of blew
apart in front of us. Misa: Wow. Robertson: And they went ahead, lifted the computer up — it was fine — but the
plane was not so good. Just an example of how Control Data works, and, I guess, all computer companies work — one
of the things that came up when I was traveling with John Hill, the Department of Defence sales rep, looking at
computer systems for defense applications. There was one issue that he was very worried about. Control Data had
just come out with new disk drives, the 844 disk drive, which was a multi-platter, very fast disk drive for its time. And
we’d struck difficulty because it was so fast that the software couldn’t keep up on Cybers, so what they did was they
half-tracked it. So they took every second track of data, to give the software time to catch up — so they were running
at half speed, effectively, on these disk drives. The Department of Defence were very keen on the 844 disk drive but
were not keen on the idea that they’d have to run it at half speed. So there were all sorts of rumors about what was
going to be done about this, and whether it could be done. So one of our tasks was to find out — to get the real facts
— and all the work was being done in Sunnyvale. There were three projects going on at the same time in the
Sunnyvale software development division. The first one was the Air Force Advanced Logistics System [ALS] that was
being developed for the U.S. Air Force, the second one was a major system for the Union Bank of Switzerland, and the
third one was a system for Skylab — all three being developed at the same time, and all three developed along a big,
long corridor in the one building. So the sales guy, John, and I went to talk to them. We were told that the ALS guys
were working on this, and so we went to talk to the ALS guys and we said, “Now, the issue that we have is that we’ve
got a prospective customer who has to have full-tracked 844s. He won’t live with half-tracking.” The ALS guys said,
“We’ve done a major study on this — and it’s impossible — it can’t be done.” So, sort of on a whim, we walked down
the corridor to the UBS project, and we said the same thing to the guys that were developing the UBS system — “We
have this major problem.” The UBS guys said, “Well, we’ve done a study on this, and we’ve worked out how to do it,
and we’re about to start development.” So John and I said, “Let’s keep going.” So we went right down the end to the
Skylab group, and we explained the situation again, and they said, “Oh yes. Sure. No problem — we’ve done that.”
[Laughs.] So we said, “Why don’t you talk to those guys at the other end of the corridor because they say it’s
impossible.” So the Skylab guy got out of his desk, and he said, “Where are they? Who are they?” And he stormed off
down the corridor to tell them that they didn’t know what they were talking about. [Laughter.] That was a great
lesson to me anyhow. Misa: How silos sometimes work very powerfully. Robertson: Yes. Now the other story that I
had was how the Western Australia Police Force got to be paid for Christmas. The Main Roads Department had a
Cyber, and they were running a lot of applications for the Police Department in Western Australia. They moved to a
new building and, at the same time, purchased a new Cyber to go in the new building. The Cyber was to go into the
seventh floor of the building, and the problem was it wouldn’t fit into any of the elevators. So, the only solution we
could come up with was we would station a crane, a multi-level crane, in the middle of the main street of Perth —
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Adelaide Terrace — and they would take the windows out of the side of the building, deliver the computer up and put it through the space where they’d taken the windows out on the seventh floor. So we had that all planned, and it was to happen; it had to happen four days before Christmas. The reason it had to happen four days before Christmas was that the Main Roads Department ran the Police payroll system on that computer, and if that computer wasn’t up and running four days before Christmas, then the Police Department wouldn’t get paid — in which case it would be a good idea for us to leave the state very quickly. [Laughter.] Misa: You’d have a whole lot of angry police officers with your number. Robertson: Right. So I flew over to join the guys in Perth to watch this event happen. I remember standing there in the main street of Perth with all the traffic blocked off, diverted, with this huge crane lifting this massive mainframe up. It was kind of hanging and swinging there, and gradually, they managed to get it over, level with the removed windows, into the computer room. And the guys worked on that, it was up and running, and they ran the payroll system four days before Christmas. Misa: Okay. Robertson: That was pretty nerve wracking. [Pause] I was going to comment on some of the people that influenced me. I guess the first one, obviously, was Professor John Ovenstone, who got me into the computer industry, and then got me into Control Data. As I mentioned earlier, I believe he also had a significant impact on Control Data’s early years. Roy Archibald — who was the sales manager in Adelaide before I moved there, and then became National Sales Manager in Melbourne about the time that I moved to Adelaide. I think he was not well understood by Control Data. I think he was an unusual 48 man with an unusual way of thinking. Very, very creative, and the installations in South Australia and Western Australia were very much his vision. Some of them ran into some problems, a lot of it being political rather than technical, and I think Roy took a lot of blame for that from people that really weren’t familiar with the situation — didn’t understand how small states like South Australia and Western Australia worked; and the interaction between people, and the opportunity to be creative and build a vision — which he managed to do. And for various reasons it didn’t work quite as well as we’d all hoped, and I know Roy was devastated by that. But I think he was a real asset to the company, and his involvement with the South Australian government, for example, had major spinoffs with people like the Taxation Department, State Government Insurance Office in Queensland, which was another classic non-Control Data-type installation. I had a lot of dealings with him and I thought he was terrific to work with because there was this continuous flow of ideas coming out. Misa: You also mentioned John De Beer. Robertson: John De Beer was an interesting guy, too. He was Managing Director of Control Data Australia for a short period — couple of years. He was previously Country Manager for South Africa — moved to Minneapolis for a short time and then came out to Australia. He was another creative thinker; perhaps too creative. He picked up on Bill Norris’s schemes — some of which were wonderful, some of which were pretty odd. You’ve probably heard many stories of Bill Norris growing tomatoes out on the roof of the computer center in Minneapolis in mid-winter, and setting up Commercial Credit as a subsidiary of Control Data to provide a stabilization when computer systems business dropped — and, hopefully, Commercial Credit’s finance business would carry it through. He had a lot of creative ideas. Some of them didn’t work very well. I don’t know if you’ve heard about what was generally known as “cars for crims.” Misa: No, go ahead and tell me. Robertson: Bill Norris, as I understand it, had the thought that because Commercial Credit was involved in leasing cars, a service to released prisoners would be to provide them with a car — because when you come out of prison, the first thing you need is somewhere to live and the second thing you need is a job, and to get to those places you need transport. So he suggested that Commercial Credit arrange special leasing for prisoners released from prison. It became a problem because prisoners released from prison tended to get into their cars and drive off into the distance, never to be seen again — so I don’t think it was all that successful. But there were some other terrific ideas. Control Data Business Advisors was one; Control Data business centers — John De Beer picked up on some of those ideas and I worked with him, particularly in South Australia and Western Australia, where again, it was possible to sow ideas and have them take off, because it was a small community. We worked on establishing some of those activities in South Australia and Western Australia. I think either John had misread the support that he was likely to get from the Corporation, or they’d given him an indication that they’d support these initiatives and then backed off on it. But I think he overcommitted on some of these ideas, and then he and I had to rapidly do a back-peddle to explain that we weren’t going to be able to do that after all. Working with him, for me, was quite inspiring because he did have all these ideas.
I don’t know that that was well-seen by other people in the company who were perhaps a bit more traditional — “We sell computer systems — that’s what we do.” Misa: Bill Norris got a lot of credit but also a lot of blame over the years for doing some things far from what was a traditional company, a traditional computer company. Robertson: And some of the things were good ideas; some of them, like that leasing of cars to ex-convicts, maybe weren’t such a good idea. So that was John De Beer. And of course, the other one was Trevor Robinson who I didn’t meet until he came back to Control Data. But because we had a number of things in common — because I was working with a lot of the clients he was working with earlier on — we became quite friendly and just sort of kicked around ideas together, which was quite exciting for me because he was a very senior person in the company and I felt pretty junior. But he seemed to think I was worth talking to at times. Misa: Well, Rob, this has certainly been marvellous and we really appreciate your time and thought, care and attention. Thanks a lot. Robertson: I hope it’s useful. I was sort of working at the coal-face a bit more than some of the people that you’ve been talking to, so I’ve got a picture at a lower level — maybe not such a broad picture. Misa: It’s useful to have pictures at all levels. That’s the key thing.
Misa: My name is Tom Misa. I’m here in Melbourne, Australia, on November 19, 2013. I’m talking to Ron Bird, who worked from 1963 to 1975 for Control Data Australia, with the honor of having Control Data number 0001 as his employee ID. We’ll be focusing mostly on the Control Data years, but Ron, to start with, can you say just a bit about your background and how you became interested in the computing field? Bird: Originally, I was involved in the electrical, radio, television and industrial electronics industry. I came to the conclusion that computing was the future so I started to look around at what I could possibly do to change careers because I couldn’t see any big growth patterns in what I was doing. The electrical engineering company I was working for was a very old company, and terribly conservative. I applied for jobs at both IBM and Hollerith. I don’t know whether it was known as British Tabulating Machine Company; I think that was the name Hollerith was used at the time. I had offers from both companies but the English company Hollerith seemed a lot more friendly and less formal than IBM so I took the job with Hollerith. Misa: HollerithTM. Bird: Yes. Well, [pause] Misa: But it was known as Hollerith here? Bird: Yes. Just at the time, they were merging with Powers Samas and became ICT, so that was happening virtually as I joined the company. Misa: Do you want to say anything about your experiences? Bird: It was a great company, very nice company to work for; paid terrible money. What they did do extremely well was training, and for the first four months I just did full time intensive training both on hardware and software. Misa: Four months of training? Bird: Four months, yes. Half was in the sales office in the city, and half was out at the Box Hill factory where they produced the punch card blanks. Misa: And, again, remind us where the location was? Here in Melbourne or at Sydney? Bird: In Melbourne, at 56B St. Kilda Road and the factory was out on Lexton Road, Box Hill. They imported equipment in from the U.K. and assembled it at the Box Hill facility. They also had a big plant at this facility that produced the blank punch cards from Swedish paper stock that was quite a big operation. Misa: What kinds of responsibilities did you have? Bird: My assignment when I came out of training was on-site engineer at the Commonwealth Bank note printing branch, where they printed the money for Australia. They’re now called the Reserve Bank. There were 120 odd female [workers] that entered the serial numbers of money that came out of circulation and came back to be burned. So this was the way the Commonwealth Bank tracked how much money was in circulation at any given time. And that whole procedure had not changed much since 1920. Misa: So tracking each individual bill? Bird: Yes. The girls had a safe built in to their keypunching machines and they’d take out the returned money, which had eight half-inch holes punched through it, then they’d key in the serial numbers of each note. And when one set was done, it was then verified then it would go down to be burned in furnaces down below. Misa: What were your original responsibilities? Bird: My responsibility was to keep all the equipment going including keypunches, verifiers, sorters, tabulators or listing machines, as IBM liked to called them. Misa: So basically, that whole world of information processing done by cards, the unit record machines. Bird: There were a few valve [vacuum tube] computers around at that time. So when I moved out of the Commonwealth Bank, I took on looking after valve computers. I think it was five in my little area up in the top end of Melbourne and these were called plug programmed computers. Misa: Plug programmed? Bird: Yes. So they weren’t stored program but programmed on plugboards. They were used by the Royal Australian Air Force and quite a number of companies like ICI, the Weather Bureau, Trans Australian Airlines, War Service Homes, etc. Misa: And who was your employer during that time? Bird: ICT. Misa: Not working for the Commonwealth Bank. Bird: No. I was just the engineer keeping the equipment running. Misa: But still for ICT? Bird: Yes. And at about that time I was also looking after the valve computers in Adelaide. I would fly over there on Monday morning and come back Wednesday 7 afternoon in propeller aircraft. That was for most of the big South Australian department stores that would run their payroll on Tuesdays. I moved to Tasmania in 1962 and was involved in the installation of the first solid state ICT machine at Cadbury’s chocolate factory at Claremont Tasmania. Misa: At Cadbury’s? Bird: Yes. That system was called a 1301, and we finished building it on the site because ICT was late on delivering and Cadbury was threatening to go to IBM. So we finished building it on site. Then the software didn’t work properly so we ended up programming all of
Cadbury invoicing in absolute machine code, which was very efficient. [Laughs.] **Misa:** Yes, very quick. Hard to program but quick to run. **Bird:** So what was going to be a one-month’s trip down there ended up being closer to six. **Misa:** And you were in residence in Tasmania? **Bird:** Yes, in Hobart. Never ate chocolate for many years after that because the smell of it all day would just put you . . . **Misa:** Too much. **Bird:** Yes. So, came back from Tasmania and the company wanted me to move to Sydney because that’s where they’d sold three 1301 machines to two cigarette factories [Rothmans and WD & HO Wills] and Colonial Sugar Refining. I said well, I’m not going to move to Sydney because it’s much more expensive to live in Sydney than it was Melbourne at that time and really had no incentive to move. So then again, I started looking for jobs with other computing companies, and those companies were Control Data, General Electric, and English Electric. **Misa:** And they were all having facilities in Melbourne. **Bird:** General Electric and English Electric HOs were located in Sydney but the interviews were done here in Melbourne. John O’Neil had interviewed me for the English Electric job and as it turned out he knew at the time he was going to CDA. General Electric made me a written offer which I still have a copy. David McNab the guy that made the offer also ended up at Control Data. On the strength of the GE offer I resigned from ICT. The guys I worked with at ICT said well, before you accept the GE offer go and talk to Trevor [Robinsonat CDA]. I’d met Trevor a year before in 1962 at Heymanson’s. I went through another interview with Trevor. Trevor said we’ll let you know within in six weeks. I said well, I don’t want to appear as if I’m blackmailing you but I’ve already resigned from ICT on the strength of another offer, which I haven’t accepted yet. He said do you mind me asking who that is? I said General Electric, and I need to know within a week. Trevor said OK we’ll let you know as soon as we can. So I went back to my office. Before I got back there was a phone message from Trevor, and on calling back Trevor made me an offer that I could not refuse. I accepted on the spot as this was a 30 percent salary increase to what ICT were paying me. So I ended up starting with Control Data on the 15th of September 1963. **Misa:** 15 September 1963. Now, John [O’Neil] told me that there was an early group of six or seven; it just happened that you became Control Data Australia number one, because of “Bird” you’re first. So there was a cohort all starting at more or less at the same time. **Bird:** Yes, there were two programmers, two engineers, Trevor and a secretary when I joined. There was also an American called John Barth. **Misa:** John Barth. **Bird:** Yes. And he was sort of the representative from Minneapolis. I don’t think John [O’Neil] would’ve met him because John didn’t come ‘til 1964. By late 1963 there were ten of us, and out of that ten, to the best of my knowledge, there’s only two or three of us left that are still alive. Claire Manual who was Trevor’s secretary, ended up in Personnel Management at CDC in Bloomington [MN headquarters]. Claire came back to Australia and later moved back to her home state of Queensland, and we never heard from her again. She was older than me so she’d be in her eighties by now, I would think. **Misa:** Those early years, let’s go down two paths. One, I’d like to know about your career, your responsibilities; but c —

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him, did he?  **Misa**: Yes, I think so.  **Bird**: And he had an office up on the fifth floor. I must have moved in that building more than five times, because we were continually rearranging office space as we expanded. **Misa**: So on St. Kilda Road is actually the first one is at 598; now my understanding is that also you were at 474 St Kilda Road. **Bird**: Where we had the files in the bathtub, if you like, that was 474. **Misa**: Which is two doors down from where we are at this moment, in 478. **Bird**: Right next door. **Misa**: Can we talk a bit about your career during these early years? **Bird**: Late in 1963, Trevor asked me to temporarily move to Canberra. We had won the Bureau of Census and Statistics contract and we were required to transfer six million punch cards to magnetic tape in readiness for the arrival of the Census 3600 and the 3200. This was done on a 160A system at the Government Printing Office in Kingston ACT. **Misa**: The Control Data models 3600 and 3200. **Bird**: Also, there was a 3600 being delivered to CSIRO Canberra at the same time. Census did not have their computer site ready and so, as I mentioned earlier, I did a bit of site planning. I designed all the electrical; and it was quite a large installation; it eventually ended up with 64 tape units. The customer could not get the Department of Works to get the electrical work done so I ended up bringing a group of electricians up from Melbourne, whom I knew, and we did it ourselves. We saved the cost of having all these people arrive from Minneapolis, standing around while the Federal government Department of Works were twiddling their thumbs because they just couldn’t get their act together. So that was the start of our doing site planning/facilities management for customers. Customers liked to have the hassle taken out of preparing a computer site. When the systems arrived, I was worked with the Site Planning guys that came out from Minneapolis to install the two 3600s and the 3200. When I came back to Melbourne the Engineering Manager said well, you can be our site planning guy because CDA didn’t have anybody with my background being electrical. A lot of computer engineers are uncomfortable working with mains electrical of 110 and 240 volts. I’d attend to site meetings with customers and advise them what was required, and talk to their consulting and air conditioning engineers. **Misa**: That’s a whole line of business that CDA got involved with here that you took charge for. You were designing facilities way beyond CDA, for other computer companies or other people using computers? **Bird**: Not other computer companies, it was primarily for our own customers and we did some in Southeast Asia also, which I’ll come to. So that’s how I came to travel around. I was the most travelled man in Control Data for a time. I would do two or three site meetings with the customers prior to delivery, then when the gear was delivered I’d go and install it and do all the connections, and check out all the electric and fire it up. Then once I did that, I’d hand it over to the onsite engineers and be gone. Another guy called Bob Secombe and I, we were sort of a pair. He was the hardware installation engineer. **Misa**: Can you spell his last name, please? **Bird**: S-E-C-O-M-B-E. Bob and I used to travel around as a pair and I’d fire it all up and then he was the check-out guru, if you like, on the 3000 series. **Misa**: Do you have any stories or memories about doing one of these start-ups? I suppose it was something with a bit of drama about it, turning everything on for the first time? **Bird**: No, in Australia, we never really had any major problems that I can recall. They all went pretty smoothly. The one where we did have the problem was in Thailand where the Thai electricians got two 600 amp cables crossed over, with an active connected to the neutral. There was a failure on the 600 amp breaker, when they threw the big switch resulting in large hole being blown in the electrical cabinet. **Misa**: Where everything was going. **Bird**: We had some interesting installations. One we did in Perth, which Bryan Gardiner was talking to you about. We had to haul the 3200 mainframe up to the sixteenth floor of the T&G building in the downtown area of Perth. We had an inch to spare [on] either side. That was a long, slow job. As well as doing all the site planning and installations, 15 we also arranged for all the local shipping and rigging to get equipment on-site because they were big machines and didn’t always fit through normal doorways, etc. Sometimes you had to take windows or walls out, but this one we had to take the lift (elevator) out. **Misa**: So the machines themselves, the computers, were coming from Minneapolis or wherever they were made in the States at that time, shipped here. You would have the facility, building, the wiring, the cooling, the entire infrastructure, that was your responsibility to organize? **Bird**: Yes. I also looked after the overseas shipping later on. Everything brought in from Minneapolis was flown in by charter aircraft. We only ever shipped one system by sea, and that was one we weren’t supposed to talk about (the 3400 for Department of Defence). And that had many problems. It was packed in a container and we had to unload it on the pavement. The wharf laborers (teamsters) were difficult to deal with and we had several union problems. So overall it made...
economic sense to fly equipment in. The charter aircraft companies we mainly used were Pan American, and Flying Tiger. There was another airline we used and I can’t for the life of me think of the name of it, but it was based in Detroit, and it basically flew auto parts around the U.S. for GM and Ford. They had DC-8s and if they weren’t busy of a weekend, or other times we’d get a very good charter price from them. They’re all mad, these pilots, they’d land here, check the engines, kick the tires, get the equipment unloaded, fuel up, and be on the way back to the US in a matter of a few hours. Flying Tiger guys were the wildest, they were real cowboys. Misa: Especially during those days, it’s whatever. Bird: Flying Tigers used Canadair CL44s for our freight. Misa: . . . 10 or 12,000 miles, it’s a long, long, long flight. Bird: They could get back to Los Angeles when a 707 aircraft was empty on a full load of fuel. On the way here they had to stop at Fiji or Hawaii or both to refuel. Probably one of the funniest stories was in Canberra in 1964 when the first systems came in. The CL44 almost went through the airport fence because they just didn’t have enough runway length. Canberra airport, the capital of Australia was assumed to have a big airport. Wrong. Flying Tigers came tearing down the runway, it was at night, and I think they stopped about that far from the fence. Misa: A foot or so. Bird: They taxied round to the terminal, then they powered down the motors, and so on. The next morning, the crew asked where’s your generator unit? Generating unit? Yes, we need that to start the motors again; you know, ground power units that are used for aircraft like Lockheed Electras use. Canberra didn’t have Electra’s or any other aircraft servicing Canberra that required a ground power unit. We had to get one trucked down from the RAAF Air Force Base in Williamtown NSW. That took a day, and of course, the press got a hold of this because the CL44 has got a swing tail, and the freight comes out after you’ve opened the tail up. Misa: Oh, yes, so you’ve got this quite dramatic view. Bird: So the press were sort of having a field day and said we can lend you a can opener to open this up. [Laughs.] So that was our first experience with Flying Tigers and CL44s. There’s a video, actually, of one landing in Melbourne and opening up the tail, that I sent you the link for, which I took with an 8mm home camera. Misa: I’ll make sure that we get that added to this record. [“Delivery of Monash CDC 3200 system 1964,” http://www.youtube.com/watch?v=vnqCksRXk] Bird: Yes. And there’s also a video of the computer room at the Bureau of Census, in the early days; the Control Data 160-A. So that was the shipping side of it. So we had quite a business. The airlines loved us, Pan Am and Flying Tigers were the main companies we used. I think it was 120,000 pounds in freight we could load in to a Boeing 707. CL44s were used extensively in the Vietnam war and I think first one we had chartered in 1964, went down in Vietnam. I could recognize the registration number, but not absolutely sure. CL44s were made under license in Canada by Canadair from the British company that made the Britannia, so the CL44 was the freighter version of the Britannia. Interesting little bit of aircraft history. Misa: So in terms of your job, what do you think was the most significant challenge of actually pulling together these many, many different pieces? To get one computer up and running takes a whole bunch of work and you were at the center of things. Bird: I would physically connect the various modules up, which was couple of days work with Hubble connectors for the peripheral equipment. You know what a Hubble connector is? Misa: No, tell me. Bird: It’s a 20 amp twist-lock connector that is used in the USA. It’s not used in this country or Asia. We needed special cable here and in Asia because CDC equipment used five-conductor cable. Four is standard here, not five; neutral, three phases and ground. So we had to get the cable specially made because you just couldn’t buy it off the shelf here. By and large I guess the main thing was motivating the consulting engineers to do what you wanted them to do because they had their own ideas about how they thought it should be done, but in the end, most of the people we worked with were very good. Misa: Consulting engineers would’ve been hired by the client, by the customer? Bird: Yes, they probably could’ve had one that did work on their buildings, and so on. And it maybe that they did both electrical and air conditioning, or we might’ve used a consulting engineers on electrical; VIC TAB did; they had separate people on the electric 19 and air conditioning but that’s another story. That’s why I hired Glynn Staggard, who you met Friday [at the monthly CDA lunch]. I could do all the electric and spec out the air conditioning, but what I couldn’t do was design the air conditioning. He was a mechanical engineer that worked for the federal government in the Department of Works, and was an experienced air conditioning design engineer. Glynn picked up on the electrical side quickly. If you came into Tullarmarine Airport in Melbourne, he designed a lot of the infrastructure at the airport; that’s what he was doing when I hired him. Misa: That’s where I arrived. Okay. Bird: So then that department, the site planning group grew...
quite fast. We hired draftsmen and then we had another electrical guy, and another air conditioning guy, so it grew fairly quickly. **Misa:** During that site planning part, were you based in Melbourne or Canberra? **Bird:** In Melbourne. The reason that I did the Site Planning in Canberra was because I was there looking after the 160A system that was converting punch cards to magnetic tape for Census. So the Engineering Manager said you can take on the Site Planning role when you come back to Melbourne. I said fine, that’s cool, I don’t mind. So I really didn’t get to work as a Customer Engineer on the 3000 series. I knew the 160-A hardware back to front and could program it in absolute machine code quicker than anybody could program it in assembler. Beautifully designed Seymour Cray machine. **Misa:** 160-A. **Bird:** A 160-A was the first CDC system that was sold in Australia. It was to the Australian Post Office, or the Postmaster General’s Department in Melbourne. **Misa:** That’s PMG, some people refer to it? **Bird:** People refer to it as the Australian Post Office, but at that time telephones and the Post Office was the same organization and split off a few years later [Telecom and Australia Post]. **Misa:** That was the first system that Control Data sold. **Bird:** Heymanson sold it. It was installed at the PMG Research Laboratories [at] 10 Lonsdale Street Melbourne. I had been looking after that system before I went to Canberra in 1963. **Misa:** I’m not sure where the dividing line is, but then talking about your work for Australian Systems. **Bird:** That didn’t come until 1969. 21 **Misa:** Would it be a good time to move to that then now? **Bird:** No, there are a few things we probably need to cover. During that time, I did a fair bit of work in Southeast Asia and for Control Data Far East. The customers we were involved with were RMK-BRJ [Raymond International, Morrison, Knutson - Brown and Root and J.A. Jones construction], a consortium of building companies that were doing construction for the U.S. Navy in Vietnam. They were also known as “The Vietnam Builders.” Did a trip into Vietnam at the height of the war in 1966. Another Vietnam construction consortium was located in Silom Road Bangkok and also had a CDC 3000 system. This construction consortium was known as DZK [Dillingham Zachary Kaiser]. **Misa:** In Thailand? **Bird:** In Bangkok. Southeast Asia, came under the jurisdiction of Control Data Australia. But the other ones I worked on were for Control Data Far East, which included Korean Institute of Science and Technology, in South Korea, known as KIST. That was an American Aid hands-across-the-sea-type deal as was Tata Institute in Bombay. Other CDFE projects included Commission for Taxation Reform in Taiwan. **Misa:** The Commission for Taxation Reform? **Bird:** Yes, and that one we had to get the oxy torches out and cut out steel stair rails to get the equipment on site. **Misa:** Was that a government agency? **Bird:** It was part of the Taiwanese government, and was sponsored by Madame Chiang Kai Shek, who was also a shareholder of Control Data Corp. **Misa:** Okay, sort of an interesting connection to the government of Taiwan. **Bird:** The other one in Taiwan was Chung-Shan Institute of Science and Technology, which everybody in Minneapolis thought was a university, but it was a government military research facility and we believed they were trying to build a bomb. They had a nuclear reactor from Siemens in the building next door. Our agent in Taiwan was David Huan, spelled H-U-A-N, and he was a nephew of Chiang Kai Shek. He was very well-to-do, and he was into exporting toys, asparagus, electronics and lots of other Taiwanese goods. Unbelievable character. There’s one I’ve missed there; the other one was in South Korea; There is one other that I missed which was KCC Korean Computer Centre. And that was a sixteenth century bath house we converted into a computer room for a CDC 3200 system in Seoul. **Misa:** A sixteenth century bath house. **Bird:** Yes. You couldn’t get electrical and air conditioning equipment in South Korea at that time, so you had to bring it in from Japan or from the US. The Koreans did not want Japanese gear so we mostly used US made equipment. There was still a lot of ill feeling towards the Japanese. So we would buy it off Carrier or some other US company and ship it in for them. All electrical gear I would buy in Minneapolis — Square D stuff — and cable as you couldn’t get suitable cable in South Korea. I remember we ran short and had to buy some at the Sunday markets that had probably been stolen from the US Military. The other thing I did in Japan that was interesting was Ishihawa Harima Heavy Industries, which were shipbuilders. That was a very interesting project. It was a 3300 with a Cad Cam on it; with big color screens, which had not been seen before; very, very new stuff. So when it arrived in Japan, the installation location turned out to be in a Toshiba computer manufacturing town called Ome. This was because Toshiba owned a good part of this shipbuilding company. Nobody spoke reasonable English in the town. So I had to get an interpreter up from the CDC Tokyo office. When you get down to technical stuff, it was difficult because to get the site ready we had to do a bit of improvisation because the Japanese electrical system’s nothing like the U.S. So I had to get them to build a
transformer that would give me the 5 wire star configuration and correct voltages I needed. I spent three days drawing diagrams for the Toshiba engineers, and I had to convince them why I needed it before they’d do it. And once the penny dropped — and it took a long while, then they went off and produced this transformer in a couple of days. It was a big transformer; about 100 KVA not little. We got that all fired up and I ended being there for six weeks. Rather than travel out from Tokyo which was a 2 hour plus trip, where you had to get on the government railroad, and then a little private railroad. Ome is within sight of Mt. Fuji a beautiful place. So I moved into the local Japanese inn where the visiting company people stayed and that was an interesting experience with my room having a view of Mr. Fuji. The only thing I couldn’t handle was rice for breakfast. [Laughs.] But fortunately, there was a U.S. military base, not far away, and I would go there in a taxi and have food like toast and eggs and bacon. Misa: They could cook breakfast. Bird: Yes. I stayed there until the software man came out from the US and installed the CAD software. The CDFE Japanese customer engineer (Yamada San) whose English was not great but he was an excellent engineer so we got it all going. Misa: So, you’re basically, in some ways — correct me if I’m wrong — you’d get an assignment to install at this Japanese shipbuilder, and you’re flown in and needing essentially to rebuild, or create a slice of Australia or the United States in the middle of Korea, or Taiwan, or Japan, and to make sure that this American machine somehow would be interfacing .... Bird: Yes, because all the voltages and frequencies would be different. Glynn [Staggard] took over for me when I went into project management within ASD. Glynn took over all Site Planning as I had enough of the traveling because of all the time spent sitting on airplanes and in hotel rooms. I’d get back from Southeast Asia or the U.S. and be off to Perth, or New Zealand, or wherever. Misa: You wouldn’t have time here. Bird: No. I think there was one year I was three months in Melbourne, the rest I was traveling. But Glynn seemed to thrive on it. Misa: I’m sorry, that’s Glynn [pause] Bird: Glynn. G-L-Y-N-N Staggard. And Mike Spark was the salesman who sold those services. Misa: So now is it a good time to switch to Australian Systems? Bird: Yes, I’m just trying to think of anything else in the site planning area of interest. Misa: Sounds like a huge job. Bird: It didn’t seem so at the time; it was a lot of work, but I just loved what I did. When you finish an installation it was a great feeling of satisfaction when you went and pressed that big green button and the whole system fired up. I knew just trying to think of anything else in the site planning area of interest. Misa: Of course. Bird: Yes, and make sure the air conditioning’s holding because they’re very critical on temperature, of course. Misa: That’s right. Many places in Asia, the temperatures could be very hot. Bird: Well, you get there and somebody’s stolen the thermostat. You have a young boy standing there and he just turned it off and on to maintain the temperature. [Laughs.] So we did get another temperature thermostat for the air conditioning in Saigon. Misa: So a human thermostat, you’re saying. Bird: We had a few people in Vietnam, out of Australia. There was probably at any given time, half a dozen there. Control Data had its own accommodation, which was a walled villa that had its own Mama-san, and maids to look after the team, cook the meals, and so on. Misa: And where in Vietnam was it? Bird: It was near Cholon. Accommodation was provided for the programmers and engineers including CDA personnel in a secure walled villa at 51A Phan Ton, Dakao Saigon. But as well as the Australians, there were quite a few Americans there from Control Data Corp. It was a U.S. Navy project, and the guys from these construction companies told us that the company was under penalties and estimated [that] half of their workforce, which was a couple of thousand, were Viet Cong by night. And because they were on penalties, they paid them off to leave their sites alone, that’s what they told us. Misa: Amazing times. Bird: Whole different world. It was very interesting and a little dangerous but the food was fantastic. Misa: Glynn took over those responsibilities from you. Bird: Glynn mainly did projects in Japan, South Korea, Taiwan Thailand and of course Australia and NZ. Now, before I get off that, the Tokyo office was interesting in that the Dick Rennie CEO of CDFE, who was an ex Sabre fighter pilot in the Korean War; interesting guy. The sales manager Yong Kim had worked for Seymour Cray in Chippewa Falls. You ever heard of him? Misa: Yong Kim, no. Bird: He was South Korean; absolutely brilliant guy. He spoke faultless Mandarin Chinese, Japanese and, of course, Korean and English. I was told he ended up as CEO of Epson printers in the US. Misa: Really, Epson. Bird: Yes. He was married to an American girl; Dick was married to a
Filipino girl; the Australian support manager, Bill Bryant, who’s back in Perth now, was married to a niece or a relation of Chiang Kai Shek. We’d go out to dinner at a hotel and I’d probably be partnered with one of the Japanese girls from the office. The waiters would wonder who’s with who! Control Data Far East had a very busy business and a very social life. In 1969, before I took on the project management role in ASD, I was going to move with my family to CDFE Japan. Got a fair way down the track. I’d been to the U.S. and negotiated conditions that I’d go there on. Control Data Far East had enough work to justify having me in Tokyo. And then my marriage broke up and I ended up staying here, so that was that. **Misa:** And you would’ve been located in Tokyo? **Bird:** Yes. Then I had a couple of other offers from within Control Data Corp, one was in South Africa, and I looked at that; the other one was in Brussels; and the one I was really interested in was in Rio. And as you may have known, Control Data took over Telex in Brazil. So they offered me a job down there and they said well, come down, have a look, and tell us what you think of the place. Unfortunately, when the time came to go, my divorce came up in court and there was no way I wasn’t going to be in that courtroom, and then the whole Rio thing fell through. So it wasn’t going to be a job anyway, as it turned out, but them’s the breaks. **Misa:** So that was about 1969 then? **Bird:** That was 1969, yes. So, what I ended up doing in my first major project was taking on the Royal Thai Turf Club and also the RAAF message switch. For some reason there was no restriction on talking about the RAAF project, even though it had very high security. **Misa:** So those were two of the early [pause] **Bird:** Yes, the RAAF Darwin system was running back to back 1700s. I went up to Darwin and stayed in the officer’s quarters on the airport. At that time, Darwin Airport was operated by the RAAF, so it’s virtually a military base. U.S. people there now, as well. **Misa:** And was there a shift in your responsibilities when you took on project management? **Bird:** Yes, well, because I was on site in Bangkok I did site the planning, for this project. This was a A$1,500,000 project, which was a 3100 and a 3300 for the Royal [Thai] Turf Club. We wrote the software here in Melbourne and checked it out as far as we could go. The software was a variation of the Victoria TAB software, except it was on course, not off course and was called COLT. We loved these acronyms with horsey names derived from Computerized OnLine Totalisator. **Misa:** C-O-L-T, right? **Bird:** Yes. The Thai people were good to work with and it was a great project. So on Christmas Day 1970, we travelled to Bangkok in a chartered 707 from Royal Caledonia Airlines, which is the Scottish airline. This aircraft had brought a load of Scottish immigrants to Australia. They packed all the seats up in front, and we loaded up all the computer equipment in the remaining space. We had six seats down the back for the project team including two Thai engineers who had been down to Melbourne on training. We sat down in the back and flew to Kuala Lumpur and then on to Bangkok. There’s photos of that on the EX CDA website. So, we started installation on Boxing Day 1971. After hardware and software installation we did major volume testing, because it had to run reliably. **Misa:** Again, this is this real time betting system for people, and a lot of money rides on it. **Bird:** Right. And my story about this is on the [CDA] website, but I’ll briefly describe what happened. We would get up to 500 girls of a night, to really hammer the ticket selling machines, which were made by ATM Sydney [Automatic Totalisater Machines]. These were heavy duty machines that you could hit with a sledge hammer and you wouldn’t break them. We tested them every which way of software and combination of all the different bet types. The Royal Thai Turf Club’s not where foreigners go, it is mainly local Thai people that go there. It’s grand opening day. I’m in the royal box with the RTC committee and the King of Thailand. I’m sitting up there nervous as hell because I’m thinking please let it go well. The big infield indicator in the middle of the race lights up. It’s the first day it’d been used. The first race was a forecast race and only had three runners in it. But odds were coming up for non-existent betting combinations and I’m thinking oh great, something is wrong! Somchai, the Racing Club Secretary is sitting beside me, and I said you’ve got to make an announcement. He said, don’t panic, it’ll be alright. So I didn’t know what to do because we’re on a really stiff penalty of A$10,000 every time the system failed. So what’ll I do?! There was this big six-foot foreign devil (me) jumps the fence, through all the crowd in the members stand, over the fence, across the race track and into the infield where there was a concrete blockhouse. Pulled the plugs out of the indicator lights. The non-existent forecast combination suddenly disappeared! People were betting money on it because it was showing 999 to 1, it didn’t exist but punters were putting money on because the odds were so high. I said to the secretary you’ve got to make an announcement and give them their money back. He said we’ll wait and see if they complain. Nobody complained, and they did not return any money. Anyhow, it was a very
simple problem to fix and we did not have to pay a $10k penalty. It was one very unlikely combination we hadn’t tested. So we fixed it the very next day. From that day on it ran for a year, never missed a day. During the week it was used as a data center for the United Nations Mekong Delta Project, and universities got time on it for free, but while it was under royal patronage, it still required some injection of money from the RTC stakeholders who were mostly multimillionaires. **Misa:** So this, the Totalisator would be going only on the weekend during the betting time? **Bird:** Only on Sundays. **Misa:** Only on Sundays. So the other six days...? **Bird:** The other six days it was used as a service bureau or data center. Whilst we were installing the system there were many people to deal with; they didn’t know what they had, they really didn’t. I’d come up with a change in the specification that I needed to get signed, and they’d look and say, is it alright, Ron? You sure it’ll be alright? Yup. And they’d sign the specification changes on trust. I wouldn’t have liked to get on the wrong side of them, as you may know the Thais can be unpredictable if they perceive someone has done the wrong thing. **Misa:** So you wanted to be cautious. **Bird:** Yes, but by and large, the Thai people were great to work with, as long as you did the right thing by them. It was six months, on and off, I spent there. I came back to Melbourne for one thing and another during the project. It was one of my most enjoyable projects. **Misa:** You had a lot of contact with Australia, of course, also with Thailand, Taiwan, Japan, and it sounds like much more limited contact with Control Data back in Minneapolis. **Bird:** No, with the site planning, I visited Minneapolis probably once every year or so. Jim Liska ran the site planning group in Minneapolis, in Arden Hills, who I think may have died. Lovely guy. **Misa:** Jim Liska? **Bird:** L-I-S-K-A. I would go there and we’d compare notes of what we were doing and what was the latest thing. But the other thing I did while I was over there because I couldn’t keep my hands out of the computer side of it, I did some training down at Industrial Products Division down on Penn Avenue. And that was for the VIC TAB Multiplexers, called 3276. These were to be the front end to be used at the VIC TAB site. **Misa:** This is Penn Avenue in Minneapolis. **Bird:** And at that time, we also brought back one unit. Because we were having the first Australian computer conference in Canberra in 1966, we wanted to demonstrate some of this communications gear. We also had the Rabinow Optical Character Reader. Rabinow had just been taken over by CDC. We were the first ones to ever show an optical character reader working in Australia. Bill Polglaze who was with me looked after the OCR. I think the claim to fame with these multiplexers from Industrial Products Division, was to send data down the coax cable on the east coast of Australia from Melbourne via Brisbane to Canberra. We had two 160A computers talking to each other. In 1966, that was a bit of a breakthrough and I don’t believe anybody else had ever done it. It was a 160-A in Canberra connected to the160-A, in Melbourne, at the PMG research labs. So data was sent up the east coast to Brisbane from Melbourne and back to Canberra through the coax cable. **Misa:** We don’t remember it well enough but there were all kinds of proprietary computer network schemes going on in the 1960s. ARPANET became the famous one, but there were many, many different networks. **Bird:** Yes. This was just straight computer to computer that nobody had really seen. We couldn’t get any modems to work properly in this country and the guy that got them for me was an Australian. Bruce Bamborough (who later started Data 100 in Minneapolis) got hold of them for me and sent them out to Australia. These were Rixon vestigial sideband modems, which were a very unusual modem because they were amplitude modulated using single-side band. 35 **Misa:** Single-side band. **Bird:** Yes, vestigial sideband, that’s just a nice way of saying single-side band. And we actually got them to run at 2400 bps, which was unheard of in those days, Telecom’s copper lines weren’t that great at that time. So that was a bit of a breakthrough. We had a very successful computer conference. Control Data had great exposure to the general computer community. **Misa:** Yes, because Control Data was very strong with the government business, with scientific computing; but CDA as well as Control Data back home tended to come a little bit later to the commercial applications. **Bird:** Yes, too late. Like Livermore, and places like that, got very big and even Boeing who had a lot of CDC gear. I visited Boeing Seattle in 1969 on the way to Minneapolis from Japan. One of my colleagues from University of South Australia was working there so I got the grand tour of the Boeing plant that had just started producing 747s. **Misa:** Would you like to say anything about the climate of working at Control Data Australia; the culture, the people? **Bird:** The culture was excellent. I’ve never seen another company that had the sort of culture of Control Data. Everybody worked together. I mean, now and then you get a little bit of backbiting, but you get that at every company. By and large, people worked as a team group, and we got things done; we made things happen; and this
was all due to the leadership of Trevor Robinson and his example of how to operate and how to act just went right down through the company. And I attribute most of that success to that one man, I really do. **Misa:** So how did he set the signal, or set the tone in such a powerful way? **Bird:** That’s a hard one to answer, probably, but Trevor was a great promoter. He’d promise something and then go a little bit more, which is a known advantage, of course. But it’s very true and most people there took his advice and did that. People worked together and the company was very generous. We worked hard, and long hours. But we also played hard and the company was very good from a social perspective. We’d have Friday night drinks, wives and partners were always included. We had a very active social club, which my wife Barbara was the secretary of in the early 1970s. We had some marvellous functions and they were always well attended. Those functions were always featured in Between Ourselves newsletters. But yes everybody got on. Engineers always blamed the software people if something went wrong; and the software people blamed the engineers. [Laughs.] It was all light hearted. But just the team effort when putting the CARBINE system together at TAB was something to behold. That was no mean feat, believe me. And some of the people there were just so talented and it was incredible. I have worked for a lot of companies, and I’ve never seen so much talent in one place. I don’t believe any other company came close at that time as to the pool of talented and experienced people at CDA. You saw how many people were there on the monthly Friday lunch that still turn up and mix with each other after 40 years. What does that tell you? **Misa:** Well, it says something and I’d appreciate your reflections on what you think it might mean. **Bird:** Even outside of our monthly lunches and reunions there’s a lot of mixing of groups outside of that. As an example Glynn Staggard and I mix socially on a very regular basis along with one of the shipping guys. **Misa:** So there’s really quite a community. **Bird:** Yes, there’s probably other groups that I may not necessarily be aware of, both in Melbourne and interstate, I know there’s a lot of interaction between people depending where you live. **Misa:** I wanted to make sure we had some time to talk about Data 100, is it a good time to move to that? **Bird:** Yes. **Misa:** You moved there in 1975. **Bird:** Yes, I was approached to take up the position of Australian Support Manager. Data 100 wanted to set up in Melbourne, and Bill Bryant, who’d been the support manager at Control Data Far East had moved to Memorex in Santa Clara. **Misa:** In California? **Bird:** Yes. And then Memorex wasn’t going anywhere in the computer area, it went back to making media, I think, and got out of the computer business, per se. Bill joined Data 100 in the US and moved back to Melbourne, hoping to be the CEO of Data 100 Australia. He sold the first Dat100 batch terminal system to Melbourne University in 1975. However, there had been arrangements made in Minneapolis that Jess Barber, who had been with Trevor Robinson at Data 100 Europe, was going to run Australia, or as it became known Data 100 Western Pacific. Jess Barber came out and set up in the office just down the road from here at 464 St Kilda Road, with Bob Secombe as the sales manager. They approached me to come on board as support manager. So three of us ex CDC engineers were sitting in the office with one machine out in the field; and we were going to build a business. And it went like you wouldn’t believe. We got into Telecom (Telstra) because most of us knew people in Telecom. I think we ended up with about 15 systems there. The revenue from the maintenance paid the wages and the rent. Then we moved into New Zealand and set up agencies in Singapore, Malaysia, and Thailand. We were also doing support for Data 100 Far East, which was a separate entity. We did a large project for the Korean CIA. South Korean CIA had undertaken a program to have 39 everybody issued with an ID card. And we set up this in an old tobacco factory in Seoul, and we had over 800 screens. They ran three shifts a day. People’s details were entered in the Data 100 data entry systems. One of the tasks I had was to have Korean keyboards made with the Korean Hangul character set. And we did the same in Thailand. We modified a band printer that would print Thai. The band had to go around four times to be able to print every Thai character. So we did a bit for the Malaysian Bureau of Statistics in Borneo. We had two systems on the island of Borneo in Sandakan and Koto Kinabalu and a few systems in Malaysian Telekom also. **Misa:** Malaysian Telstra. **Bird:** Yes. And Singapore Telecom, which were two separate entities. Data 100 Western Pacific’s customers were predominately blue chip organizations, such as banks, oil companies, insurance, mining companies, etc. Most of the equipment we rented rather than sell outright, which we encouraged. Telecom always insisted on buying outright. We had this huge rental portfolio, and sold part of it off. [Laughs.] We knew there was a finite time we could keep doing this because PCs were going to take over data entry, and batch terminals were already on the way out. Unfortunately, Data 100 had done little research or developed any
new products. So the word went out, to “move iron” to get money in, and fatten the company up to make it look attractive to sell. McDonnell Douglas and Northern Telecom became the two bidders that came down to the wire to buy the company. Northern Telecom, decided they needed a computer company like AT&T had bought NCR. And so Northern Telecom won the battle in 1978, and from 40 there it was all downhill because it was NTSC [Northern Telecom Systems Corporation] which we always said stood for Never Trust Smiling Canadians. That’s not fair, though. They were nice people but they didn’t know what to do with a computer company. They’d had also bought a little company called Sycor in Ann Arbor, Michigan. It was a “me too” product, being a UNIX box that everybody else had so there was nothing that separated you from everybody else. I realized that the company was not going anywhere, so I bailed out in 1985 after 10 years with the company. And as it turned out, I was right with my forecast. And so I went off and had a mid-life crisis and did all sorts of really weird things for five years. **Misa:** What did you do? **Bird:** I was the General Manager of Australian Pacific Gem Company, and we sold opal and other precious gem stones into the US, Japan, and Germany. We had our smaller opal stones cut in North Korea. **Misa:** North Korea, not South Korea. **Bird:** North Korea, because we didn’t lose anything that way. If we got it cut in the traditional places such as Hong Kong or Sri Lanka, you could expect to lose about 20 to 40 percent in shrinkage. North Koreans didn’t know the concept of theft so we had the maximum yield possible. One of our partners was a gemologist and took cutting machines to North Korea and trained people allocated to us by the government how to cut opal. Because the North Korean government wanted something back in return we had to buy some goods from them. We bought sterling silver jewellery, which our wives all told us was horrible [I still have most of it]. Also crystal glassware that was indistinguishable from Czechoslovakian bohemian crystal. We also bought a container load of beer glasses and another container of “bridge nails” which we sold at a good profit. **Misa:** Right. **Bird:** A lot of “bohemian” crystal was actually made in North Korea, as was most jewellery such as wedding and engagement rings for the Eastern bloc countries at that time. **Misa:** Leaded glass. **Bird:** Yes. And the other thing we used to buy off them to keep the balance of trade was brown tinged diamonds that came from Madagascar. These were traded outside of the DeBeers cartel. We couldn’t get enough to sell. So in the end, we made quite a lot of money selling these diamonds in the US. Our only Japanese customer was a ring maker and he came to the Mitsui Bank here in Melbourne and he’d pick out the oval black based opal stones he wanted and arrange a bank check for up to A$80,000, hop on the plane and go back home again. No shipping, no insurance, it was fantastic. Our US agent was a diamond dealer based in Utah, he was a Mormon and had eight kids. He did a runner on us and took us for US$10,000. Never tracked him down. **Misa:** Taking a runner, that’s a way of saying he disappeared. **Bird:** Yes. And our German sales lady, whose name was Hiltrud Vogel, you know what Vogel is in German? **Misa:** Bird. **Bird:** Bird, yes. Pure coincidence. And Hiltrud was a real tough lady. She sold almost A$500,000 worth of gems. We would give her goods on consignment. She carried a zapper with her; and carried all the stock around in a large briefcase. She only sold to the man she liked. She was a Mormon and had eight kids. She would just buy the gems from you and then decide she couldn’t do it anymore and packed up all the stuff and sent it back without checking with me. That created a huge problem for me with Australian customs. I had no end of problems fighting with them because it was about $30,000 worth of stock they sent back. Anyway, I eventually got out of paying the 33 percent duty after a drawn out battle with customs. **Misa:** You pay on the stuff going out, you didn’t want it coming back. **Bird:** Yes, they carried it out, there’s no record of it ever going out but where else do you get opal from? There’s only one other place and that’s Mexico. Hiltrud came out to Australia and had hand carried the stock back to Germany. My two partners and I had mining leases in Coober Pedy South Australia. Companies can’t hold mining leases for mining opal. The mines are just holes down in the ground, and you go down in a bosun’s chair. They’re all mad out there, they really are. Miners make their own explosives. They make it up in newspaper tapers with fertilizer and dies. The mines are just holes down in the ground, and you go down in a bosun’s chair. They’re all mad out there, they really are. Miners make their own explosives. They make it up in newspaper tapers with fertilizer and dies.
black based opal in an open cut. It’s an aboriginal reservation so you have to get permits to go out there. That’s what our Japanese customer bought. He would never question the money; he didn’t speak English; he’d just pick the stones he wanted and leave a couple. Then get the bank to write us out a check. It was lovely. [Laughs.] So the other things we did was buy second hand Harley Davidson motorbikes from California. This was a disaster as the dealer turned out to be a criminal. Four of us bought the freehold of a special condo retirement village, which almost sent us bankrupt. Wrong time, wrong place; 17 percent interest money. We bought it for A$2,500,000 and in the end the bank sold it off for A$1,600,000 but we managed to survive. Had a mobile telephone company, called Celcom Communications, and what we did, in the very early days was design and build a solid state answering machine and a hands-free, which none of the phones here in 1985 had. We had it manufactured at IBM’s production line in northern Victoria Australia. They had the best facilities to do what we needed. We made money out of that business. We sold it off to one of Australia’s largest parking companies Wilson Parking. If you did development research at that time in Australia, you got large tax breaks. That’s the only reason they bought it. So we sold that off because we knew we couldn’t compete with the Motorolas, the NECs, and so on. We made a good profit out of it. So after having got all the mid life crisis out of my system, I went back to the computer industry and went to work for Digital Equipment. They had advertised for a senior trouble-shooter. I applied for it and got the position. Digital had dug themselves into a huge hole with Telecom (Telstra) and they were looking for somebody to dig them out. **Misa:** Senior trouble-shooter, that was the job description. **Bird:** Yes, I was interviewed here in Melbourne. The job was actually from out of DEC Sydney and out of 40 people, I got the job. I’d been out of the industry for five years, which is a long time in the IT industry. So they got me down at Telecom and it was just a mess, an absolute mess, completely out of control. So to make a long story short, after two years there, I managed to turn it around and ended up making a quarter of a million dollars profit. It was one of the first customer support Help Desk systems in Australia, which was written from the ground up in Progress 5GL. **Misa:** Digital had somehow gotten wrong footed. **Bird:** They were out of their area of expertise. They had never ever done projects like that before. Digital’s strengths was to sell to universities, etc. and somehow they’d got into this and didn’t know what they were getting into. But they sort of moved on. We ended up setting up an outsourcing department, which I was heavily involved with. There were some very big projects there. Queensland Electricity Commission was a $28 million project where I spent three months in Brisbane; another one for the Victorian government was about the same money; and then they were taken over by Compaq then Hewlett Packard took over Compaq. Didn’t like Hewlett Packard at all. **Misa:** The consolidation. **Bird:** Yes, but Hewlett Packard were a bunch of snotties, they thought they knew all about outsourcing, and they were rank amateurs and were losing customers like you wouldn’t believe. And in the end, I got very, very ill and I said I don’t think I can or want to work here anymore. I was doing a big project for Northern Territory government. We’d done one, which was $28 million, then they were going to do another one, which would be about the same sort of money, and I said I can’t travel anymore. And they stopped all of the project development in Sydney and moved everybody down to Melbourne because I was here. And then I got so sick I couldn’t work, and then they moved everybody to Darwin. **Misa:** Back to the north. **Bird:** Yes. Originally when I got sick, the project team was in Sydney. I spent half my life in Sydney, going back and forwards, up on Monday back Friday. But I’m getting too old for this. I had some serious heart problems and few other problems, and said it’s time to give notice. That was in 2002. But, no, the computer industry has been very kind to me. I enjoyed every bit of it. The last few years not so much. Hewlett Packard used to have a reputation as one of the finest companies to work for. I just didn’t like them. I thought they treated their staff badly and they were ruthless and rude. Maybe it’s because we’d come from Compaq. Telstra**Error! Bookmark not defined.** here in Australia, did not buy anything or have anything to do with Hewlett Packard at that time so I was told by a senior Telstra Manager. **Misa:** HP. Too bad. **Bird:** Don’t know why but they don’t. **Misa:** HP has got a number of puzzles these days, so we’ll leave that for another conversation. **Bird:** What used to amuse me, a lot of the people that worked at HP would go down to the local Chinese computer shop to buy their personal computers. We’d get 36 percent discount with HP and still most HP staff wouldn’t buy them. **Misa:** Is there anything else that we should talk about?
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Bird: What else. We didn’t really touch on New Zealand but I’m sure Marcel will cover New Zealand. I didn’t do an awful lot there with Control Data other than some early meetings with the NZ TAB people. I had some responsibility as the NZ TAB project manager reported to me in the early days of that project. But at Data 100, I did because we had quite a good operation in New Zealand.  

Misa: Well great. Thank you so much for your time this afternoon.

Bird: I’m sure I’ll think of other things, but didn’t think of anything else you should know.

Misa: I think we did a pretty good job of going through the parts that we wanted.

Bird: I tend to ramble on a bit. [Laughs.]

Misa: Thanks for your stories.
After extracting the Control Data Australia page, I decided to trawl the entire set of Oral Histories (over 1,350) that are on the CBI site. The following may be of interest - they are just the tip of the iceberg and represent those of a general nature that caught my eye. Anyone with either a specific background or pursuit should check the complete Index of the CBI site.

There are 78 entries specific to Control Data Corporation - I simply didn't have the time to go through this list!

Transcripts

Cray

Oral history interview with Margaret Loftus http://conservancy.umn.edu/handle/11299/107444

After briefly describing her educational background, Loftus discusses her work software at Control Data Corporation in both their Palo Alto, California and Arden Hills, Minnesota facilities. She describes her move from applications software to operating systems and recalls the differences in the management style and climate for women in Palo Alto and Arden Hills. Loftus discusses her advancement at Control Data and her decision to join Cray Research after returning from a position in Australia. She describes the difficulty of developing software with the prevalent anti-software attitude and the challenges associated with assembling a software staff. Loftus concludes the interview with a description of Loftus Brown-Wescott and this firm's involvement with local start up high technology firms.

PLATO

Oral history interview with Donald L. Bitzer http://conservancy.umn.edu/handle/11299/107121

Bitzer discusses his relationship with Control Data Corporation (CDC) during the development of PLATO, a computer-assisted instruction system. He describes the interest in PLATO of Harold Brooks, a CDC salesman and his help in procuring a 1604 computer for Bitzer's use. Bitzer recalls the commercialization of PLATO by CDC and his disagreements with CDC over marketing strategy and the creation of courseware for PLATO. (There are around a dozen entries under PLATO itself - a handful of these are from Tom's Melbourne interviews)

United Kingdom Computing History

Oral history interview with Richard C. Lloyd http://conservancy.umn.edu/handle/11299/107440

Lloyd, managing director of the British insurance company SAMLAS (formerly Mutual), outlines the company's computerization beginning with the Powers-Samas Perseus installed in 1959. He discusses their later machines, including the Ferranti Orion 2 in 1966 and the 2900 in 1976. For each computer Lloyd describes notable hardware and software features, comments on its operation, and points to the company's increased information processing ability.

Oral history interview with Arthur L. C. Humphreys http://conservancy.umn.edu/handle/11299/107365

Humphreys, a former managing director of International Computers, Limited (ICL), reviews the history of the British computer industry. Topics include: the termination in 1949 of the trade agreement between IBM and the British Tabulating Machine Company, the merger in 1959 of British Tabulating and the Powers Samas Company into International Computers and Tabulators, Ltd. (ICT), and the merger in 1968 of English Electric Computers Limited and ICT into ICL.

Not aware of the name, Anyone recall her in Australia?
Oral history interview with James W. Birkenstock and Thomas J. Watson, Jr.  
http://conservancy.umn.edu/handle/11299/107119

Watson and Birkenstock discuss the circumstances surrounding the decision reached by Thomas J. Watson, Sr., and Raleigh Phillips, chairman of British Tabulating Machines Company (BTM), to end the original licensing agreement between International Business Machines (IBM), BTM, and International Computers, Ltd. during World War II and after 1949. The interview covers the original agreement made in the early 1900s by Herman Hollerith, the relationship between IBM and BTM during World War II and after 1949, and the IBM license agreements with Cyril Holland-Martin and Gerhard Dirks.

Oral history interview with John M. M. Pinkerton  
http://conservancy.umn.edu/handle/11299/107600

Pinkerton begins by discussing his education and wartime work in radar technology in England. He then describes his movement into the computer industry after World War II and his work on the LEO I and LEO II computers. In this context he discusses the British computer firms J. Lyons and Company, Leo Computers, English Electric Co., and International Computers Ltd.

Control Data Corporation

Oral history interview with Robert M. Price  
http://conservancy.umn.edu/handle/11299/169866

(This is the complete transcripts of the interviews Tom Misa had with Bob Price which culminated in Building the Control Data Legacy: The Career of Robert M. Price. The transcript is some 420 pages).

Oral history interview with Frank C Mullaney  
http://conservancy.umn.edu/handle/11299/107538

Although little known in terms of CDA history, Frank Mullaney was one of the founders of CDC and is significant locally as he visited Australia and was involved with Trevor Robinson in the negotiations that saw E. L. Heymanson appointed as agents for the Corporation as from 1 January, 1962. Most of the interview discusses Mullaney’s career through the late 1940s and early 50’s, but towards the end discusses what appears to have been a somewhat toxic management environment at Sperry Rand/Univac which saw Mullaney, Bob Price and others (a few month later, Seymour Cray) founder the Control Data Corporation.

Stubs

All of the above transcripts can be viewed online, but there are other histories that may be of interest which are apparently archived and available on request to CBI. Not sure how it works - maybe the request simply means they replace the existing stub with the full transcript, or perhaps they email the document. If anyone finds out, please let me know! (Unfortunately, as at early 2015, the Interview with Bill Norris fall into this category).

Commercial Credit Corporation

Oral history interview with Paul G. Miller  
http://conservancy.umn.edu/handle/11299/107501

Miller discusses his work with computer systems development at Control Data Corporation (CDC), his interaction with William Norris and other CDC executives, and his move to CDC's subsidiary, Commercial Credit Company. (This would be an interesting read - Miller was a CDC VP who visited Australia about the time I joined late 1967).

Oral history interview with C. Hammond Brown  
http://conservancy.umn.edu/handle/11299/107156

Oral history interview with John M. Sheehan  
http://conservancy.umn.edu/handle/11299/107632
Control Data Corporation

Oral history interview with Arnold J. Ryden
http://conservancy.umn.edu/handle/11299/107618

Ryden describes the formation of Control Data Corporation. He discusses his role and the roles of the other founders, especially Bill Drake and William Norris, in organizing the company and arranging the initial financing.

Oral history interview with William C. Norris
http://conservancy.umn.edu/handle/11299/107557

Norris describes the beginnings of Engineering Research Associates and Control Data Corporation (CDC). He also discusses PLATO, CDC’s attempts to improve economically depressed areas, and CDC’s employee assistance programs. (Rather remarkable that this remains a Stub).

Minneapolis

Oral history interview with Norma J. Anderson
http://conservancy.umn.edu/handle/11299/107096

Anderson describes her experiences as a counsellor at Control Data Corporation’s Northside facility and how this work enabled the development of better employee programs throughout the company.

Oral history interview with T. Williams
http://conservancy.umn.edu/handle/11299/107716

Williams, a north Minneapolis community leader, discusses his involvement with the development and implementation of a plan for operating a Control Data Corporation manufacturing plant in economically depressed north Minneapolis.

PLATO

Oral history interview with Robert E. Morris
http://conservancy.umn.edu/handle/11299/107512

Morris describes his work with the PLATO computer-assisted education system and outlines the interaction and technology transfer that occurred between the University of Illinois and Control Data Corporation.

United Kingdom Computing History

Oral history interview with A. Terence Maxwell
http://conservancy.umn.edu/handle/11299/107470

Maxwell recalls the associations among the major British punched card companies in the 1930s: Power-Samas, the British Tabulating Machine Company (BTM), International Business Machines, and Remington Rand.
The Index below provides some insight into the people, sites and other entities mentioned in Tom’s interviews.

Given the somewhat random nature of the material originating from people with diverse backgrounds within Control Data, it hasn’t been the easiest document to index, but to a certain extent, I’m not sure that really matters - the strength is in the personal recollections rather than a structured history of Control Data Australia.

I can confirm this is the complete set of interviews - it matches the email that Tom sent to the participants, but at the lunch he had previously conducted and interview or interviews in Sydney, but he later confirmed that while he had lunch with Peter Jones in Sydney, Peter’s health was not good and not up to the rigours of a taped discussion.

For most practical purposes, the scope covered by the thirteen interviews was excellent - the two obvious operations that perhaps are not covered in any detail are the Manufacturing Division and Control Data Institute, but this is perhaps no real surprise given we don’t see anything from them on a Third Friday and rarely at the biennial re-unions.

I’ve included most references to people - the classification between locals and CDC may be open to question in a few cases. The references to those who contributed during the interviews are restricted as much as possible to where they are mentioned outside of the context of their own personal story.

"Customer sites:Telecom” is used as the generic reference to the Postmaster General’s Department and later Telstra - my guess is that this was the name used for most the time period.

I haven’t included indexes to specific models or operating systems - including these would add excessively to the length and would tend to crowd out other entries.
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