



## CSIRO Oral History Collection

### Edited transcript of interview with Roy Green

**Date of interview: 3 April 2017**

**Location: Subiaco, Western Australia**

**Interviewer: Professors Tom Spurling**



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## **Dr Roy Montague Green, BSc (Hons) (Liverpool), MA, PhD (Toronto), FInstP, FAIP, FTSE**

### **Summary of interview**

Roy Green was born in Ilkeston, England on 25 October 1935. He talks briefly about his childhood in Ilkeston, his secondary education at Ilkeston Grammar School and his university studies at Liverpool University.

Roy's first job was as a trainee engineer with Westinghouse in Hamilton, Ontario, Canada. He tells how he decided that he did not want to be an engineer, so enrolled as a PhD student at the University of Toronto. His work was all about the detection of low levels of radiation in people or foodstuffs. It 'was really to do with chasing where the atomic bomb fallout went.'

He describes his decision to accept a position at the AAEC in Lucas Heights and his journey to Sydney from Toronto via England and Perth, where he married Robin Wendy Shields, and his subsequent decision to leave the AAEC. He returned to Canada to work in the RCA Research Laboratories in Montreal. It was as the Director Research Program Development, that he developed skills that were very useful in his future roles.

Roy came back to Australia in December 1971 to establish WAIT-AID Ltd, the technology transfer company of the then Western Australian Institute of Technology. He discusses his approach to enlisting the staff to external engagement.

There follows a section where Roy talks about his move to the Commonwealth Public Service in Canberra in 1975 during the final months of the Whitlam Government, and his subsequent roles at ASTEC and the Department of Science and Technology.

Roy recounts his recruitment to CSIRO as the Director of the Institute of Natural Resources and the Environment, his successes in building large externally funded projects and his brief time as Chief Executive of the Organisation.

## NOTE TO READER

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## Introduction and early life in England

*Okay, thank you very much, Roy, for agreeing to take part in this CSIRO project, collecting oral histories of important contributors to the history of CSIRO. It's now the 3rd of April, 2017 and we're in Roy's office in Brigid Road, Subiaco, not very far from where I went to school.*

Is that right?

*So it's very nice of you to take part in this project. So I think it could be good to talk a bit about your early days and your experiences as early life and your undergraduate degree and PhD. So you were born in England somewhere?*

Yes, in Ilkeston in Derbyshire in the Midlands, yes.

*And did you have siblings, and?*

I had a sister six years older than me. she died a few years ago of throat cancer, unfortunately, and we had a fairly big family – not immediate – my mother was one of seven and my “father” was one of three and there was quite a sizeable family and we used to have quite a lot of get-togethers in those days of course, through the wars years and subsequently.

*And you went to school?*

Yes, Ilkeston Grammar School until 17, and then university at Liverpool University.

## University of Liverpool

*And you were a physics graduate?*

Mm.

*And was Liverpool a good physics -*

Yes, in atomic – well nuclear physics which is why I chose to go there, yeah.

*And it was part of the war effort, wasn't it?*

There were certainly some of the scientists who were involved in the war effort, but that was before my time, but they did have an accelerator there and I picked Liverpool specifically because of that love, rather than Manchester which I was also offered a place in, which was more astronomy.

*Okay. It still is. That's where the SKA is headquartered*

Yes.

*So Roy, you then presumably got a very good honours degree there?*

Not particularly, no. Second class.

*And you went to Toronto?*

## **Westinghouse in Hamilton, Canada**

Well initially I took a job in Hamilton with Westinghouse in Canada and worked with them for a year.

*You worked as a?*

I was an engineer. No, no, I was an engineer. In fact I learnt all my binary arithmetic and stuff with them, because I was involved in the Seaway, the Saint Lawrence River Seaway Band the locks and the bridges there and designing those things. That's what I did with them. So I spent seven months in -

*So you were a physicist and an engineer?*

No, I did physics but I got taken on by them as an engineer, and I was doing supposedly a two-year sort of – I don't know what you call it – an apprenticeship in engineering with them, but I left after one year and decided I didn't want to be an engineer, and then that's when I went to Toronto after one year in Canada working with them both there and in Montreal. I then decided to go back and the University of Toronto accepted me to do a PhD there – well first a Masters. You do a Masters there first and then you do a PhD.

*Yeah. And that took you a few years then?*

## **PhD at the University of Toronto**

Yes, I suppose I graduated first in 1956 in Liverpool, so I started my PhD in '57, late '57, and finished in '61.

*And what was the PhD about?*

Well it was what called – I built a whole body counter with my prof, of course. That was an 8 inch thick steel room, walls of steel to cut down gamma radiation so that we could measure very low levels of activity in people and in foodstuffs and so on. And my thesis was really to do with chasing where the atomic bomb fallout went.

*So this was gamma rays.*

Yeah, caesium-137.

*And was that presumably a highly original bit of work at that point?*

There were quite a few whole body counters around – of course my part was original and in particular I developed a technique, what was called a peak to value ratio on the spectrum, which was a very sensitive measure to correct for the thickness of the source. Initially I'd started off by using the change in resolution of the – because with the whole body source or thick sources you get scattering, so you get a spreading of the spectrum. I tried to use that spreading to correct for the thickness of the body structure. Sorry, is that okay?

*I'll try not to touch.*

Yeah. but that wasn't very sensitive, and then in fact when I was home I got German measles part way through this and I had this brilliant thought at the time – well I think it was brilliant – of using what I call the peak to valley ratio, which was the height of the peak against the height of the valley, and that was actually a very remarkably sensitive accurate measure to provide the correction for the thickness of the source in determining the level of radioactive material in the body.

*Okay, of the -*

Yeah, well you had to do an adjustment. You had to do a correction depending on if you were a big man or a small man and these sorts of things. You needed a correcting factor to determine how much caesium was in the body. And that proved a very accurate means of doing it. That peak to valley ratio – it was subsequently changed to valley-to-peak –when the lithium-drifted germanium detectors came along they were much higher resolution, and the valley to peak ratio was then used as a measure of the quality of those detectors. But I was the first to introduce it in this other way.

And so you got your PhD at Toronto -

Yes.

## **AAEC at Lucas Heights**

*And then you came to Australia?*

Yes.

*And why was that? Were you a country lad in England or?*

No.

*So an urban?*

Well Ilkeston was a small town but I was never a farmer or anything like that, no.

*So you went to Canada and then you came to Australia.*

Well when I left for Canada it was a choice between Canada and Australia, and I went to Canada because I got offered a job there before I got offered one in Australia. But I actually

decided that I'd like to come to Australia and I'd applied for the job at Lucas Heights even before I met my wife who happens to be Australian. So I'd actually accepted the job there before – many people think I came because of an Australian wife.

*So you met your wife in Toronto when you were a PhD student?*

Yes.

*And were married in Toronto?*

No, no. We were married here. In fact she came back – she was only in Toronto for about six or seven months and then had to continue her journey because she had a ticket that expired. So she came back here and there was a year apart because I had to finish my PhD, so I finished my PhD and went to England for a few weeks and then came on to – well Perth en route to Sydney and stopped off for a couple of weeks and got married here in Perth.

*And where did you get married?*

Well it's the Church of – I can't think of the name of it, but it's the church used by St Hilda's School. It's on the highway to Fremantle.

*Okay. So your wife had been to St Hilda's?*

Yes.

*Okay. And so you went to Lucas Heights and you were there particularly to look at this -*

Yes, I built another steel room there.

*And gamma ray detectors.*

Yes, to measure the levels of gamma rays emitted, yes.

*And what was your impression of the Atomic Energy Commission? Who was the director then?*

Well now, you're getting me guessing a bit. It was not – Keith Alder became the director and was still there for many years after I left, and Keith was fine. I got on very well with Keith.

*Baxter.*

Baxter was the Chairman.

*He was the Chairman. Okay.*

He was the Chairman of the Board, so he wasn't based at Lucas Heights. He was actually at the head office which was on the coast in Sydney. I forget which – Coogee or somewhere there. Baxter and I didn't get on too well. I mean I was a relatively junior person in the thing, but I had a falling out with him at a meeting which was part of the reason I didn't stay there,

actually. It was a situation where he made a statement that all research scientists were geniuses, – all above average is what he said, actually. This was to do with salaries. And I said, “No, that’s a nonsense. I said whether you talk about Nobel prizes or anything else, you’ve always got an average. Everyone can’t be above average. And we had this falling out in a public meeting. That was – I decided I was taking off. I didn’t really find Lucas Heights at that time terribly exciting.

*It was quite a different organisation to CSIRO.*

Oh, yes.

*It was much more highly-controlled, wasn’t it?*

Yeah, much more bureaucratic I’d have to say, yes.

*But you made the contribution there.*

Oh yes indeed. Well it was used as a monitoring program as well of course, people working in the reactor area, and I published several papers in the course of the two and a half years that I was there and got on well with the people that I worked with.

*And do you know any of those – did you keep up with those?*

Yes, to an extent. I’ve just got to think of the names. Des Davey was a very good friend. Des is – I’m not sure Des is too well. I tried to get him a few years ago and he was pretty ill at the time. But he and I got on well. We were bridge partners so we spent a lot of time together and we worked together on many programs. We were both in health physics. Bob Fry was the head of Health Physics– and I’ve stayed in touch with him from time to time.

*So in Toronto, the area that you work was then known as health physics, was it, or?*

I came to health physics in Lucas Heights. No, it was just the physics department in Toronto.

*And at Lucas Heights was there a health physics group?*

Yes.

*So you didn’t staff it?*

No, I didn’t start in it. I joined it. Bob Fry was the head of health physics when I went over there.

*And so then you seem to me – I’m reading the CV – made a very interesting move to go back to Canada?*

## **RCA Research Laboratories in Montreal**

Yes.

*And by then you had a wife and a child. Was your daughter born in Australia?*

Just, yeah. She was three months old when we went to Canada.

*So you packed up, went back to Canada?*

Yes indeed. Actually RCA which is the company I went to in Montreal. I'd written to my old prof again and he obviously told the people in the RCA research laboratories in Montreal

*So that you were interested in coming back?*

Yes.

*And were you?*

Yes, I was. Yes. I was going somewhere. I wasn't staying at Lucas Heights. I also got an offer – but it didn't come quite in time – to go with the UNESCO – or it's not UNESCO – the UN agency in atomic physics or nuclear physics based in – well to build steel rooms in both Israel and Egypt.

*And that was the lucky break?*

Well I suppose. Well it was when there was still trouble between them, but I wouldn't have had a big problem. And it was well paid, of course. But I decided – my wife wouldn't have been able to come because they were both three-month assignments, and -

*So was that an offer through the Australian government?*

No, no. I applied for it.

*You applied for it. Okay. It wasn't arranged by the Department of -*

No.

*Right. And in RCA, did you go into their health physics area or?*

No, no. They actually were developing this lithium-drifted germanium detector in one of the labs, which was a bit sensitive. When I did my -

*Why were they doing that?*

Well for sales, really. I mean they were very expensive detectors for caesium or for gamma radiation. In my PhD I used -

*For detecting radiation from bombs and other -*

Yeah, well for detecting gamma radiation period, any gamma radiation really. The difference was that I used sodium iodide crystals in my PhD research– which were big things, eight-inch-diameter crystals. The resolution of those if you had a good one was about 10%. The

lithium-drifted germanium detector was much smaller, and indeed a lot of the work we did at RCA was to try and make them as big as possible. But their resolution was sort of 1% or better, so it made a world of difference. So they were developing the – both lithium-drifted germanium detectors and also silicon detectors for optical radiation, and I got involved in that area.

*So when I looked up the story of RCA, it wasn't clear why they were in this area. They were the Radio Corporation of America.*

Well they had a very big research laboratory down in Princeton. We were an offshoot in Montreal, and there were four labs in Montreal, one of which was in the detectors system. Another was in lasers. There was a combination of those that was into I guess you'd call it optical communication systems if you like, using lasers and detectors. Then there was another very good group in Plasma physics.–. The guy who headed up the labs in entirety, Morrel Bachynski, was really one of the world leaders in the field.

*And was that a separate – that business was a separate business selling instruments to -*

No. we didn't do much selling, in fact. I mean we did sell. We made things specially and sold, but in fact we earned about 75% of our income from contract work, research contract work.

*From the Defence Department.*

Mainly in the States.

*Right, okay.*

We were linked with the labs in Princeton, but an entity unto ourselves. We had to make our own way. We didn't get much company funding.

*And that laboratory presumably doesn't exist now?*

Well RCA doesn't exist anymore. GE bought them out. The lab in Princeton is still there. We moved from downtown Montreal to the edge of the island while I was still there, but I didn't stay long then.

*So I'd just like you to tell me a bit about your experience as the director research program development. So at the end of your career there you seemed to have two roles -*

Yes.

*One of which was the director of research program development.*

That's right.

*Sounds to me as if that was a marvellous education for many of the things you did later in your career. Is that right or am I reading too much into it?*

No, that's very true. It was, but if I had to be pragmatic about it, it was really the marketing function. I was trying to win contracts and did a lot of that as well as running the lab. My lab was doing specifically the optical communication systems and we had significant contracts with NASA and the military down in the States. But I was also looking for contract work for the whole laboratory, the other two areas as well. So I spent a fair bit of time travelling around America. Most of our money came from America. We were – to earn 75% of your funding from contract work is pretty tough. That was very different to the main labs where probably more than half the money came direct from the company itself, because they invented the TV, the colour television and things of that sort were done at RCA in Princeton.

*So what did you have to do? Did you have to – you got contracts but then did you have – was it a dual selling? Did you have to then sell the contracts back into the company? How did you go about -?*

Well we did. We actually had to – NASA or whoever would be advertising contract work they wanted done. So a lot of our effort was responding to those requests to submit a proposal to do the work. In other instances of course, we also proposed some work that we thought they'd be interested in, so it was doing a selling job sort of saying, "Well this would be useful for you if you paid us to do this work." So it was two-fold, but mostly responding to -

*To advertisements.*

Yeah.

*And how big was that laboratory?*

Not big. In total there were only about 40 or 50 people.

*And were they 40 or 50 people all PhDs or a mixture?*

No. They'd be -

*Engineers, and -*

Well not many engineers as such because there was an engineering department separate from us. And we worked with them on some of these contracts of course. But there would only have been probably half of us who were PhDs or research scientists.

*And a fairly narrow discipline base, or?*

Well there were really three discipline bases, I suppose: plasma physics was the one I've mentioned. Morrel Bachynski was one of the world leaders in the field. That was a very good lab. Then there was the nuclear detector system, and then what turned out to be lasers – moved into lasers with photo diodes to make laser communication systems. So they were the three main areas.

*So physics, essentially.*

Oh yes, yes. Pretty well all physics, yes.

*And so how long were you doing the selling job? Did you enjoy that?*

Yeah I did, actually. I found it – well it was at first very educational. I think I was a reasonably good communicator. The only thing wrong with it– my wife would say – is that there’s a lot of travelling, so I was down in the States an awful lot of time and she says that for seven wedding anniversaries over there, I was only home for two of them or something, because I was always away. Our anniversary fell on a holiday in Montreal, but I was never there.

*And your second child was born in Canada?*

Yes.

*And so that was from 1964 to 1971, and then you came back to Perth.*

## **Return to Australia to WAIT AID in Perth**

Yes. Yes, to -

*So was that – I mean presumably you came back to Perth because your family wanted to – your wife’s family is in Perth?*

Yes, but no, I was keen to come to Perth. I’d seen Perth of course, and Perth appealed to me. I was offered the head of physics at what was then the New South Wales Institute of Technology in Sydney as an alternate to coming to Perth. The Perth job was really when I left being a research person, because I then headed up this company called WAIT-AID

*So what that a job advertised?*

Yes it was, yes.

*So Don Watts wasn’t part of WAIT then, was he?*

No, no.

*It was Hayden Williams.*

Hayden Williams, yes.

*So you’d applied for the job.*

Yes.

*And in some ways, because of this RCA experience, you were highly qualified for this.*

Well I got offered the job, so I guess I was the best candidate at least. I got interviewed in – in fact over in New York. I had to go down to New York for an interview with one of the guys who became a very good friend here, actually.

*So this was called WAIT-AID.*

Yes.

*Was that one of the first technology transfer companies in Australian tertiary institutions, or?*

It was an earlier one, but New South Wales, the University of New South Wales, was earlier. That was the first in Australia. Incidentally they subsequently offered me - the guy who was heading that up, whose name I can't now recall but a very good man who did a great job there, and he was quite keen for me to go and join him and take over when he was going to retirement. But at that stage, I'd decided to go to Canberra and switch fields.

*So you started WAIT-AID -*

Yes.

*From scratch.*

Yes, that's right. I was there for three years.

*And what do you remember of that time? I mean the two things that people like to know about university technology transfer companies. One was how did it interact with the staff of the university – it wasn't a university then, was it?*

No, no. An Institute of Technology.

And you know, how do you get the staff to be part of this venture. The second question that people ask is how do you persuade the external companies and other research users that the university can provide something useful?

Yes, well first, my interaction at the staff level was to go round to each of the departments and give a bit of a spiel about what I was planning to do, and basically – I was a firm believer in the fact that it was good for them to do this outside work, regardless of whether they got paid or not; that's very much more broadening experience. And that seemed to go over well. I had cooperation literally from all the departments there; certainly not just science. We were into the arts side and the design side and the business school and so on. I got jobs across the whole range. In terms of selling, I did a fair bit of talking around Perth, things like Rotary and so on, to tell them about it. I got into some arguments with people because they saw us as competitive at times, you know, the outside consultants.

*Were there many of them?*

No, not that – it wasn't a bad thing, but they felt that it was inappropriate for these people to sort of chase the work, and also I can remember having this argument with someone who said, "These people if they do this sort of work, they'll be offered jobs outside and they'll leave the university." And I said, "Well that's a damn good thing. I'm all for it." We also charged full rates. We didn't actually cut – we could have but we never did have a -

*So when you say “full rates” was that three times salary or?*

Well I can't remember the exact figure, but it was competitive. It was the same sort of level as the outside consultants. We didn't undercut the consultants' rates, because we thought that would be unfair.

*And eventually it was illegal.*

Yes, yes.

*But it wasn't then.*

It wasn't then, no. we could have done it for free, but no, we didn't. And actually I was only there for three years. We were very successful. We made money from the word go.

*So that was 71 to 75. Sorry – it says 71, anyway. You came there in 1971.*

Was it 1971?

*That's what it says in this.*

Let me get that straight. I thought it was 72, but anyway.

*Okay. So yeah, you came in the beginning of the year in 72.*

Yes, that's it. That would be right, because I was home at Christmas time and I came just after in 72.

*And that was an exciting period in Australian history anyway. Can I just ask you, did WAIT interact with the state departments? Did you get staff from the, you know, like Bernard Bowen's Department?*

No, very little. I actually tried. I approached them. In fact I probably even talked to Bernard at the time. But there was no – very little money came from the state departments. It was almost entirely the private sector.

*Private sector. And in 1972, what was the basis of the wealth of the Western Australian economy? Was it -?*

I think it was still agriculture at that time, to be honest.

*Before the main mining boom.*

Yes. Yes. We did do some work for the miners, of one sort and another, and we did quite a bit of work for the agricultural people too. But it was all over the place. I mean the other thing we did was run courses, training courses, as well. So that was another area.

*WAIT AID organised those -*

Yes.

*It sold educational services as well as research services and technical services.*

That's right. And the mining school was also – that was based in Kalgoorlie, that was part of my remit as well.

*And the Muresk.*

And the Muresk was also part of the remit.

*Okay. And they're all part of Curtin now, I guess.*

Yes. Yes.

*The mining school of course was one of the oldest mining schools.*

And a very good reputation, yes.

*And what was your – coming from Toronto and then interacting with US universities and then coming to WAIT, what was your impression then of the sort of standard of the research and capability of that institution?*

Well, let me just correct one thing. I didn't have too much interaction with the universities in the States. It was almost entirely research operations and NASA and military labs and so on. But actually, I was very impressed with the physics department at WAIT.

*Well John de Laeter was -*

Yeah, John de Laeter was -

*You would have kept up with John De Laeter over the years?*

Over many years, yes. We've played a lot of tennis together. It seems to be one of those binding things, yes. And John was a great guy. There was some good people in the health side – because there was a school of health -

*Historically they did all the paramedical stuff.*

That's right.

*Physiotherapy and all that.*

Yes, and that was pretty damn good too. Chemistry was fairly good. And the business school, which I can't – it's difficult for me to judge because I didn't have much experience, but they obviously had a very good reputation and we got quite a lot of work in under the business school side of things as well.

*A friend of mine, he became a professor of chemistry there – Bob Alexander.*

Oh, yeah. I knew Bob well, yes. He was there when I was there, yes.

*He was extremely competent.*

Yes. The school of chemistry was very good, yeah. I suppose mostly chemistry -

*We did a lot with Bob Kagi.*

Yeah, yeah. He also did a lot of work for me.

*They were students in the chemistry department when I was a student.*

When you were there. Oh, okay. Yes, well they were there and they both did quite a lot of work for WAIT-AID, yeah. And Bob Kagi did a lot of his own stuff as well. He was a bit of an entrepreneur, products rather than services.

*So this is not really part of your story, but the Western Australian Government chemical laboratories came over there at some stage.*

Not when I was there.

*Not when you were there.*

No.

*So that site around that area became quite a strong chemical centre for -*

Yes. When they built the labs, the new chemistry department. That's right. And some of CSIRO of course went there.

*Yeah, went over there at that time. Did you interact – did WAIT-AID interact at all with CSIRO?*

Oh yes, yes. I can't remember individuals more than anything else, and some of the space workers – some of the - I'm trying to think of how to describe it, but it was more the GPS-type stuff that we were doing, or the investigation of prospective ore bodies and so on.

*Yeah that's right, prospective.*

Yeah. And we did a bit of the work there with CSIRO, but not too much. It wasn't a great deal of interaction.

*So Wilf Ewers. Did you meet up with...?*

No, I don't remember that.

*You didn't meet up with Wilf?*

I don't remember the name.

*He was the officer in charge of the CSIRO probably up from about the 60s into the early 70s.*

No, no. it's not a name that comes to mind, certainly.

*Okay. So that was an early venture into technology transfer companies. What's your impression of technology transfer companies?*

I'm all for them. I mean I think it is one important avenue to do things. I think the more you can get interaction between the universities and the private sector, the better. I'm all for that.

*So did you have to make a profit? Or I mean what was -*

As a pay way, yes.

*You had to pay way. So you got some percentage of the contract?*

Yes. I'd got that all set down. On my way here I went to England and I visited quite a few of the companies over there, the equivalent of WAIT AID. Then we sailed out to Perth and I wrote up what I had learned while sailing out. It was something like a 70-page document laying out this whole system.

*You wrote the document?*

Yeah. And said, "This is the structure that I want," and I actually had the forms that people would sign off on and so on. So when I got in I had a Board, I presented it to the Board and they accepted it all, yeah.

*And who did you report to? The chairman of the Board? Was the chairman of the Board the vice-chancellor?*

Yes. Well he wasn't called vice-chancellor then of course, but the head of the -

*The director.*

Yeah, the director, yeah. I had more to do with John de Laeter and Mark Liveris who was head of the school of health

I think he was a physicist, Mark.

Mark was, was he?

*I'm pretty sure he was a physicist.*

He was in the health area rather than chemistry, yes.

*The physiotherapist that I go to in Melbourne has got a certificate on her wall signed by Mark.*

Oh, okay. Yeah, well Mark and John were great friends. I had a – one of the guys, head of the school of business was on the board as well, but he was – actually we had a – I can't think what it was – we had an outside chairman who was on the board of the institute, and he was chairman of my board as well. I can't think who it was now, but it was an external person.

*Was the company set up as a genuine company?*

Yeah, a limited liability company.

*A limited liability company.*

Yes.

*So you in fact were appointed by the board of the company, not by the vice-chancellor.*

That's right.

*So you were independent of the internal functioning of the university.*

Yes, to a large extent. Of course we had to go by the general laws of the place and so on. But we made a lot of money in those three years. I think we finished up with something like \$300,000, some figure like that, profit, which I left to my successor.

*And is it still going?*

No, no. well first it changed names and I can't think what the name was. And I think it's actually stopped altogether now; I don't think it's operating any more, but I'm not sure. It did go for decades after my time, mind you, but I think it's -

*Does Curtin have a technology transfer company?*

Well it became Curtin. It moved to Curtin and they changed the name. It obviously wasn't WAIT-AID anymore. And I can't remember what the new name was, but I did have some interaction with the guy who headed it up at the time, just after I came back over here. And indeed, there was a prospect of my coming back to head it up again, not just that but a wider remit. And I might have done so, the person who was in the job and I interacted with a bit, he decided he didn't want to continue. This is now going back quite a few years, obviously. But he changed his mind and decided he would continue. So I think almost certainly I was going to be offered the job, but when he said he'd like to stay on -

*Would you have taken it?*

I probably would. It was before I joined CSIRO. This would have been probably very early in the department. I can't place it very well whether it was Department of Science days or whether it was even when I was still with ASTEC. I'm not sure, but it was early on.

*So this was 1972 to 1975.*

Yes.

*Then in 1975 you went to Canberra.*

Yes.

*So why did you do that?*

Well I have to say, at that time I couldn't see – I didn't want to be doing the same job -

*Forever.*

What I call a business job, a business management job. That didn't appeal to me as a long-term future.

*So you obviously made a conscious decision to give up being a research physicist.*

Oh yes, yes, when I moved to this job, because otherwise I would have gone to Sydney and headed up the Physics Department, yes.

*And did you agonise over that, or?*

Not really. I decided at that stage that while I was a reasonable research scientist – I'm certain I wasn't a top research scientist but I was a damn good manager, and so even in project management type terms I thought I was pretty good. But I was never going to be a top researcher. So I decided that you know, I should really move down a track, which took advantage of my management skills, rather, yeah.

*That's interesting. Often decisions are made for people, I suppose. But you made the decision to go from research scientist to research manager, but you didn't really want to be completely out of scientific research.*

No. I preferred to be involved with it. I mean my management side was program management in the research area.

*So a question that people often ask about research managers, how much was your credibility as a research manager dependant on the fact that you'd had a PhD in physics and quite a successful career as a research physicist?*

Oh, I thought that was extremely important, I mean particularly in the US, it wouldn't have worked if I hadn't have had that qualification.

*And what about at WAIT?*

I think it's difficult to say at WAIT. I mean first of all I gave courses. I taught some of the health physics stuff in the school of physics there. But on the business side, well obviously that wasn't so relevant, but being able to talk intelligently about the research even that they were doing I think was still important. To get the staff on side was very important. Well then when it came to winning the contracts of course, you made a fine judgement about whether

you should do it or whether you should get the expert on the staff to come and do it. Often we'd do it as a team, but -

*And did you train the staff a bit?*

To the extent that I would always coach them before we went to – we'd have a session before we went to talk to the client, yes.

*Very important that, isn't it?*

Yes. Yes.

*People still don't often always do it.*

No, it's actually extremely important.

## **The Bureau of Environmental Studies in Canberra**

*So you went to the Commonwealth to the Bureau of Environmental Studies?*

Yes.

*Which doesn't exist now.*

No. it didn't exist for very long then.

*So what was that?*

Well, it was in the Department of Environment.

*And this was now 1975?*

Yes.

*And you went there before the-*

Just before the collapse.

*Demise of the Whitlam government. So this was the head of the Environment Minister was Moss Cass -*

Yes.

*So was this a Moss Cass idea, or?*

Well I can't answer that. Well, certainly it had only just been initiated. I mean I was one of the first staff. There were three of us. There was the head of the – there was a director and then three – Ken -

*Don't worry.*

I can't think of the surname. He was an engineer. I remember that.

*So the Bureau of Environmental Studies was part of the Department of the – was it called the Department of the Environment?*

Yes, it was called the Department of the Environment, yes.

*And so what was the purpose of the Bureau of Environmental Studies?*

Well to do research management.

What was your task there?

Well more management than doing the research, but also again, establishing the structure. I mean the work you wanted to do you had to sell it. You weren't just given it. You developed the whole program of activity. There were three divisions or three branches, we were called.

*Of the Bureau?*

Of the Bureau, yes. I was head of one, Don McRae was head of one of them. Another guy, John – I can't think of John's surname now, either. The three of us we answered to Ken, who was the director. And we each had an area of responsibility.

So was this within the department? So you were a branch or a -

I was an assistant secretary.

*Assistant secretary in the Commonwealth public service.*

That's right.

*So the Bureau of Environmental Studies wasn't a research group. It was a – what was it?*

Well it certainly did research, and it actually commissioned research outside. We had some funds for commissioning research.

It was mainly commissioned research.

Yes.

*From CSIRO or universities.*

Yeah, mostly universities at that stage, yes. Not much in the private sector. Mainly universities.

*So can you just reflect a bit on this transition of Roy Green from a nuclear physicist interested in gamma ray detection to somebody now, an important figure in determining the*

*direction of environmental research in the country. So how did that sort of transition work in your mind?*

Well in the years when I was heading up ASTEC – not ASTEC sorry, the WAIT-AID in Perth, quite a bit of the work came in the environmental area of course, and I found myself getting more and more interested in issues related to the environment.

*So in the period in the 60s, late 60s, early 70s, the notion over governmental interest in the environment started to develop.*

Yes.

*So we started to get the EPAs, US EPA started around that time, the Victorian EPA, the EPA of Victoria was the second EPA in the world -*

Yes.

*So all of that started, and you were -*

And there was an EPA here, of course. Well when I here, then that -

*It started soon after.*

Well it started before I got here. It was already here in 72.

*There you go. We in Victoria always claim we're the first.*

Yeah, well Brian O'Brien – you know Brian O'Brien?

Yes.

Well he came over back from the States with NASA -

*To head it up.*

To head up the EPA here, and it was before I got here.

*So part of the work of WAIT-AID was in aspects of the environment?*

Yes, yes.

*What particular things were they?*

Well water and salinity were big issues. We also had quite a bit to do with looking at the issues up in the north and rehabilitation of mining areas and so on. We did quite a lot of work in that area actually, because we have some pretty expert people in that area.

*So your interest started to develop in environmental science and environmental policy, presumably?*

It actually started even before that. When I was still with the laboratories in RCA labs, I actually went on to a Canadian government committee. In fact I chaired one of the sub-committees in the environmental area for them, and we used to meet in Ottawa. But I left early. I mean we started that going but I was only in the position for about a year and then came here. But I'd started an interest in that area even before I came over here.

*And what particular part – water – what particular part of this did your background as a physicist help you?*

Well because we covered pretty well all of the instrumentation that you would need to measure, so I actually gave – I lectured, when I think about it, and I thought I'd mention this – but I gave part-time evening lectures when I was still at the RCA, I lectured at the University of Montreal.

*That's on your CV, but it doesn't say what you lectured in.*

Well, it was health physics, and mainly environmental issues, and it was – the group I had was early teachers who were trying to develop a better knowledge of the scientific area, if you like. So it was not a terribly high-level scientific exercise, but I taught them all about the sort of instrumentation and measurement.

*Without measurement, you can't do anything.*

That's right.

*So the Bureau of Environmental Studies. What happened after that? So that was from 1971 to 1975 – sorry, 1975 to 1976.*

Yes. Yes.

*So when the change of government came – so the -*

When the collapse of the -

*When the Fraser government came in, did the Bureau of Environmental Studies continue or did the new government have different ideas?*

Well it did have different ideas. The Bureau did continue though, for some time, and it wasn't still called Bureau of Environmental Studies, but it still existed in its entity. But I decided to leave it almost as soon as I got there, not because of the area, because we were told we were moving down to Albury-Wodonga.

*Oh, right. That was the time you ran.*

That's right.

*Decentralisation and you didn't want to do that.*

Well I'd just moved from Perth to Canberra. I really wasn't interested in moving then from Canberra down to Albury-Wodonga. I didn't have anything against Albury-Wodonga. I just felt I'd made a significant shift and I didn't want to make another one. I had two young – well one young daughter at one time, but another one on the way. So as a consequence of that I started looking for further positions. And -

*So you say you had another one along the way, but 60 – it wasn't -*

It may not have been -

*Julie was born in '65 and this was now '75.*

Julie was born in '65. Yes, that would be right, yes.

*So she was in primary school. You didn't want to shift children around.*

That's right. Sorry, Cathy had been born in Canada of course. We had them both, yes. You're quite right. They were both junior students, yes. My apologies. I'm getting out of kilter.

*But the point is that you'd shifted from Perth to Canberra. You didn't want to then shift from Canberra to Albury-Wodonga.*

And they didn't anyway – they didn't eventually, but because of the possibility or the prospect, I decided to look for other positions.

*And so you went there as an assistant secretary.*

Yes.

*Was that a promotion?*

From here?

*From WAIT?*

Well it was a similar sort of level. I don't know that you could – the pay was a bit better I think, from memory. So in that sense it was -

*But not a huge promotion.*

Oh, no. No, no.

*So you're now an assistant secretary in the Commonwealth Public Service.*

Yes.

*So in those days that meant that you probably stay – you know, Commonwealth Public Service unless someone decided to sack you -*

Or I decided to move on, yes. That's right.

## **Australian Science and Technology Council (ASTEC)**

*So the job at ASTEC was advertised.*

Yes. That was the deputy secretary.

*And was that – my recollection which could be wrong was that ASTEC was also a policy of the Whitlam government that then -*

That's right.

*Carried over. And there was some – can you reflect -*

There was a bit of a hiatus in between.

*Can you reflect on all of that period of when you applied for that job and what all the -*

Yes, yes. The Whitlam government had appointed ASTEC, and it was headed up by – he was vice-chancellor of the university down in Melbourne – not Melbourne University.

*Monash?*

I think it was Monash, yes. I'm trying to think of his name now. Isn't it terrible? I have a very bad recall of names, but he was the chairman at the time. And Howard Crozier was in the position of Secretary to ASTEC on an acting basis.

*Yes, because somehow or other CSIRO was the secretariat for ASTEC.*

That's right. Well there wasn't much of a secretariat. It was -

*They provided the secretary, yeah.*

Yeah. Howard was there in an acting capacity when I applied for the assistant secretary or whatever – deputy secretary.

*It was Matheson still?*

Yes, it was still Matheson so -

*Sir Louis Matheson.*

That's who I was trying to think of, yeah. So he was still there actually when I joined as assistant secretary or deputy secretary. I forget what I was called.

*So you applied for the job, got it, when the Whitlam government was still there.*

Yes.

*That was not long after you'd gone to the Bureau of Environmental Studies.*

That's right. It was within a year or so, yes.

*And then there was the change of government, and what happened during that time?*

Well, then of course there's a hiatus. It wasn't clear whether we were going to stay or not, whether – but as it turned out we did – Howard and I – stayed on through that period. It was restructured and so Geoffrey Badger became chairman. Over time this happened. And we had to rewrite the whole basis for ASTEC.

*You did that?*

Yes I did, yes. It was primarily me and I got it to be a statutory authority, which was quite an achievement at the time, because they weren't making many stat bodies then.

*So there was an Act, an Act of Parliament.*

An Act, yes.

*So you joined up – this is what is not clear from the record – the two jobs advertised, a secretary and an assistant secretary, and your job application says that you applied for either the secretary or the assistant secretary and you got the job as the assistant secretary. But there was never a – by the time you did it seemed to me from the record that you were the secretary.*

Well that's not quite how I recall it. I don't remember – I mean I certainly applied for the assistant secretary job when Howard was there, and then they moved on and Howard was still the secretary when he was going to go back to CSIRO and they advertised – well then they had to appoint a secretary to replace Howard.

*And that was you.*

Well I applied for the job. It wasn't straightforward. I mean there were other applications for the job. I had an inside track I suppose because I was there, but it wasn't lay down misere.

*So the statutory body known as ASTEC had a – Howard Crozier was the secretary of that for a while -*

That's right.

*Then you were the – there was nobody else who ever was the secretary of ASTEC?*

No, not in that – no.

*And in the model that the Whitlam government had, was CSIRO involved in it?*

Well they had a place on ASTEC of course, as did the head of the Department of Science or whatever the department was at the time.

*Would they have been –would CSIRO have been the secretariat of the Whitlam ASTEC before it became a statutory body, or hadn't they thought that out properly?*

I don't think you would have said it was CSIRO. It wasn't our line to CSIRO as such. It was just that Howard had been assigned to be acting in the secretary's position at that time, but it wasn't really a CSIRO separate thing.

*Except that the first time that you were employed you were an officer of CSIRO.*

Yeah, I think that's the way, yes.

*So your status as a Commonwealth bureaucrat was secondment to CSIRO and then eventually you went back to ASTEC.*

I didn't even realise that, to be honest. When you say that, I guess that was the way it was. That's what it had to have been. But I honestly don't remember it, nor was it –

*That's what the records show. It didn't make any difference to you.*

No, no. It wasn't in anyway allied or responsible to CSIRO.

*So you say that in that period was probably a very good thing that during the hiatus you and others had time to rethink what ASTEC was about and write the -*

Well the basis, the purpose of ASTEC.

*Which you'd already had experience of in WAIT, writing the 70-page document.*

And of course we reported direct to the Prime Minister then, ASTEC, in that second structure. We reported to the Prime Minister, which was pretty remarkable.

*In writing the terms and conditions for ASTEC, did you look at other bodies around the world? How did you do the -*

Not that I can recall particularly, to be honest. In fact it's difficult to – when I think, I still have some difficulty in finding them. It was an extraordinarily powerful body, ASTEC. It had a lot of very senior people with tons of experience -

*Very powerful.*

Yes, and direct access to the Prime Ministers, you know. Almost any of them could pick up the phone and call the Prime Minister. I might add that the head of the Department of Science wasn't too happy about that situation, but -

*Who was that then?*

That was John Farrands was the -

*John Farrands. So the Department of Science had come with the Whitlam government or was that an invention of the -*

It was later than that. It was Department of Science and Environment – it had several different names, you know, and indeed, even when I joined it was Science and Technology when I joined that department and it lost the Technology part-way through.

*So do you want to have a break?*

Sure. Do you want a coffee or tea?

*Thank you. I'll just turn these off.*

[music]

*So we're now back after our morning tea. Thank you, Roy. So we were talking about your starting off at ASTEC and how you used your experience of writing what organisations are going to do to write the basic terms and conditions of ASTEC.*

Yes. Yes.

*And what was – how did you do that?*

Well it was really a proposal that the government had to accept with what we were all about and the fact that we should be a statutory body and all that sort of thing. Then we had to argue the case a bit and I debated much of that with Geoff Badger.

*Who was Geoff – Geoff Badger was the chairman, was he?*

Yes, he was the chairman.

*And was he arguing with the Prime Minister? Was he selling this to the Prime Minister?*

It was actually more the Prime Minister's Department and also what were they called – the legal -

*Attorney General's people.*

Attorney General's people weren't too sure that we should be a statutory body, because that was a – they didn't really want too many statutory bodies at that time. But we persuaded them that it was the right thing to do.

*And Louis Matheson was the chairman?*

No, no. Lewis had gone then.

*He'd gone. Right.*

Yeah, he'd gone by then. That was after this -

*The change.*

Yeah, the change -

*So who was the new chairman? Geoff Badger?*

Geoff Badger.

*Right. And he was the Vice-chancellor of Adelaide, was he?*

Yes, University of Adelaide, yes. He'd actually been on CSIRO's executive at one point in time too, and before that I think, but he had that job and then he went back to be vice-chancellor of the University of Adelaide.

*So then ASTEC started and you got various jobs to do, and so you were in ASTEC from '76 to '82.*

Yes.

*And during that time of course was the Birch report.*

Yes.

*But the Birch report wasn't an ASTEC report -*

No.

*It was set up by the government, a separate review set up by the Prime Minister to review the purpose of CSIRO.*

Yeah, lots of interactions with Arthur Birch at the time though, between Geoff and Arthur and others.

*So what was your role in -?*

I didn't have any direct role at all.

*You had no direct role.*

No. I talked to Arthur quite often, but I didn't have any direct input, no.

*So as the secretary of ASTEC, what then was your view of the formation of the Birch enquiry, the Birch report and CSIRO's response to the Birch report?*

Well it was discussed at ASTEC meetings and I think everyone, you know, we were all quite – when I say “we”, ASTEC were really quite supportive of the Birch report.

*Of the recommendations of the Birch report.*

Yes, yes. I think we probably had a – they would have had a bit of influence. I mean the people that were on ASTEC would have certainly had some impact on Arthur and his thinking, even though he's a fairly independent character.

*So by 19 – this was 1976 ASTEC started. This was in 1978. What staff did you have by then?*

We had – one, two, three I think I had four scientific types – you know, four senior people and -

*Science policy people.*

Yeah, yeah. Phil Price was one. Ted Cain was one.

I didn't realise. So he was in ASTEC?

Yes. Yes, he was in the ASTEC secretariat

*Was Bruce Middleton then?*

No. Bruce – well he came in as assistant secretary fairly early on in the piece. He wasn't – it was a bit later on that Bruce came in. Again, that went through an interview process and Bruce won the job. So we appointed – I was there when we appointed Bruce, yes, and there was another Ian – I can't think of Ian's surname now, but he disappeared off the scene somewhere. I've not stayed in touch with Ian. But there was Phil and Ted and Bruce. We stayed fairly close together in all that time. And in that period you may recall, we produced this Science and Technology in Australia set of documents, a very significant bit of work. I think it was a huge job in fact, I must say.

*Was Ron Johnson involved in that?*

Ron was involved but not directly. He did actually spend some time with us when he took a sabbatical from the university, but that was later. And we had quite a bit to do with Ron. Well Ron at the time was still at the University of Manchester in those early years, and he came over to -

*To Wollongong.*

Yeah. Yes.

*And was Stephen Hill -*

Stephen Hill was around, yes, so again we talked to him and the other one was -

*Jarlath Ronayne?*

Jarlath did some sabbatical with us as well. He did quite a bit of work with us. And Ian the other guy from Queensland – Ian, who's still around.

*Yes, yeah. Ian Lowe.*

Ian Lowe, yes. But Ian was a bit later. He was a younger guy, really.

*And so at this period in ASTEC, what was your impression of CSIRO? And particularly, I mean the thing that I'm interested in hearing what you think is how do you think CSIRO reacted to the recommendations of the Birch report?*

I'd have some difficulty in answering that. I'd have to think very hard back, but certainly we – and I say “we” meaning ASTEC really, were very enamoured. We thought highly of CSIRO, the whole bunch felt that CSIRO was a great organisation. I can't – it's difficult for me to recall. I mean they responded quite well I thought to the Birch report, but I can't honestly remember that well, because I wasn't that directly involved in a sense. But of course the head of CSIRO was always on ASTEC, presented well there. We've always had those -

*That would have been Paul Wild.*

No, before Paul.

*Jerry?*

Jerry, yeah.

*Jerry Price.*

Jerry Price.

*So he would have gone in '77.*

Yeah, but Jerry was probably the more, you know, a very significant presence at that time. I don't remember the years, but he had a lot of influence on ASTEC at that time.

*And on Australia's Science policy.*

Yes.

*And had the Department of Science started then?*

Well I don't know if it was called the Department of Science, but there was certainly a department with science in the name. You see they change the names quite often. There was only ever the one Department of Science I think, which was when we lost Technology and it became the Department of Science. When I joined it, it was the Department of Science and Technology and before that it was linked with Environment at one stage and even Education, I think. There was the Department of Science and Education as well at some point in time. But I can't honestly get those -

*And it doesn't matter for this story. So you then – so in fact ASTEC's task was to not develop policies so much, but to develop inputs to policy. What was the actually task of ASTEC?*

Well the most significant thing that ASTEC had, to be honest, and again it wasn't easy, was that we actually reviewed all submissions, cabinet submissions, related to science and

technology, and we provided advice on all of them, no matter where they came from. Now that was actually a very powerful position to have, and as I say, the Department of Science, John Farrands was not happy about it. Of course John would have attended all the ASTEC meetings. I mean he came to the meetings and had a fair bit of input there, but he wasn't as – and I have to say wasn't as well-regarded as was CSIRO's representative at the time. But that was a powerful position for ASTEC, to have to be able to comment on all relevant cabinet submissions. So we did actually develop some policy ideas too. I mean we submitted suggestions, probably not necessarily formally, you know.

*So the cabinet submissions came to you. What sort of staff did you have to do that? That's a big task, isn't it?*

Well it was, but we'd normally – we'd always involved some of the members of ASTEC itself. – The submissions often would go to all ASTEC members, but there'd always be some of them who'd want to have a say, have an opinion to put forward. And we would always make it a fairly short – you know, anything going to Cabinet, one page was about as much as you ever did. But yes, it was quite a significant task, and I think we had quite a lot of influence. I mean I think there were times when things changed as a consequence of our advice.

*And so in 1982, so you were in ASTEC for six years or so. In 1982, you then went to become – you went back into the public service as a – well in ASTEC you were still in public service, but you went back as the deputy secretary of the department?*

Yes, that's right.

## **Deputy Secretary Department of Science and Technology**

*And the records say that it was by then called the Department of Science, Industry, Technology and Commerce.*

No, I think it was just Science and Technology when I joined it.

*Okay. And so you went back in to be the – and who was the secretary?*

Greg Tegart.

*Was the secretary of that department?*

Yes.

*And who took over ASTEC? Who became -*

Bruce Middleton became the secretary eventually in my place. He'd been deputy secretary or assistant secretary when I was there. Bruce, again through a competitive process, Bruce was awarded secretary.

*Right. So from '82 to '87 you were the deputy secretary of the department and that started off being in the Fraser government -*

Yes.

*And the change of government came in '83 and you were '82 to '87 so you had John Button as the minister in that department -*

No, no. It was -

*So Barry was the -*

Barry Jones was the minister, yes.

*And eventually it all became part of a big department.*

Well that was when I left.

*Oh, you left. So that was in 1987.*

Yeah

*Okay.*

It was at that time, yes.

*So you were the deputy secretary of the department, and what were your main functions in that time? I mean what's your whole - I thought - I mean I wonder whether - so when - this is just my memory - I thought I looked it up. I thought that the ASTEC report into CSIRO that Greg Tegart was the secretary of ASTEC, but he was the secretary of the department.*

No. he wasn't secretary of ASTEC until after Science disappeared, after the disbandment of the department in '88 I thought it was.

*Okay.*

Yeah. That's when he had a choice of positions and he decided to take up the position as Secretary of ASTEC, because there wasn't a department for him to head up.

*So when you went into the Department of Science it was the last days of the Fraser Government and Mr. Thomson was the minister, was he?*

That's right. David Thomson.

*David Thomson was the minister. So he recruited you?*

Well not so much him. I mean he didn't get directly involved in the recruitment process. John Farrands - well it was a separate appointment. There were three people on the panel, thank goodness. John Farrands wasn't on it. John and I didn't really hit off together. We

could imagine we would have a bit of difficulty because of the competitive position of the two, and John didn't like ASTEC very much, basically. And so I applied for the position of dep sec. Interestingly, John Farrands was still the secretary at that time, and one of the people – I'm trying to think of his name – one of the old guy from the CSIRO -

*Gratton Wilson?*

No, no. One of the senior – head of – he was the boss of his school -

Not Jim Peacock?

No, no. Older than that. It was a family do. They've got a – up in Sydney or out of Sydney there's a garden which has the name of the people. You'd know him – I can't think of him. He stayed on forever.

*As a chief of a division or?*

No. after he retired he still stayed on with the division. You'd know him if I said the name. He's very well known. He was on the panel. Anyway, the panel recommended me to be dep sec, and I can remember I was over here on Christmas holidays actually, up on the family farm; got this call from John Farrands who was – I think he was trying to find a reason for not appointing me. But I can remember him saying, "Well you know, what will happen when you've had this confrontation between the department and ASTEC? And I said, "Well, I can tell you what my head said of course. I'll take the department's position." but I said, "But I can't tell you what my heart will say." I said, "When Australia are playing England I never quite know which side I'm going to support." I remember telling him that on the phone.

*So during the time 82 to 87 in the Department of Science, what were the sort of issues that you were mainly concerned with. Was the notion of national innovation systems and the role of universities and CSIRO and industry, I mean how was all that playing out in that time?*

Well if you remember we actually developed a technology policy document which was really quite an effort at the time, and that took into account the various roles particularly of CSIRO in that regard. We had a lot to do with the university sector, you know, where the universities were going, encouraging them to – so we were trying to propose structures that would have them working more closely with the private sector and so on. Those sorts of things were very common. We tried hard to get more funding for university research. I can remember arguing many times about the relative levels of -

*So did you run the ARC or was that in the department of -*

No, that was in the Department of Science.

*Department of Science. So you were responsible to the ARC.*

Yes, that's right. And I had a lot of arguments about the relative support levels for NH MRC and ARC. I always felt it was out of proportion, and NHMRC always had a hell of a lot more money than ARC. That's because I guess people are more worried about health than they

are about science. But it was always a big argument to have. But I tended to – Greg wasn't terribly interested in the operational side, if you like. So preparing budgets for the various groups – of course the Bureau of Meteorology was there and the Antarctic Division was there and the Patents Office was there, all of those. And I tended to coordinate most of that effort as Dep Sec. that was something that, you know, Greg and I agreed was the way we should operate. So I probably was the -

*And Barry Jones was the minister.*

All through that time, yes.

*And you obviously got on pretty well with Barry.*

I did indeed, yes. I hadn't expected to initially. I didn't know him of course, and I'd thought it might be very difficult, but in fact it wasn't. And we got on very well and we're still good mates.

*And Bruce by this time was the secretary of ASTEC.*

Yes.

*So during that time, that was the time that I spent a year in Parliament House as Gareth Evans' senior private secretary. So I was -*

You were close to the action.

*Yeah. And I had contact with the people in Barry's office, Richard Johns and others, who were very interested in science and technology policy and particularly in - Richard was in - Richard was in John Button's department.*

Yes, that's right.

*Button and Jones worked pretty closely together.*

Yes, except when Button decided to take technology away from us, yes.

*So how – I mean from the outside at the time, we thought that the Department of Science and particularly our minister wasn't the most influential person in cabinet.*

Well that's true.

*What was your impression?*

I think that's very true. First of all, Barry wasn't very interested in the operational side of things. He was a thinker, of course. But two things with Barry. One, he couldn't ever get terribly interested in the budget process and putting the right arguments forward, and two, he tended to lecture to his colleagues, I think. That was his nature. I'm not saying that as a criticism. It's just the way he is.

*And he obviously knew a lot about what he was talking about.*

That's right. But it didn't always go down well with his colleagues, so as a minister he wasn't as effective as I would have liked him to have been.

*But during that time – I mean I asked you earlier about the way that the bureaucracy in particularly ASTEC and others thought about CSIRO's implementation of the Birch recommendations, because as an insider in CSIRO at the time, we got the impression that there was a bit of disquiet in the government about that and the ASTEC. And ASTEC was asked to review CSIRO and come up with what was known as the ASTEC report.*

Yeah. This was after my time, you mean?

*Yes. You were the deputy secretary of the department at the time, so what was the interaction between the Department of Science, ASTEC, CSIRO and the ASTEC report? ASTEC report was in a sense a bit critical of CSIRO. It essentially had the same recommendations as the Birch report.*

That's right. I'd agreed with that. Well I think if I was to give a sort of general view of where they're at, I think they felt that CSIRO needed to get closer to the industries it was serving, that there was a tendency for CSIRO to be too much into the pure research area, and I think that would have been an ASTEC view and it was probably a departmental view. That's perhaps the main message. There was a view that maybe the top structure in CSIRO was a bit top heavy, I suppose you could say. And certainly when it came to budget times there always seemed to be arguments between the department and CSIRO as to what should go forward. But not to a great extent. I mean CSIRO was pretty much its own entity in that regard, but we would have debates about it, discussions.

*The CSIRO budget went to Cabinet through the Department of Science.*

Yes. It was a science budget.

*So you as the Deputy Sec would have interacted with the bureaucrats at Limestone Avenue?*

Absolutely. Yes, that's right. And I got along well with them, I must say.

*And that was Gratton Wilson.*

Yes, and I think it's fair to say that we had a pretty good relationship. It was never nasty. I mean we'd have disagreements, but -

*It was cordial?*

Yes, it was cordial. I mean I'd see them almost as friends, not competitors, you know.

*And the other issue at the time was the governance arrangements at CSIRO. So the old system of having the chairman and the executive, so having the roles of chairman and chief*

*executive the same. The ASTEC review recommended that the two roles be split. Did you have an input and what was your view on that?*

Well my view is that that was probably an appropriate thing to go, but we didn't actually have a strong input to that. I mean we read it and I suppose if we were asked we would have said, "Yeah, that's a good idea."

*So did the minister – did Barry have any?*

I can't remember Barry ever commenting to me about it anyway.

*So he wasn't highly interested in it?*

No, no. it wasn't – you know Barry is a funny guy in that way. He's got great attributes but when he's interested in something he knows a hell of a lot about it, but he really wasn't terribly interested in some of the detailed operational matters.

*So in the 1985 ASTEC review, recommended that the organisation have a board and split the functions and then he had to appoint the board.*

Yes, so he had big influence on that.

*The presumably before that the legislation had to be – the science industry researcher had to be changed and that came through into the cabinet process through your department.*

Yeah, but we didn't have a great involvement in it.

*So who would have done that? CSIRO?*

CSIRO did it, yeah. We didn't really have a big influence on that, no.

*So the parliamentary draftsman people would have interacted with CSIRO.*

Yes.

*So but if it has been going off the rails, would you have intervened?*

I'm sure we would, yes.

*So the minister would have been informed how that was going.*

Yes, yes. And again, that would have been done probably by Greg rather than me, I seem to think. I had a lot to do with the minister's office, I must say. I tended to be there quite regularly. But in this instance -

*Pat Kennedy?*

Pat Kennedy was there for many years, yes. And also – what was the guy's name – he was there with David Thompson and Barry kept him on, in some part because I said he was

pretty good. But he was a very strong-minded guy and he would have certainly told Barry what for if he, you know, was the sort of guy. He didn't stay that long, because I think he had some fallings out with Pat. But yes, they were the two in the office. It's terrible not being able to remember the names.

*So the board was formed, and how were the people on the board selected?*

I didn't have any say in that. Barry was very much involved in that. He always wanted to be involved in choosing his senior people, senior advisors, and certainly I'm sure he would have made the recommendations for the board – certainly the chairman was clearly one of Barry's recommendations.

*So that didn't come through your department?*

No.

*So that was a ministerial office?*

That's right, yes.

*Is that surprising, or?*

No, well I can't tell you whether – I didn't get involved in any of the discussions, but Greg might have. I can't answer that, because that would be the sort of thing that Greg would interact more than I would have, so.

*But not come up through any process.*

No, it would have been an informal -

Informal process with the minister.

Yes.

*And so all that time, I mean the ASTEC review recommended that the organisation should be much closer to the users of its research in a way that you were recommending to the people when you're a director of WAIT-AID. Déjà vu.*

Yeah, ongoing message, yes.

*So the government appointed the board and then the board set up the so called – the board had various discussions presumably, and decided to get McKinsey and Co in to make recommendations about the internal structure of the organisation. So the new Act kept institutes but the board reviewed all that?*

Well yes.

*And you had -*

No involvement.

*No involvement?*

No.

*So as you know, McKinsey have people on their teams from – they have their people and they get people from the organisation, and I was part of that. So I -*

You know all that.

*I learnt a lot from McKinsey, which you probably have had similar experiences. So were you at all involved in advising the minister or knowing about the new structure of the organisation?*

No. I certainly wasn't. Again, you'd have to check with Greg, because he might have, but I didn't, no.

*So it was a ministerial.*

Mm.

*So we come to the end of 1987, the beginning of 1988, and the organisation is looking for people to be the directors of the new institutes and you were one of them.*

That's right.

*So how did that happen?*

## **CSIRO Institute Director**

Well you may recall that the Department of Science disappeared. I got shifted – I was the one dep sec in science, of course, and Greg and I got on extremely well and I felt it was a great job. When that happened, I got moved to DITAC as it was called, Industry, Technology and Commerce. And there were two dep secs already there. They really didn't need a third dep sec, to be honest. I'm not even sure they needed two. And very early on in the piece I had a meeting with the secretary.

*And who was the secretary?*

David -

*David Allen?*

No.

*David Charles.*

Charles. David Charles, yes. David Charles. My memory for names is awful. And we sort of mutually agreed that I shouldn't stick around.

*Where was John Bell at that point?*

John was in Paris I think at that point.

*He was still in Paris.*

That's right, yes. I'm sure – no he was, definitely. Yes. And in fact I was on the panel when John was appointed Dep Sec back in the – that was after I'd joined CSIRO. So it was my most miserable six months, I think. I hated working in that department. I only stayed in a sense I felt a need to stick around a bit, because the people who'd come from science were behind the eight ball, you know, and whenever that situation arises, the ones coming in are always in a difficult situation. And so I felt I had to support them. We would meet every damn night. Every evening in the week they got together for drinks in David's office and I wouldn't go home until 7:30 at night almost every night. I just didn't like that sort of operation at all, but I felt obliged to be there because I needed to be able to give my opinion of life.

*So when you say "we" the secretary and the deputy secretaries met together.*

Plus a couple of other guys who were sort of favoured in the organisation. And I was a bit of a lone voice, I suppose. I shouldn't say – I mean I wasn't badly treated or anything, but it wasn't a satisfying period of life. I mean the job was pretty awful as far as I was concerned. It's the one time in my life I remember coming home from overseas on a trip and I'd always get in early in the morning and go straight into the department. In this instance I decided to hell with the department. I just went home and took it easy for the day.

*So the minister was Button -*

Yes.

*And Barry was the junior minister in the department.*

He was the junior minister. He's still a minister, yes, and still has some responsibility for the science side, but yes. John Button was the – and John Button is great, of course. I think he's a great minister.

*So you got on alright.*

Yes. I didn't have any problems with John. I had a high regard for him, although I didn't like it when he pulled technology out of the Department of Science and Technology. I wasn't happy about that, although I don't know this should go in here, but in the negotiation about moved to the Industry, Technology and Commerce from Science and Technology, I really think I had a few wins there. I reckon we finished up well ahead of the game in terms of what we kept and what went. But that was by the by in a sense. Anyway, when it happened, I immediately looked for jobs. The only two I applied for actually was the one in CSIRO and

ANSTO the head of ANSTO, because I'd been to ANSTO. I didn't particularly want to move to Sydney, mind you, having been in Canberra all those years.

*So who was the head of ANSTO at that point that you were replacing?*

I didn't –

*You didn't -*

Well I pulled out of it because I got offered the CSIRO job, so I didn't wait.

*So you applied for the job of – so were you headhunted for that or were you just -*

No, no. I applied for them.

*You just saw that -*

I was on the ANSTO board at that time as the Commonwealth representative or the department representative, so I had to withdraw from that position of course due to a conflict of interest, but I knew the ANSTO people fairly well. And I don't know whether I would have gotten the job or not, but I pulled out when I was offered the CSIRO job. I jumped at it.

*And what was that process?*

It was an interview process. I applied – in fact, Gus Nossal wanted me to apply for Howard's job, you know, the head of the admin side of things. . And well, I didn't want that job. I wanted to be back into science policy and research management type things, so I applied for the head of the -

*And Keith Boardman was the Chief Executive at that time -*

Yes.

*So he was on the interview?*

Oh, yes. He chaired the interview panel in fact, yes.

*And did you apply for the job as the director of the environment?*

Institute of Natural Resources and Environment, yes.

*Right, okay. And you got that job?*

I got the job, yes.

*So that was from 1988 and then it started off with Keith as the – Keith Boardman as the Chief Executive -*

Yes.

*And what was your – you've really come -*

Well there were six -

*Full circle, in a sense that you're now in the organisation that you are telling me that from the outside you'd looked in and admired the way that it was going. When you actually got there, what was now your impression?*

Oh, I was very favourably impressed by the standard of the research work. I still felt there was a need – and indeed I implemented the requirement to get a lot more outside contract work going, or involvement with the customers.

*That already had the 30% requirement.*

I'm quite proud of the fact that we actually achieved a higher level of outside funding than the industry institute had. And I think the only one ahead of us in fact was mining, minerals. We actually got up to about 40% in my time, and I was very pleased with that and I worked pretty hard on my chiefs in particular that we should do this and spent time talking to them and the senior scientists about it all.

*So as the director, what was your involvement in the direction of the research?*

Mainly I left that to the chiefs. I had some influence, but certainly for instance the two things I had a big involvement in, one was climate change. I played a big part in that and got a very significant chunk of money from government, \$5 million a year or something for that work.

*Was that with – was Graeme Pearman the Chief then, or did he come later?*

No, he was later. He wasn't chief at that time.

*Brian Tucker was -*

Brian Tucker was chief, yeah. But it wasn't just that division. . It was also oceanography, fisheries and wildlife and ecology. They were the particular – all of those and water. All of the divisions had some part of that.

*So at that point then you started obviously having to interact with some of the state departments, did you?*

Yes, but not hugely. What I did was to put together a proposal, if you like, to government, a package of research projects. In fact, I can remember sorting it out. You know, the proposals came in and they were about \$15 million worth from my divisions. And using my common sense I suppose, I chopped ones out and got down to what I saw was a very hard set of proposals, which was \$5 million worth.

*Was Andrew Pik -*

Andrew Pik was my -

*Did he start with you then?*

Yes, but Andrew was also with me at ASTEC.

*So you recruited him into the -*

No, I tell a lie. Sorry. Andrew applied for the job at ASTEC and didn't get it. I sort of picked him and another – and I can't think of the other guy's name now. He was from the national university – ANU – and he joined me. But the two of them I couldn't differentiate between and I put it to Geoff and to Bruce to review the two of them. And they chose the other guy who was very good, actually - nothing wrong with him at all – but Andrew didn't get the job and then he joined CSIRO. So I knew him from those days.

*So he was already in CSIRO.*

He was already in CSIRO, yes. I didn't appoint him -

*He was good -*

Yes, he was good.

*And so Keith – what was the sort of interaction between you and Keith? You sort of developed your own -*

My own institute.

*Institute. And what was Keith's interaction with -*

Well much the same as with any of the other institutes. I mean obviously we had monthly meetings. I talked to Keith quite a lot because I was on the same floor in the HQ Building. I mean we were in the same level and I saw them a lot. And Keith and I got on very well. I mean I think we knew each other pretty well from before and I never had a problem with Keith except perhaps sometimes when he didn't make a decision quickly enough, but that was a bit different.

*And the directors who came on in 1988, they were quite a very distinguished lot.*

Yes, absolutely. Yes.

*Alan Donald and Ted Henzell and Alan Reid and Colin Adam and Bob Frater and you.*

I was the only outsider, I think. I mean all of the others I think were – where did -

*Well Colin was an insider, but he'd only been in CSIRO for a short time.*

He'd come in as a division head.

*He'd come in as the Chief of the division of material science.*

That's right, yes.

*Materials science, and Dave Solomon had been the acting director of the institute of industrial technology.*

Yes.

*And Colin was in that institute – yes, Colin was in that institute, but anyway, Colin became the director.*

That's right.

*And Dave went back to being the chief of the division.*

That's right. Colin was a -

*Chemicals and Polymers.*

Yes.

*And so you got to know all those?*

Indeed.

*Had you known them before?*

Not to any great extent. Bob Frater I probably knew better than any of the others. I'm trying to think was Bob on ASTEC?

*I don't think so.*

I don't know that he was, but I'd sort of got involved with him in some activities. It may have been the review of the IT or something of that sort, but anyway I knew Bob from earlier days. But I don't know any of the others, really.

*So Keith was then the Chief Executive for a short time, 1988 to sometime in 1989. And then -*

Was it as short as that, was it?

*Well maybe 1990. Then the retirement age is then and so retired and John Stocker came on.*

Yes.

*Was your executive at all involved in that appointment or did the appointment of the chief executive happen via the board – obviously the board appointed -*

The board appointed him. My interaction with the minister was probably closer than any of the others. Because I'd known Barry for many years, and Barry talked to me about John

before appointing him and he was very impressed. He'd had dinner with him in Melbourne. And I didn't know John, of course. I'd not met him at all until he came on board. But I remember saying, well he sounds like a great guy and Barry certainly was keen on his appointment. Now I don't know – the board certainly made the appointment – how influenced they were by the minister I have no idea. Barry was still a minister then. It was a bit later than that that he no longer was a minister. But no, I didn't certainly – and I don't think any of my colleague directors had any involvement.

*But did you talk to John – he became the Chief Executive or -*

That's all, yeah. Didn't meet him at all until after.

*Not beforehand.*

No.

*So the organisation before that was in a bit of in a sense John came in – you know, I was a lad. Well I wasn't really. I was in Colin's office. But when John came in was it a sort of breath of fresh air?*

A very different sort of personality to Keith. He ran a tighter ship all round. In the meetings we had, you know, the senior executive meetings and so on, he was very specific to timing. He didn't let you meander on or anything. If I had any criticism of Keith it was that he didn't come to a decision easily. He was quite happy to chat away for quite some time and I could find that a bit frustrating at times.

*So it's an interesting contrast. I'd just like to get your opinion. Sometimes coming to a consensus via discussion is a good thing. At other times having the chairman say, "We've got to do this" is a good thing. So is there a balance, do you think?*

I think there's a balance. You wouldn't want to – I mean if you're a Chief Executive you certainly wouldn't want to be making decisions that didn't carry a lot of your colleagues with you. You wouldn't want to sort of be absolute in that regard. But it is a matter of judgment, I guess, as to how long you let the judgment run and when you come up with a decision.

*So you've now got the Institute of Natural Resource and Environment with Andrew Pick as your planning person and a couple of other people who have -*

Wendy Parsons.

*Wendy Parsons. There's also a good finance person.*

Yes, who came over here. Who's still over here; Greg Thill

*And you had the INRE projects office or something?*

Yes. I established the INRE projects office, yes.

*And none of the other institutes have that.*

o.

*So why did you do that?*

Well to really focus – two reasons, I suppose. One was to get more collaboration between the divisions so that you know, if you had a big project like the one I mentioned, the one looking for a lot of money, you need several divisions involved. So having a central sort of office for that purpose was valuable. Secondly then it was very much a marketing operation as well.

*And who was the head of that?*

Well initially it was -

*Was it Graham Harris?*

No, Graham came in afterwards. It wasn't Graham originally. It was Chris Crossland. He headed up the CRC up in for the Great Barrier Reef Park Authority

*And I benefited from that project in the end.*

Oh, did you?

*Because you got the project in Indonesia.*

Oh yes. Yes. That's right.

*And I – Trevor Redhead -*

Yes.

*Went up there -*

Well he won the job really.

*He won the job.*

He did all the work to get it. He was the -

*The deputy.*

He wasn't initially. We appointed him subsequently to winning that job. He was in the department – he was in Wildlife and Ecology before that, yeah. And I moved him – I think Chris Crossland – I just remember the name -

*Chris?*

Crossland. Do you know Chris?

*No, I didn't. I knew Graham Harris but not Chris.*

Well Graham came in afterwards. I'll just make sure I've got it right, because I'm always in here. It better be in here. Yeah, Chris Crossland. And Chris headed up that office to start with.

*And that was in your institute office in Limestone Avenue?*

No, it wasn't, no. it was over in Black Mountain.

*Okay. And they were responsible for coordinating proposals.*

Yeah, major proposals. I mean it didn't interfere with the divisions doing their own thing but Chris won the big project for the – down in the -

*Port Phillip Bay. And that's when Graham Harris became famous.*

Graham came in after Chris took this job up in the CRC, heading up director of the CRC up for the Great Barrier Reef. Graeme Kelleher stole him from me. I didn't want him to go, but Graeme Kelleher got him to go up there. So that's when Graham Harris came in.

*So during that time, when John Stocker came in as the chief executive, the story of SIROtech started to evolve.*

Yes.

*And you had experience in WAIT-AID, so what did you think of SIROtech and how that whole saga of the demise of SIROtech? Were you involved in that at all?*

Not to any great extent.

*In a sense you had your own saga in your project office.*

Yeah, well I did. And I thought mine was a lot more effective than SIROtech

*Why was that?*

Well maybe it was more focused. But SIROtech, you know, I don't think it ever really got its act together properly, to be honest. And I never did – I was almost opposed idea that we – I think John had the idea we could make more money as directors by becoming board members of SIROtech and getting paid as board members. Well I thought that was almost dishonest. I said so. I mean John knows my views on this. I said I didn't really think that was good. I think Colin Adam was getting some money.

*Well Colin Adam took some time off from being the director of the institute to being the Chief Executive of SIROtech.*

Was that after my time then?

*No, no. And I was the acting director, so I got to know you -*

Yes.

*On the executive when I was the acting director of the Institute.*

Yes.

*And John Stocker we had those discussions about the research priorities, which I'll come to in a second. And you weren't disappointed in a sense when SIROtech disappeared?*

No, didn't bother me at all, even though I thought it was a – in principal it was a good thing. In practice I don't think it ever really did an extraordinarily effective job.

*But in practice what you set up is the project office was in a sense a technology transfer office under your control.*

Yeah, but it was also limited to the big jobs. I didn't try to interfere with the divisions chasing the research contract work at divisional level.

*One of the things SIROTECH took from CSIRO and then gave back to CSIRO in the end was the patent portfolio. Was that a great – were patents of much importance in your project office or in your division?*

No, nothing like as much as it was in some of the other divisions. But I didn't have a problem with that. I think we never really did – again, that was one of the areas where I think CSIRO fell down. I think we should have done a lot better than we did with the patents that we developed. I don't know that it had an answer. I just don't think we did it very well, that's all. And certainly our input in the discussions and so on, on this matter, I mean I was very much involved in talking about it. I gave my views, but I don't think we did a particularly good job.

*What was your impression of the dynamics of the executive meetings when John was the – was your institute well-supported by the others? I mean how did that all work?*

I think it all worked well. I think we got on well together. Alan was always a bit of a -

*Alan Reid.*

Yeah. He tended to be – I mean I occasionally would have a go at him because he tended to bend the rules a fair bit in terms of giving cars to staff and all this sort of thing. And also in the promotion process – which I think was a very good one –we went through a very detailed examination to promote people to senior positions, and Alan again tended to be a bit loose, I thought. In some ways I suppose I was too tight, because I never got anyone knocked back. When I put them up to the Executive they were always accepted. Alan tended to be the other way and you know, probably 30% of his would get knocked back. Well that's a matter of how you behave I suppose. I don't know. But generally speaking, I think we all got on very well.

*That was certainly my impression in the year or so I was part of that group— and it was a very cooperative setting.*

Absolutely, yeah. So SIROtech went eventually and Don Gibson was the final director of SIROtech and then he left and then the whole of SIROtech came back in to the organisation. And then John came to Melbourne and we had that whole business, which you must have known something about – you were more involved in it than others. When Chris Schacht wanted to hive off the fisheries -

*Oh, yes.*

*So how was that all – what’s your remembrance of the bureaucratic and policy processes that led to that?*

Well I don’t know that there were any processes. I think Chris Schacht had this idea that he’d do something sensational, basically. Very early on in the piece I spoke to Chris Schacht about it. My exact words were, “Minister, if you’re prepared to – if you want to combine these things and you’re prepared to say there’s another \$30 million to go into the kitty for the combined group, I’ll support you. If however you’re just going to pull these things together and there’s no more funding then I’m very strongly against you, because we won’t do as much research. You’ll waste money. So that was my position and he knew it from the start. He and I were – I suppose enemies would be the right word, actually. We were opposed to each other the whole way. And as it happened of course we got an awful lot of support both within CSIRO and also from the community, I think, that the community at large were on our side, which speaks well for CSIRO’s reputation.

Deputy Secretary.

*So was he involved with you at all?*

No. No, not at all. Not on that, no.

*So that was a big part of the organisation. I mean -*

Of my institute.

*Of your institute, wasn’t it?*

Mm.

*The board, how was the board involved in that?*

Yes. The board were very much on my side on the idea that we should not split it off. And indeed, my successor of course went the other way and said, “Well AIMS should come in to CSIRO,” which didn’t get anywhere either.

*Who was your successor?*

He died. You know –come on. The fellow who came from England.

Malcolm?

Malcolm McIntosh.

*Yeah, yeah. So your successor was the chief executive.*

That's right. I was acting – sorry, I was -

*Your successor as the director of that institute -*

Well there wasn't one when I – no. No.

*So back to the Chris Schacht process, so that all evolved and eventually Chris Schacht lost and lost his -*

It cost me a bottle of Penfolds Grange Hermitage at one of our dinners, because I said I'd provide a Grange if Schacht went as minister, and he went. We were having dinner in Adelaide, I recall – not that it's particularly relevant – but we went to this restaurant and they had every Grange for about 50 years. We had a good evening that evening, because I bought my bottle of Grange and then we had a couple of very good reds at dinner as well.

*So that was a very interesting time for the organisation. Similar to the 1974 one when Minister Connor wanted to hive off the minerals ones -*

Yes.

*And this one was Minister Schacht wanting to hive off the environment ones.*

Yes.

*In the time of the minerals one, the equivalent person was prepared to go along with that. You said that if more money had come you might have been more prepared to go along with it.*

Yeah

*Marines side was -*

*Join up with AIMS.*

Yes, that's right.

*So the CSIRO would have kept some aspects of the environment, but the marine side would have gone to AIMS.*

Probably the oceanography as well as fisheries, I would think.

*Do you still – so this brings me to my question. Do you still think that we need a – is CSIRO, which is an organisation that covers everything, is it your view from now that it's a good idea?*

I think so. I think it adds a great deal of strength to the organisation. I think it – I mean obviously it could operate differently, but I think it is a – if I had to vote on it, I'd say keep it together. I think it's the best way to be.

*So John Bell – from my point of view, John Bell was very active in these discussions about the hive off.*

That's interesting, because I didn't know that. I never got involved with John on it. I got involved with the minister.

*So you know, so John Bell was a very useful figure. So then it comes the end of John Stocker's term. After that we survived that thing and John Stocker's turn ends and there must have been some process for selecting his successor. You're the acting chief executive and then you're appointed the Chief Executive.*

Well only because of the timing, yes.

*But you were the Chief Executive for a period of -*

Well acting and chief for probably about 18 months in total.

*18 months, yes. And then another process starts.*

So I initiated that process before -

*So that's what I want to talk to you about now. You must have thought that there was some need for the organisation to rethink its upper management or the way that it does its business you initiated that process. So can you reflect on your reasons for doing that?*

Well I initiated it even when John was still there. It started while John was still in the chair. And I might add that I actually put Malcolm McIntosh's name into the ring. I gave his name to the

*The head-hunter -*

The head-hunter, so I was quite proud of that in a sense. My view was that the institute structure – it worked in a way, but the division was still very strong and the division chiefs were terribly important people. And I thought they needed to reinforce what I'd see as an earlier situation where they had a big say in policy, not just for their own division but for the organisation in total. So their view was to go away from institutes per se – you still needed I think that second-layer management which remained, but where we needed to reinstitute or reinstate the strength of the various division chiefs and their supporting staff to determine the way forward. The one thing against that was that we also needed a structure which encouraged cooperation between divisions, and part of that had been the idea of the

institutes of course. But it turned out that in many cases it wasn't within the institute. It was, you know, between institutes, divisions in different institutes that needed to collaborate. And I thought we needed to do something about that, and indeed that was part of the original thinking that went into the proposal.

*So did you interact with the board on that?*

Yes. Yes. One of the problems I had was both John and previously -

*Keith.*

Keith attended the board meetings, they didn't ever get the directors, the institute directors, to come to the board meetings, except if there was one specific issue that they wanted one of the directors to be at to talk. I always thought that was wrong. I thought there was a need for, at every board meeting for part of the meeting – not obviously all of it– the board had to meet on its own –but a part of the meeting we should have the directors there to involve them with the board in the discussions. And I introduced that. When I was acting and subsequently chief. John wouldn't have that. I mean I proposed it to him of course. I was never short in telling people what I thought. But John didn't think much of that idea. I had to handle the board all by myself. I think it worked well, I must say, but I wasn't there very long so maybe a short –

## **Chief Executive of CSIRO**

*So when you were the chief executive, the directors came to the board meetings for -*

For part of the board meetings.

*And discussed science.*

Yes.

*And general issues.*

Yes.

*And who was the chairman of the board then? It was Adrienne Clark still?*

Yes.

*And so this process for looking at the structure you initiated, was that a board process?*

No, it wasn't. It was an internal – it was directors initially, but we involved senior staff. We involved all of the chiefs of divisions. We had two or three meetings where the whole thing was discussed at length and we had a couple of day-long meetings where it was discussed.

*My memory of this is that Bob Frater had a little group of people including me, Jim Peacock, Ron Sandland and Adrian Williams, and we developed up some input into this meeting. So what was your impression of Bob Frater -?*

Well I can tell you what happened in a way, because I did actually initiate it with the support of the others. And we had a meeting – we had a one-day meeting somewhere. I can't remember. Anyway. And it was only I think it was only chiefs of divisions. Then subsequently we had one in Melbourne, and we'd gone out for dinner the night before and I got a bad oyster in the dinner. So I was sick as a dog. I mean I went to the meeting but I really wasn't with it.

*The meeting I think was at Melbourne Airport or something.*

No, no. We had one at Melbourne Airport. This was at one of the divisions in town. It may even have been – I can't remember which, but it was at one of the divisions.

*I was at the meeting.*

So I asked Bob to sort of take it over, because I just wasn't up to it, frankly. I was sick. And there's a consequence of that. Bob tended to then lead not only that day but – and I suspect this group was a consequence of that second one-day meeting to carry it forward. That's how that happened. And of course I was quite happy. I mean that was fine, and Bob did a great job.

*And that was when the idea was that as you say, that somehow or other we needed the organisation to get away from institute silos and elevate the -*

The chiefs -

Yes.

And get them – I mean we still have the structures where they got together for different ideas or different proposal areas, but it was always a difficult question, how did you manage to get that broadening of experience and bring it together. Because chiefs themselves were pretty independent characters, of course.

*So what we'll call in shorthand the sector structure was part of – I mean I've read some of the submissions that you made to the board outlining the sector structure, and so it was the beginning of a matrix.*

That's right.

*Did you think it was the beginning of a matrix?*

Oh yes. I had that idea right from the start, yeah.

*And we then had – at that point in my career – I mean this is in a sense where my impression interacts with your stewardship - I occasionally came to the executive meetings in Bob's –*

*my recollection or what I don't know which I'd like to know from you what actually happened was somehow or other Malcolm McIntosh was appointed the Chief Executive and somebody had to sell the notion of this restructure to the new Chief Executive, so an odd thing in a way for an organisation to initiate a major restructure before the new Chief Executive came. So how did you handle that?*

I had very close interaction with Malcolm. I would have seen him probably three times in London and then he was over in Canberra several times. And he and I talked a lot and we talked a lot on the phone as well. In a minute I'll just produce this – I've kept it. I'm very proud of it in a sense. It was an article in the Canberra Times that relates to this, saying that Malcolm had a – basically saying Malcolm had a – he was coming in to input this new structure, but he had a very easy job because the work had all been done. Now Malcolm was on side with it all the way. He knew what was happening -

*And you kept him informed.*

Absolutely, yeah. And he was very happy with it. There were a couple of other things you may not know, because I also instigated the ten-year time limit on chiefs. I don't know if you knew that or not. Did you know that was in place?

No.

Well we agreed at the executive level that chiefs should only remain chiefs for ten years, except in extraordinary circumstances.

*Jim Peacock.*

Well Jim Peacock, Brian Walker, one or two chiefs. And Jim Peacock is the case in point, because Jim was coming up for the appointment and he knew of the situation. He called me – this is when I was acting chief executive or I may have been chief executive at the time – whatever. And he said he's been approached by the University of Sydney and he wanted to stay with CSIRO but he didn't want to stay with CSIRO unless he was chief. And I said, "Look, Jim. As far as I'm concerned, you're one of the special cases. There's absolutely no doubt in my mind you should stay as chief, but I said I will have to clear that with Malcolm, which I did. The next time I talked to Malcolm I said, "Look, we've got this sort of" – it wasn't an ingrained thing but it was an agreement that chiefs should move over time to time – and I said, "Jim should stay." And he agreed with it immediately so I was able to call Jim back and say, "Jim, you don't have to worry. You'll be appointed as chief." So that was one of the interactions I had. There were quite a few of those, I must say.

*So that whole new arrangement was instituted. A lot of work was done on it and it sort of came in when Malcolm became the chief executive. So you were never a deputy director under that scheme -*

No.

*So you'd left the organisation after you'd been the chief executive.*

Yes, that's right. I left immediately. In fact it was a bit of worry, because Malcolm of course had the health problem. I'd already arranged to go to Paris and I'd agreed to stay on a month after Malcolm was arriving. I think he arrived in February or something and I agreed I'd stay a month.

*The records say that you were the chief executive until the 31<sup>st</sup> of December and then the acting chief executive again, for six weeks or -*

Something like that, yes. I didn't know that, but that's right. And actually I needn't have stayed, because he managed perfectly well without me. I mean I was around – I stayed around and chatted with him a few times, but he didn't really need me, I must say. So it was an idle four weeks as far as I was concerned. But where were we on that.

*Well the handover, the new structure and the way that you solved that or discussed that. So Malcolm was involved in that and was very well -*

Very well versed in what we're doing.

*So matrix structures. What is your reflection on matrix structures?*

Well it can get too complicated. I think you've got to be very careful not to make them too complex, but you need some sort of system like a matrix to get people involved across fields. And as I say, I think the institutes became silos. That was the problem with them. We needed to change that. And I can't honestly – because I wasn't there afterwards, I can't honestly say how well it worked, but it seemed like a better way forward than what we had been doing, yeah. So that was the principle of it anyway, that it would achieve more and more flexibility for the chiefs in particular to move around.

*And the way that matrixes work depend a lot on who gets the money, so which axis of the matrix gets the money, it seems to me. Did anyone ever think about that?*

Probably not in quite that term, but I still saw it as the money going to divisions. So it was still that same structure for the allocation of funds. And it was really in the contractual work more where you shared the money. I got into big arguments with one of my colleagues. I remember when I got a lot of money for biodiversity. That was another one of the big programs, championing money.

*The Institute project office.*

Yeah. That's right. And I won it twice. I got one lot and I accepted that there were several divisions involved in this and not just my divisions. And I was a little perturbed to find that the money had been allocated that much more to the agriculture area than to my area. Brian Walker got hardly anything out of it, for instance. Well when you looked at the breakdown of who was doing biodiversity work, Brian's division was far and away the biggest. And when I say this, anyway I didn't say anything at that time, because the chiefs had decided -

*So were you the chief executive at that time?*

No. This was still institute director. And even the second time I was still institute director. John was still in the chair and still chief executive. And Brian was overwhelmed really by having three other chiefs involved, so a bunch of them, and they decided how it should be allocated, which I was quite approving of except I wasn't approving of the outcome, where Brian finished with hardly anything. So the next time I got this chunk of money for biodiversity and I allocated it. And you can imagine that John – my brain's gone -

*Radcliffe.*

Radcliffe was extremely unhappy that I'd done this. Well his chiefs were very unhappy and they went to him and so he called me and said, "This isn't the way it should be done," and I said, "Well John, if I break it down on the basis of who's doing this sort of work, then it seems to me that Brian Walker should get a chunk of the money, and so that's going to happen." and we eventually – he insisted and going and talking to John about it, which we did, and John supported me I'm pleased to say. But he wasn't happy. It was one of the few times that – and John and I are very good mates still, but he wasn't happy about that outcome. And his chiefs were very upset, but I wasn't – I didn't yield at all.

*Malcolm became the chief executive and you went off the Paris and then you came back to WA, did you?*

Yes.

*Did you have much interaction with Geoff Garrett?*

Nothing like as much as I had with Malcolm.

*So Malcolm and then Colin Adam became the sort of -*

Acting and then-

*Acting Chief Executive.*

Mm.

*Until Geoff Garrett came along. And the matrix system – I was an outsider by then – became too complicated.*

Yeah, it could have. I lost track. I talked to Malcolm a lot, because I was in Canberra a lot after I'd come back from Paris. And he always had time and he was always keen to talk, and you know, I gave him whatever advice I could sort of thing, and he was always keen to seek my -

*So what was your advice to him, you general advice?*

Well the advice tended to be on more specific things. It wasn't on structures or anything of that sort, because they were in place and I wasn't sort of involved in that. So really it was – often it was down to individuals and so on that were talking more than anything else. But he

always had time to talk to me and we got on very well, and I thought he did a fantastic job. I mean -

*I thought he was very –I was a great supporter.*

Yeah, yeah.

*So your impression of CSIRO from the outside now? You said to me earlier that you would keep CSIRO. So if you were designing a national innovation system from scratch, you'd have something like CSIRO?*

I think so, yes. I've compared it in my mind – well for many years I've compared it with other organisations around the world, and I didn't see anything that was really quite as good as CSIRO, both from the point of view of outcomes, you know, achievements, but also from the point of view of staff, the researchers having the time to do research. I know they complain a lot that they've got to fill in all these documents and so on, but by comparison with most other places around the world, I think it's really a pretty good structure. So I'd still be supportive of that. Having said that, I'm really quite concerned that I think the morale of CSIRO – I've deliberately stayed away. I've been asked to do jobs, serve on committees and things with CSIRO and I wouldn't. It's just my particular thinking, and I felt that it wasn't appropriate having been Chief Executive that I should do that. And of course it's – a lot of other people would think differently, but that's just the way I was so I haven't done that. but I have got some concern now that in talking generally to people in CSIRO and probably over here more than anywhere else – it may be WA-specific, I don't know, but the morale seems to me to be pretty low at the moment.

*When you joined CSIRO in 1988, it was halfway through. When I joined CSIRO in 1969, CSIRO was about 40% of the -*

Research -

*Research expenditure in Australia. In 2017 CSIRO is about 4.5%.*

Yeah.

*So its role in the national innovation system, simply by those numbers, means that it has declined. So the question in a sense for your reflection is given that, should it be rethinking its role?*

I think you always need to rethink or revisit your role. I think it has been doing that to an extent, I must say.

*And that changes morale.*

Yes. I hadn't realised the percentage was that dramatic a change, because it's still got a fairly significant budget overall. When I left the CSIRO, I think it was the largest it has ever been in terms of staff numbers, yeah. We grew very significantly over the time I was there. My institute grew 40% or something. And supported. So I was quite pleased with those

things. Ever since I left, it's been diminishing. It's been getting smaller, and that's a great concern. I can't be sure why that's happening, but in my view it isn't a good thing.

*It's not a good thing.*

No.

*So I mean the simple thing why organisations decline is that they're -*

Not relevant or -

*Their budget won't support -*

Yes, well that's probably right.

*So while the CSIRO's budget continues to increase, the number of people that that budget can support continues to decrease, and that's the simple explanation. So we can't solve that problem today, but your reflection is that an organisation like CSIRO is still really important for the Australian national innovation system.*

Yes. It certainly is. The growth that we had was actually mainly driven by the external funding we got. We didn't really get any more from government, but there was one thing that I've always been very proud of at the time when I was fairly early on in my time as director. We got an economic team, an external team, to do the review of about half a dozen – I think one research project from each division. Now we may have selected them carefully. I can't really remember. But these were external economic people who prepared this and looked at the cost-benefit out of those things. And I think the least one was probably – I think it was probably oceanography, and that was sort of like one and a half times. But the best was sort of like 17 or 18 times. We produced this as a document. It's still available.

*I've seen it.*

And I presented it to the Department of Finance. And they accepted it. We had a very much better relationship with the Department of Finance as a consequence of that than had previously been the case. Now I think that's probably the sort of exercise that should be done from time to time to prove that you're valuable or have an independent look at it, if you like. If we'd done it ourselves it wouldn't have been of any value. But getting the external – and I paid them to do it – but having the views of life of how good we were made a big difference. It was very valuable.

*All right.*

I'll put this – because I know I've got it there – this article. You may – I mean obviously you don't want to record it but you're welcome to have a copy of it if you want. It wasn't the one I was thinking of. I kept it because I was quite pleased with what it said. I've just got to see if I can find it now. I saw it the other day. That's why it's just come to mind.

*Is it in the Canberra Times?*

Yes. I can't remember his name either, but the guy who did a lot of articles on science. It's in one of my files. Here we are. Okay. Now if it's of any interest I'll make you a copy.

*It would be good to have.*

All right. I'll do that. There's one particular paragraph which talks about the Derbyshire-born physics graduate.

*That's very, very good. So Roy, before we do that I think we've probably covered much of what I had. Did you have anything else?*

No. I think you've got a very comprehensive job, I must say. Yeah. There was one other thing. I'm trying to think what it was now. It was something that came to mind that I was going to say, but it's gone out already.

*Okay, well thank you very much and I'll stop recording.*