



CSIRO Oral History Collection

Edited transcript of interview with Ta-Yan Leong

Date of interview: 7 February 2019

Location: Black Mountain (Canberra)

Interviewers: Professors Tom Spurling and Terry Healy



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Dr Ta-Yan Leong, BE (Kyoto), ME (Kyoto), Dr rer nat (Berlin Free University)

Summary of interview

Dr Ta-Yan Leong was born in Ipoh, Malaya (now Malaysia) on 3 December 1946. In the first part of the interview he describes growing up as a Mandarin speaker in post-war Malaya, including his primary and secondary education in public and private schools.

He then talks about his experiences as a tertiary student in Chiba and Kyoto. He was studying industrial chemistry in Japan and completed a Master of Engineering degree. It was in Japan that Ta-Yan learnt to speak German, decided to switch from chemistry to cell biology and went to Germany to complete his doctoral degree at the Max Planck Institute for Cell Biology. On completion of his degree in Germany, Ta-Yan spent two years at the School of Biological Sciences Stanford University. He was thus well qualified to take a Research Scientist position in the CSIRO Division of Plant Industry. He talks frankly about his feelings of insecurity in the Division and why he took the opportunity to transfer to a position in the CSIRO Centre for International Research Cooperation.

In the last part of the interview Ta-Yan reflects upon his achievements during his time in CIRC and his interactions with his Chief Executives.

NOTE TO READER

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Introduction and early life in Ipoh, Malaya

This is an interview with Dr Ta-Yan Leong for the CSIRO History Project, oral history collection. It's the 7th of February 2019 and we're in an office at CSIRO in Black Mountain. I am Tom Spurling and with me is Terry Healy. Thanks very much Ta-Yan for agreeing to this interview.

Thank you.

Could you please confirm your understanding that Swinburne University of Technology will own copyright in the interview material, and that access to the material will only be given in accordance with the instructions you have given us in the rights agreement?

Yes, I do.

Thank you very much and once again, thanks for agreeing to be part of this project. In this interview, we're going to be talking about your early life and experiences, a bit about your career before and after CSIRO and your views on your role in CSIRO and the evolving role of CSIRO in Australia. So let's start at the beginning, you were born on the 3rd of December 1946 in Ipoh in Malaysia?

Yes.

Well it wasn't Malaysia then was it?

No, it was Malaya at that time.

Was it the Federation of Malaya?

Not even it was the Federation of Malaya. At that time it was still under the British rule, still part of the British Empire.

So in 1946 Malaya was still a colony of the UK?

That's right.

But it was sort of like a Federation?

Yes.

Can you tell us a bit about your early life in Ipoh? Where is Ipoh and what about your parents, siblings, primary school?

Yep, actually it's 'Ipoh'. It is situated half way between Kuala Lumpur and Penang, but further inland. And it was the richest tin mine in the world at that time. So Ipoh was built on tin, especially during the Korean War that was in the 1950s. Soldiers went off with tins of food and tin was very expensive. And so why it had become very expensive because of the great demand. And we can see lots of tin mining activities around Ipoh, and that's how Ipoh has developed. And coming back to my family background, I am a third generation Malaysian Chinese. My great grandfather migrated to Malaya to escape the war in China and problems

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The Ethiopian wars? The war in China was with whom?

Internal wars.

What year was that?

Between Chiang Kei-Shek and Mao Zedong or before that?

Before that, yeah. Even before the Japanese invasion of China.

Right, so in the 1920s?

Probably in the 1920s. And then my father was born in Malaya, he went back to China for his education, for his University studies and then he married and came back to Ipoh. That was before the war broke out.

When your father went to China to University, what did he study?

He was the first graduate of Civil Engineering in the Sun Yat-Sen University in Guangzhou at that time. And his home village was not too far from Guangzhou. And because he was not only the first graduate from the University, he was also the first University graduate in the village.

In his home village?

In his home village.

So the village your grandfather and welcomed your father?

Yes, my father. So I was lucky enough to visit the village about six years ago, so it was good, for the first time. Although I've been to China many times before that. Coming back to my family background, my father was the Science head teacher in a Chinese medium school, a high school in Ipoh called 'Yuk Choy' High school, where the medium of instruction is Chinese Mandarin language. And I think we follow the whole curriculum from China. At that time, before Malaya became independent, there was such freedom that we could have Chinese medium schools, English medium schools and all the other schools. So my father was the head Science teacher in the high school and my mother was a teacher in the primary school. There were altogether six children in the family. So although my parents were teachers, I think we were still quite poor.

Were you the eldest or the youngest?

I'm number five. Well taken care of by my elder sister, she became quite influential in my future life. I went to the Chinese medium primary school and -

So before you go into that, what happened to your parents and your family during the Second World War with the Japanese?

Well they were just under the Japanese occupation. Food was rationed and -

But not locked up?

No, not locked up. There will be too many people for them to lock up. They will lock up probably the resistant forces or the communist sympathisers and whatever, but you can't lock up everybody. Although I think they have barricaded the town and every time you go in and out, you have to show your identity, that you are not carrying any food out of the compound. So our life was not easy at that time.

And were the people of Chinese origin especially targeted?

Yes, mostly because they would suspect that they were under the influence of communist sympathisers and so on, and there was quite a large proportion of them especially in Ipoh because it's the tin mining town, business was booming and a lot of Chinese were running businesses in Ipoh. So of course they would become the target from all sides in that. And Ipoh, even after the war ended, was under very strict control by the British government because of the communist emergency, so called, because they were saying that the communists were trying to stir up trouble and so on. And even after the independence of Malaya, everyone was limited to living within restricted areas. You can still go in and out but you have to carry your ID and you are not allowed to carry food or other items because they will suspect that you may bring rice to feed the guerrilla in the jungle or whatever, the communists and terrorists in the jungles.

But your family suffered during the war but they all survived?

Yes, they all survived. And I didn't know much about the war itself because I was born in 1946. That was after the end of the war. But I only hear all these stories from my parents and from other relatives and so on. So it was quite an experience. And growing up in Ipoh, it's quite interesting, quite multicultural. I went to the primary school with the Mandarin or Chinese language instructions. We have English lessons, we have Malay lessons and sometimes we will play with Malay boys or Malay children in the neighbourhood, talking either in Malay or in English. And so I grew up in a very multi-cultural and multi-lingual environment.

So is your first language Mandarin?

Mandarin, yes. My home language in my mother town was Cantonese, this is from Canton.

So you speak both Cantonese, Mandarin, English and Malaysian.

That's later on, yeah. Of course in the first few years of primary education it was mainly in Mandarin, and then English and Malay were introduced in the later years of the primary education. And then when I went to high school, I also went to the high school where my father was the teacher and that was using Mandarin as the medium of instruction.

Was that called St Michael's Institution?

Not yet.

Alright.

And my father was keen for me to improve my English. So in the morning I would go to the Chinese mainstream junior high school, and after that I would go to an English private school so that I learn things in both Mandarin and English. And to the extent that I was able to pass the common exams in both English medium and Chinese medium. And of course my father created an environment that we would have Chinese and English newspapers on the weekends.

At home?

At home, yes. So there's plenty of exposure. And my eldest sister was a teacher in Chinese language, so she would give me lots of private tuition as well. So after I finish my junior high school in the Chinese school, I transfer directly to St Michael's Institution which was an English medium school run by the Christian brothers in Ipoh.

Was that a co-ed school or a boys' school?

No, it was a boys' school.

And were the Christian brothers who ran that, were they English?

Some brothers were from England but the head master at that time, I think he was a mix of Burmese and European.

And English was the medium of instruction?

Oh yes, English was the medium of instruction. Well from Year 9 to Year 10 it was a boys school, and then in Year 12 - we call it upper six and lower six, so we have form four and form five, and in form five was boys' school, but in the form six - lower six and upper six, which was similar to Australia during that time I think? Form lower six and form upper six we have a mixture of boys and girls because some other high schools which were girls' high schools, did not necessarily have the upper senior years. So I went to the Science stream in St Michaels and completed the GCE which was conducted by Cambridge University at the ordinary and advanced levels. So similar to the HSC here in Australia.

And you also did the Federation of Malaya Certificate of Education?

Yes.

Were they different exams?

They were also run by the University of Cambridge and University of Oxford, but of course recognised by the Malayan Government. And I also did the language, the Chinese papers in the HSC as well. So mainly through my own home through private tuition from my older sister.

So did your siblings all go to tertiary education? Your older sister, you're saying, was a teacher but did she graduate from a University or something?

Yes, she was the first graduate from the Nanyang University in Singapore. That was the only Chinese medium University in the South East Asian region actually, although later on Lee

Kuan Yew managed to turn it into a more English stream institution. So she was the first graduate from Nanyang University and then she went back to Malaya to teach Chinese language. And all my other siblings, my three elder brothers, they all went to Universities in Taiwan. At that time the Taiwan Government offered a lot of scholarships for students, especially my elder brothers were graduates from pure Chinese medium schools. The same school as me although they didn't go to the English language senior high schools. So my younger sister actually came to Sydney to do her University studies as a private student. And of course being number five in the family, I couldn't expect my parents to send me off to overseas Universities, although I was quite keen to continue my studies in England. In fact I got an offer from an English Technical University but it would have cost a lot of money for my parents. So I try for a scholarship offered by the Japanese Government, and was successful. So I landed in Japan after I finished my HSC in Ipoh.

Industrial Chemistry studies in Japan

So you were born in 1946 and your CV says you went to Japan in 1966, aged 20. Is that incorrect?

Yeah it's incorrect, 1964.

1964 you went to Japan?

Yeah, maybe even 1965 because the high school in Malaya would finish in December and the Japanese University would start in September.

And so all the anger and hostility from the war years, was that more or less over and you could go to Japan and felt comfortable?

Yes, I think there was a lot of effort by both governments to make up and peaceful treaty and friendships treaties were signed. So the Japanese came and started to offer scholarships to students in Malaya, but they were not as popular as nowadays because first of all you need to learn a new language, and secondly at that time the Malaysian government didn't recognise any academic degrees from Japan. Mainly because it's in a different language. Unlike nowadays, I think it's much more popular.

And what did your parents think of that?

They were quite happy for me to take the advantage and also take that adventure. Another reason was that a relative of mine was offered a similar scholarship the year before and he went to Japan and his feedback from Japan was quite favourable. So my parents were quite happy for me to go to Japan. And of course the scholarship was quite generous too, that means they don't have to pay anything for me.

So the first thing you did in Japan was go to Chiba University, a Japanese language course?

Yes.

How many years? Was that one year?

Just one year. Chiba University, it was outside of Tokyo. It depends on which University you want to enrol in in Japan. For Universities in Tokyo and some other Universities, you would have to spend two to three years in the Japanese language college, in Chiba University, before they will accept you into the graduate course or second year of the graduate course. Whereas Kyoto University, at that time, would accept students right from the first year. So I only spent one year to do my Japanese language in Chiba University, so the second year I went straight to Kyoto University which I think I enjoyed that.

So you were quite fluent in Japanese after one year?

It depends, because I have the advantage of Chinese language, a lot of the kanji's were similar although the pronunciations were different. After one year of the intensive language course, I've more or less learned most of the Japanese grammar and I would be able to read the newspaper without much problem.

And what was Japanese society like when you first went there? Were they still suffering from the war?

Yes.

Was there plenty of food?

There was plenty of food and 1964 was the year they had the Tokyo Olympics, and before that I think they put in a lot of effort building up the infrastructure, the bullet train. And of course Japan has recovered quite a lot during the Korean War, being the base for the American military supply and a lot of other logistic supply as well.

So in Japan, Kyoto - I'm asking you a question here - was it a wealthier sort of society than Ipoh?

Yes, I would say so because Kyoto was not much destroyed by the allied forces because of the historic and cultural heritage, and standing of Kyoto. I think the allied forces respected that.

So at Kyoto University you ended up with a Master of Engineering in Industrial Chemistry.

Yes.

Could you tell us a bit about why you selected industrial chemistry and science as your career? Your father, you said, was an engineer and your mother was a Chinese teacher and your sister became a teacher in Chinese language, why did you do science?

Well I studied Science in my senior high school years and I was particularly interested in chemistry because at St Michael's institution they have a really good analytical chemistry section.

A teacher?

A very good teacher, and we had practical lessons every week where we'd do all this chemical analysis, and I was quite fascinated by all this. So I wanted to continue studying

chemistry. And industrial chemistry would offer me a lot of opportunities in terms of engineering, technical and at the end I chose to do research. And to put it straight, I enjoyed the analytical chemistry in Ipoh in my high school years so much that at Kyoto University in the first years of chemistry, analytical chemistry lessons, I was the first to complete the analysis. So that makes me more confident in doing chemistry in Japan, in Kyoto University. And I was also influenced by the professors in Kyoto University because during my first year in Kyoto University, you probably heard of the student movements?

Yes.

The whole campus was closed down by the radical students and no one could come in and out of the campus, although staff members could go in but other students were shut out. But I just showed them my alien registration card and they would let me through. And so there was no lessons at all for more than half a year, and I talked to the professors in industrial chemistry, they said "Why don't you come into my lab and do some practical hands on practices or experiments and so on?" So I enjoyed that because I was the only foreign student in the whole year, and I was given special attention. And at the end I chose to do synthetic organic chemistry, but it has got some industrial aspects of it.

So when you say you were the only foreign student in your class, were there other foreign students at the University of Kyoto?

Yes.

But you were the only one in that particular year of chemistry?

Yep.

And you obviously lived off campus, but were you in a sort of student accommodation?

Yes, and for the first two years in Kyoto I stayed in the foreign students' dormitory, which was run by the Ministry of Education, especially for Government scholarship students. And then I didn't like that very much.

Were you lonely?

Yes but I managed to make friends with other foreign students, students from Malaysia, Singapore and from other countries. Not much of Japanese students because for the first six months there was almost no contact with other -

They were all on strike.

Becoming proficient in Japanese and German

Yeah, they were all on strike. And in the meantime I met up with other senior students from Malaysia and Singapore, and they were living in this private student housing facility which was run by the Swiss Missionaries, it's called 'Haus der Begegnung' in German, which meant the house of meeting, house of encounter. It's just a small building with about rooms for sixty students, but they were run by two house parents, two pairs of house parents. A pair of

house parents from Switzerland, usually German speaking. And then a pair of Japanese house parents. So there was a mixture of foreign students and Japanese students, and that's where I started to mix with not only foreign students but Japanese students.

And Ta-Yan, were most of the foreign students male? Or was there a mixture of male and female?

A mixture of male and female, yep.

And in your class in chemistry, were there men and women or mainly men?

Mainly men, yep. And that experience at International House influenced my later experience or my desire to go to Germany for my PhD.

Were you the only boy from Ipoh there?

Probably, yes. Because that house, being not very big, it will restrict the number of students from each country. So there's a maximum number of countries in the house and they have maximum exposure to different cultures and different languages.

But was the Master of Engineering in Industrial Chemistry a research degree?

Yes.

So you had to write a thesis in Synthetic Organic Chemistry?

Yes.

And that had to be written in Japanese?

No, the professors were happy enough for me to write it in English. In fact the faculty of Industrial Chemistry in Kyoto University has a long history of relationship with Germany. And for our chemical practicals, we could write a report either in Japanese, English or German. And German was the compulsory language for the whole studies.

So you learnt to speak German in Japan?

Yes. And I practiced German sometimes at the house with the house parents. So I wouldn't be able to learn much English in the University because the standard was just not very high. People would just learn how to read and understand, most of them would not even be able to speak in English. But German is a bit easier. But I went to the Goethe Institute.

In Kyoto?

In Kyoto, yeah, to do some extra German language work when I decided to go to Germany. In fact at the end of my last year in Kyoto University, I came across this international association for the exchange of students with technical experience. And I signed up and they sent me to Germany for a summer vacation where they placed me in - originally they were going to place me in a Copper mine in Dusseldorf, but then because I'm not a Japanese student or some mix up of paperwork, they sent me to this Max Planck Institute in

Wilhelmshaven instead, which turned out to be a great experience for me. So with the help of a really nice supervisor, he helped me to complete a small project at the Max Planck Institute within this two month period, and the director of the Institute was very happy and he said "If you want to come back to Germany, let us know anytime and we would be happy to offer you a fellowship or whatever." So I went back to Kyoto, completed my undergraduate studies and then I managed to have an extension of my scholarship and completed my Master's degree. For my master research, I did some synthesis of chemical compounds using UV light as an energy source to polymerise some simple chemicals. And although my own research did not turn out to be very practical but the reaction itself turned out to be quite useful eventually. At one stage in Japan, the printing, especially the newspaper printing industry was using lead moulds and it was expensive and lots of work involved. Whereas a company commercialised the research finding from this lab where I did my Masters research. They managed to develop some hard paper where they would have a film of the chemical monomer and then if you are going to put what you want to put in the newspaper, the negative or whatever under the paper, and then the UV light on it and the chemical which receives the UV light would polymerise and becomes very hard, and then after that exposure you just wash it away and then you can use that as your master negative or whatever to print your newspaper. And that was used for about two or three decades before they invented digital printing or whatever.

Was your work in that published?

Yes, it was published. But as I said, my work was not directly related to that particular commercialisation process.

PhD studies at the Max Planck Institute for Cell Biology

So you then went to Germany to do your PhD?

Yes.

Was that at Max Planck?

Yes, at the Max Planck Institute for cell biology.

So you switched from chemistry to biology at that point?

Yes.

Why was that?

That interest sprang from my work, the two month period that I was there at the same institute. It was quite fascinating work for me because the lab has the largest collection of giant single cellular algae. And it can be 20 centimetres long and its one single cell and it has got a nucleus at the base and then it grows filament, then it grows into some sort of branch off into an umbrella to catch the sunlight to conduct photosynthesis, and you can manipulate the influence of the nucleus on the whole cell. And it was quite fascinating work. So after I finished my Master's degree, I could consider applying for an extension of the scholarship to do a PhD in Kyoto, but I chose to go to Germany just for the fresh research

work and also for some more experience in Germany.

And were you still single at that point?

Yes, but I met my wife in the last year when I was in Kyoto and I went to Germany and came back to marry her and then we went back to Germany.

And is your wife Malaysian or Japanese?

She's Japanese, yep.

So you went back to Japan to be married?

Yep.

And did all your family go to Japan for the wedding?

My mother was very sick at the time, she was terminally ill and so she couldn't come. None of my family members could come to our wedding in Kyoto.

And how long did it take you to get your PhD or doctor - it was called something else.

Doctor rerum naturalium; Dr. rer. Nat.

Yes, how long did that take you?

About three and a half to four years. Yes, so I was mainly working on the - let's go back to my PhD research just very briefly. That single cellular giant cell or algae, *Acetabularia*, it's easy to do all this cellular manipulation research and, similar to other plants, it has got this circadian rhythm in photosynthesis. And so I was working on the role of protein synthesis in the circadian rhythm. And I was able to show that the protein synthesis followed closely the circadian rhythm, and it can be manipulated by using some chemicals as well. So I was interested in that research and I was quite happy to be able to finish the research and get my degree. The degree was from Berlin University, Freie University Berlin. That's different from Berlin Technical University because my professor at the Max Planck Institute was a professor from the Berlin University.

So the Max Planck Institute wasn't a degree granting institution, you had to get the degree from the Freie University?

Yes.

Post-doctoral work at Stanford University

And your next stop was a post doc at Carnegie Institution of Washington in Stanford?

Yes.

How did you come to choose that?

Yes, well I must say that my life has been influenced through people that I've met along the way. And I was lucky enough that when I was doing my PhD work in Germany, a Stanford University professor came and spent his sabbatical leave at the institute. We got along quite well, in fact we were in the same lab and so he got to know me quite well and he said "Well if you are interested in coming to Stanford, let me know after you finish."

So the place is called the Carnegie Institute of Washington in Stanford?

In Stanford University.

So what was that? Was that a department of Stanford or a research group?

It is within the Stanford University campus, the University of Stanford host a number of research institutions and this particular one is called Carnegie Institution of Washington which is, I think, funded by some endowment from the Carnegie family. And that particular institute is called a Department of Plant Biology.

Sorry, and whereabouts is that located?

In Palo Alto, in Stanford.

At Stanford? Right.

At Stanford, yes. Within the campus itself. In fact I have to enrol as a post doc at Stanford University in order to be able to stay in the campus accommodation.

With your wife?

Yes.

And was she working at that point?

No, by that time we had our first child in Germany and we went to Stanford and our daughter was still four or five years old. So my wife has to spend - of course it's a new environment, new language, new culture for her as well. So she has to look after the -

Was that a happy time for her?

Yes because she managed to meet up with many other foreign students from around the world in Stanford. It was quite a good environment to be in. And we met some -

So you, at this point if I remember correctly, could speak Cantonese, Mandarin, English, Japanese and German?

Yes.

What could your wife speak?

Well she could of course speak Japanese and she learnt German when we were in Germany, she went to this adult education centre and studied German language. And also we had

opportunities to meet up with German friends and other friends who speak English. So she has studied English at her University time in Japan, so it was easier for her to pick up the English language as well.

What did you speak at home?

Japanese.

Still?

Still, yes.

That's very interesting. So you've told us a bit about your scientific achievements during this period, at the end of your post-doctoral experience in Stanford, what were your ambitions? What did you think you were going to do with your life?

I would like to stay back in Stanford but I knew that it was not easy because I have to find a sponsor to sponsor my Visa and so on. And my post doc term was two and a half to three years. And then this opportunity in CSIRO came up at a conference. I met up with Dr Anderson in the Plant Industry in Canberra, and also a German professor who spent some time in the Plant Industry. And Dr Anderson was quite kind enough to - she was interested in what I was doing in Carnegie and she was saying that "Wow, there may be opportunities for you to come to CSIRO in Canberra too." So as I said, my life is influenced by all these important people that I met along the way, and that's how I ended up in Canberra. But before that, I have to mention that I tried to apply for migration to Australia.

Before this opportunity came up?

Yeah, before, when I was there in Stanford. I knew that it was not easy to stay back in Stanford because I have to get waivers from the Malaysian government and also to get a sponsorship and all those other hurdles. And so at that time my younger sister was working in Sydney and I was quite keen to come to Australia. So I applied for -

So you never thought of going back to Malaysia?

No, because at that time I have heard and I have seen so many obstacles that being Malaysian/Chinese, you would almost be treated as a lower class citizen in terms of education opportunities, job opportunities and other opportunities. So I didn't have any desire to go back to Malaysia. So I apply for migration to Australia but the Australian Consulate said that you didn't score high enough. Your academic qualification and all the others, did not add up to 100 points, only to 60 or 80 points, because it did not have a job offer. So then this opportunity in the CSIRO plant industry came up and I apply for it, and was accepted. And when I applied for the Visa, the consulate look up my file and rang me up and said "You applied for migration last year and now that you have a job offer from CSIRO, will you still want to be a migrant?" and I said "Yes" "Well come from a medical check-up next week." And that's it.

And your wife and your child?

Yes, and during that time, in the meantime, my son was born in -

Two children?

Family of four, each born in a different country!

Two children at that time. So we all came to Canberra and the immigration, I think we landed first in Adelaide. When we cleared through immigration, the immigration officer was quite surprised that this family of four were all born in four different countries. So they stopped work and call everyone in the counter and look at this family of four with four different countries of birth. Anyway, we ended up in Canberra and I enjoyed my research work in the plant industry and we got to meet up with great scientist in plant industry in Canberra.

Research Scientist at the Division of Plant Industry

So you'd been in a Max Planck Institution in Germany, and Stanford University, and Kyoto University, you'd been in three top research institutions and Universities. How did you think CSIRO plant industry compared with those institutions?

Top class, although I would say that Max Planck was better funded than the CSIRO at that time. I'm not sure about how it is now but at that time in the seventies, I would say that the Max Planck Institute was much better funded.

And better facilities?

Better facilities, yep. And of course the Carnegie Institution in Stanford was very well funded as well. And in CSIRO I'm sure that it was quite well funded. It was the later years that the budget squeeze came to -

So what were your early impressions of the organisation when you arrived in 1982?

I was too busy working and I enjoyed the interactions with all these great scientists surrounding me. So it was great. The only thing that bothered me at that time was it was a term appointment and I was busy looking beyond that as well, and with that in mind I have undertaken the task of getting myself accredited as professional interpreter and translator in both Japanese and Mandarin.

So at this point your family had decided that you were going to live in Australia.

Oh yes.

And so you were on a term appointment at the CSIRO and you said to yourself "I better make sure that I have other skills in case this doesn't last."

Yes.

But you were in the Plant Industry about a year and you got a promotion to senior research scientist, so you must have been doing quite well.

Yes indeed.

Did you decide what you were working on or were you part of a bigger project? What was the sort of atmosphere of the division of plant industry at that time?

It was quite competitive because Dr Anderson was mainly working in photosynthesis and my work also involved photosynthesis. And at that time Dr Jim Peacock was the Chief of the Division and we have the feeling that photosynthesis may not be his favourite line of research because he was more into molecular and genetic aspects. So unless we change our course of research, we might not be able to be funded. And so Dr Anderson also warned me that the way ahead may not be easy enough to continue on. Her position is secure, whereas all the others may not be. So I was looking at different opportunities and another factor was, as I said, I had a Chinese educational background when I was in Malaya and then when I was in Japan, we have heard all these Beijing radio broadcasts about the red guards, about cultural revolutions about I always wanted to visit China. That's why I became a Citizen of Australia immediately when I was qualified after two years of migration.

Because that would make it easier to go to China?

Opportunity at the Centre for International Research Cooperation

Yes, because my Malaysian passport would not allow me to go to China at that time because Malaysia would not recognise China because of the communist aspects. And then the opportunity of CSIRO international office opened up, in fact there was this vacancy in the CSIRO international office and they were looking for someone with international background and language capabilities, and I thought it would be a great opportunity for me to visit China and help other colleagues within CSIRO to interact and cooperate with China and other countries. So I jumped at that opportunity. And there was another hurdle at that time as well because that position in the international office was a transfer position, and my position at plant industry was a term appointment. So technically I couldn't transfer to the permanent position in head office in the international group. So the chairman at that time, Dr Keith Boardman -

Who was himself a distinguished photosynthesis scientist?

Yes, he signed the paperwork to create this position for me after the international office was so convinced that they wanted me to join the group.

So who drove that decision? Was that Barry Filshie?

Barry Filshie, yes.

Did you know Barry before you applied for the job?

No.

So you applied for the job completely out of the blue?

Yes, of course I went and met him and talked about the position, what is going to be

involved and so on. And then he said “Oh yes, by all means apply for the position.” And I turned out to be the best qualified person.

So you were at Plant Industry for a bit over a year, you had a promotion to senior research scientist there, your reports of Jane Anderson - your promotion case says that you could have a very good career as a scientist but you decided to take a position in head office in the Centre for International Research Cooperation. I think we'll have a break here and come back and discuss more of that.

Yep.

So we're resuming now that you've got the position of Deputy Officer in charge of CIRC. The CSIRO Act gave the CSIRO some international functions and responsibilities of conducting scientific research for the purpose of performing the international responsibilities of the Commonwealth. So what was CIRC responsible for? Were you responsible for identifying these scientific opportunities and arranging the projects? I mean exactly what did CIRC do and what did the deputy officer in charge do?

Japan and the Very Fast Train Project

All the above as you mentioned but also my first official task was, as part of my orientation, I visited Japan on my own as my first assignment from CIRC, and I was in the head office of the Japan Rail where I was surrounded by a whole room of technical experts and I put to them a list of questions from Dr Paul Wild.

Was Dr Paul Wild the chairman at that time?

At that time, yes.

And he was very interested in?

Very fast train, of course. And so I brought back all the technical aspects of the Japan Rail, the Japan Shinkansen, back to Canberra for him. And that sort of helped him to finalise his very fast train proposal, and that was my very first official duty.

So how did you turn up? How did you get to an interview with Japan Rail? How was that arranged?

Through the Japanese embassy in Canberra. They were quite keen to, I suppose, transfer the technology of Shinkansen, the bullet train, to Australia if Australia is interested. There would be a lot of huge commercial opportunity. So they were very keen to lay out the red carpet for us.

When you say 'for us' that was for you?

Yeah.

So you were there by yourself?

By myself, yes.

Were you accompanied by someone from the Australian embassy?

No.

So you were just there representing CSIRO?

Yes.

Did the Australian embassy know you were doing it?

I'm not too sure.

But it was arranged through DFAT?

No, through the Japanese embassy.

Yep, here in Canberra.

You're supposed to tell people in DFAT, yes.

CSIRO international strategy

Which brings us to our question that we'd like to discuss a bit further with you. This was an opportunist approach to this interaction between Australia and Japan, deeper in the organisation was there some sort of coherent policy in relation to supportive international research? And if there was, were you involved with developing that or in working out what we should do next? After you'd gone to Japan Rail, what was your next trip?

Yes, well I have to mention Dr Stocker now.

Well that was a decade later.

Okay, we will mention him later. But then just after I joined the International group, CIRC, CSIRO signed a cooperation agreement with the Chinese Academy of Sciences. That was back in 1985. And under the agreement, we agreed to cooperate in areas of mutual interest and there was the very beginning of this relationship between CSIRO and the Chinese Academy of Sciences.

So how did we get to do that? Were you involved in talking to them to negotiate with it? Or was that done by someone else?

That was before I came to the international office. Before that, Dr Boardman visited China at the invitation of the Chinese Academy of Sciences. I think that was in 1982 or maybe earlier than that, when China started to open up? And so there were already talks about finalising the relationship. So we signed this agreement and I was given the task of making the relationship work. And so we started to get approval from CSIRO to set aside \$30,000 a year to support exchanges and collaboration with China. And of course at that stage back in 1985, a lot of the collaboration would have been under the aid program with China, and CSIRO was managing a lot of those projects in China, including the one on desalination in Lanzhou city. That involved our friend Dr Albert Mau.

And Russell Smith.

And Russell Smith, yes. So I was just coordinating all these approaches from CSIRO to the Chinese Academy of Sciences, setting up scientific exchanges or exchange of our scientists for every year and so on. So I was coordinating all this.

So was that the major part of your work, the interaction with China?

No. China was just the beginning at that time and there were other opportunities in Japan as well.

So can I ask, were most of these projects created by divisions and you were helping coordinate them?

Or the other way around?

Half and half I would say. Some were already started by divisions and some were approached by, for example, DFAT in the case of Chinese aid projects. And then also at that time, not long after '85, the Australian Centre for International Agricultural Research kicked off with projects in China and then a lot of coordination within CSIRO.

Can I put something to you that I remember, and you say whether it's true or not, that China was receptive to dealings with Australia but it was particularly receptive to dealings with CSIRO because CSIRO was a government organisation and they preferred to deal with government organisations?

Not only that, because that was part of the official channel and for example, it would be limited to dealings of CSIRO but then China started to develop links with the Australian Academy of Sciences, and that was a few years after we have started in CSIRO. So in fact I coordinated also with my colleagues in the Australian Academy of Sciences, and later on with the Australian Academy of Technological Sciences, sharing our information, sharing of our experiences, of working with China and they were forever grateful for my advice.

So the Chinese Academy of Science but was it a mixture of both a learned academy and a research organisation?

Yes.

So it was appropriate in a sense for it to be linked to both the academy and to CSIRO?

Yes, but the starting point for them in Australia was CSIRO because it worked so well and then they saw the opportunity to develop with the academy as well as with Universities much later on. And of course the main interaction at the initial years was through all these aid programs. I could remember, for example, that water desalination project and then the animal health projects where we built SPF specific pathogens free facilities to raise more lab animals. We built those facilities in China and transferred a lot of the facilities and technological know-how. So through those technical aid projects, CSIRO was able to interact not only with the Chinese Academy of Sciences, but with all the other players in China. For example, the Ministry of Agriculture, the Ministry of Industry and Technology and so on.

So your sort of links to Chinese Institutions was through the Chinese Academy of Science, was it?

Not only that.

But when you went to visit the equivalent of the Department of Agriculture, did you go there through some link through the Chinese embassy?

Yeah, in Canberra.

And independent of your links to the Chinese Academy of Science?

That's correct. Because the Chinese Embassy in Canberra has got representatives from Ministry of Science and Ministry of Agriculture.

And how important was this to China? Was it just sort of very minor? Or were we important to China?

It was important to China. Well Dr Spurling would probably know the significance of this water desalination project in China, it opened up a brand new industry in China for water desalination.

And the company that started it is one of the biggest chemical companies in China.

Right. And would the interaction between CSIRO and the Chinese Academy and others, would that reach high levels of government knowledge?

Oh yes. Well whenever CSIRO delegation, visited China, we were received by high level officials from the academy, from the ministry involved and from the Universities in China.

The President?

The President of?

China?

No, not the President.

Not that high?

Not that high.

So can I just get back to this policy notion, was this strategy of dealing with China, was that sort of stated to you or given to you by whoever was in charge of the centre? Or did you help to evolve that policy? Was it a top down or bottom up?

It's both really. Well through this, for example, the exchange agreement between CSIRO and the Chinese Academy of Sciences, scientists from the divisions were eager to visit China and develop linkages and collaborations with China. And then we have got, not only from within CSIRO but from the Australia Department of Foreign Affairs and the Department of Primary

Industries and the Department of Industry and Commerce, came to CSIRO for feedback or for input into some of their projects in China, or the interactions in China.

And within CSIRO, did any Divisions try to go around you and go straight to China without telling you?

There may be some but who cares at that time? We were just too busy doing all the official interactions, we wouldn't have time to bother with such activities. In fact there was always some friction between divisions and the head office group in that we were coordinating experts or consultants to international bodies, like the United Nations Industrial Development Organization (UNIDO), FAO, the Food and Agriculture Organisation. So until then, CSIRO scientists would be dealing with them separately. And some would even go on a consultation for free, just for their own interest or whatever. But then from the head office point of view, we would be saying that you should come through us so that we can negotiate a package that would protect your interests and give you more benefit in terms of insurance cover and all the other - even remuneration payment and so on. But some scientists would still bypass us, they would go directly to all these organisations and offer their expertise and offer their consultancy.

How did you interact with AusAID?

AusAID? We have been very closely interacting with them. I was invited to participate in a number of the AusAID programs, especially the AAACP, ASEAN Australian Economic Cooperation Program, where we conducted a research and development management training program, and also the biotechnology program, a materials research program. So AusAID would ask us to coordinate input from CSIRO and we would interact with all these other recipient countries. So there was a very close cooperation with AusAID and with others.

So you joined the Centre in 1983 -

'85.

December 1983 or 1984 you went to the Centre.

Oh okay, 1984, yep.

The 1988 restructure of CIRC

So in 1988 it was announced that CIRC would be scaled down and you lost half the staff with the international consulting activities, transferred to an arm of Sirotech. So what was the background behind that and how did that affect your life?

It was not easy to take but I think we coped with that quite alright. I could remember some very sad moments during the move or during the split.

Was it about money?

Part of it because I think that was as a result of the consultation by KPMG or PCEK review. So

I think a lot of the CSIRO functions were either reduced or transferred or consolidated and so on. So I suppose that happens most of the time within CSIRO and it's still happening now.

So what affect did that have on your work with China? Did that interaction between CSIRO and the Chinese Academy of Science and others, did that remain much the same after that split?

Well as far as China is concerned, it remained much the same because there was so much support from not only within CSIRO divisions but also within other government agencies, like AusAID like all the other ACIAR and other bodies. And the momentum of collaboration with China is gathering so much speed that it's hard to stop at that time. And even though the international office was much reduced, I have to carry loads of that as far as China is concerned. For example, a lot of the trips that I went to China were not funded by CSIRO, they were either funded by the divisions or by other government agencies within Australia. So after that big change, I've been through a number of supervisors within the international group, I think six within ten years.

So Barry Filshie stayed on after that, didn't he?

Yeah, but then he was transferred to Melbourne.

He went to Melbourne with the transfer of Head Office?

Yeah. But then, as I said, the interaction with China went on but then without much direct support from my own supervisor. I must say that Dr Filshie was a great supervisor, he was so understandable and he was so efficient. But others that came later on, as I said, I've been through about 10 in six years of supervisors, some even had no knowledge about Malaysia is different from Indonesia and that's the general manager of the International group, yeah? It was very difficult but I was able to get support from divisions, from other agencies outside of CSIRO from the academy. In fact I have to mention Dr Stocker who was a great supporter for interaction with China, and then also Dr Jim Peacock, who was at that time the president of the Academy, and the Academy was developing its interactions with China. He always involved me. Sometimes he would ask me to accompany him to meetings with Chinese visitors and so on, not only to serve as his interpreter but also as his advisor. So I must mention that I was really lucky in my life in CSIRO, working with great people like Dr Stocker, both in his capacity as the CEO, the chairmen and also the chief scientist of Australia. And also Dr Jim Peacock who was the chief at one stage of CSIRO division of plant industry, and also the president of the Australian academy of science at one stage, and also the chief scientist of Australia at one stage. So they all recognised what I could contribute, not only to interactions with China but also to other countries. And that's why I have to say that that's my best job in my life.

So can I ask you about some other aspects of CSIRO's international activities? There was an organisation known as the Commonwealth Science Council and Barry Filshie was Australia's representative on that.

Yes.

But when Barry left, who represented Australia? Did that go out of the CSIRO?

That went out of CSIRO and I think eventually the Commonwealth Science Council was dissolved.

No, it's still there.

Is it still there?

Yeah, I think its activities are much less.

I think the support from the Australian government has reduced to the extent that it's more like paperwork and not real activities.

So your work as the deputy officer in charge was recognised because you got promoted to a level seven position in 1990, and Barry Filshie recommended you to go to an advanced management program at Macquarie Graduate School. Did you go to that, Macquarie University Graduate School of management? Did you go to that?

Yes I did.

And what were your expectations at that point? What were your career expectations when you were sent to this advanced management program?

I was expecting that CSIRO would create a stronger international focus with more support, and then I would be able to assist with that. But also, they would give me exposure to other opportunities as well. So I was quite keen to spend the four weeks duration there in Macquarie University.

And did you learn much when you did that course?

Yes, some management strategies.

Did it change the way that you did your work?

Not to a great extent because CSIRO being CSIRO and I don't think I could influence a lot of the management practices at that time.

And what about managing people, did you have people reporting direct to you?

A few.

And did it change the way that you managed those people?

I think so.

Can you give us any examples of changes?

Well I tried to lead with example. So in terms of approach to my work and managing the group, I think that was a good strategy that I learnt from that.

And what about managing Chiefs?

Managing chiefs? I have to leave it to the chairmen of CSIRO.

Right, you didn't see it as part of your job to try and fix the problems?

No. In fact I must mention that I work very efficiently with chiefs who are interested in developing their international linkages, including Dr Spurling and also other division chiefs.

So just looking through the annual reports about CIRC, in about 1992 Dr Filshie was still there but he had been designated the Officer in Charge of the Centre for International Research Cooperation, but now was designated General Manager, International Affairs. And then he left and you were then - didn't seem to have a designation. Beth Heyde was designated Government Business and International Scientific Liaison. So when Barry left, you became part of the corporate group led by Beth Heyde, and she left and other people.

Yep.

So can you just give us some insight into why this change of international affairs - what was the change? Was it due to the fact that by then we had emails and the internet and so contacting international people became much easier and people could do it themselves more? Or was there a change of policy at the top?

I think it was a change of policy and also the structure of the organisation, the funding for the structure, that all impacted on those changes. We had a few rather unhappy years during those changes because the heads of the group keeps changing. People came and go and every time the direction is changed as well, and the support is being reduced all the time. And the emphasis is on generating revenue, external revenue. Well I was even asked to bring in 20 million dollars at one stage. So these are people who do not understand what international collaboration is, they only look at them with very heavy dollar sign tinted glasses.

And over what years are we talking about here? So after Barry Filshie left, so that was what year?

Barry retired in 1994.

So 1994. So Stocker was still there and then this difficult period lasted from 1994 until -

Until I retired.

In?

2010. And of course in around 2000, the CSIRO divisions were having much more say in running their own international affairs.

So that's when Geoff Garrett became chief executive?

Yes.

Interactions with Chief Executives

Did he have any influence on your life?

Oh yes. Mostly positive I must say.

Oh good.

Because I have the opportunity of going to Japan and to China with him, and these were all first times for him. They were all eye openers for him. In fact the Japan trip, I lobby our Japanese counterpart, the AIST, Agency for Industrial Science and Technology in Japan, to work more closely with CSIRO because we were very similar in terms of our research directions and working with industry. And to the extent that AIST was happy to appoint an international advisor from Australia, and I lobbied them to appoint the head of CSIRO. At that time it was Dr Geoff Garrett. And so I remember when the AIST representative came to Limestone Avenue to visit Dr Garrett, and he invited him to the first external board meeting of AIST. Dr Garrett asked the Japanese representative, "If I were to go to Japan, this would be my first trip and I would like to bring Dr Leong with me. Is that alright?" and through misunderstanding, the Japanese representative said "We are happy to invite your wife at our expenses but no other person." So Dr Garrett was saying "We will pay for Dr Leong to come with me." And then the reply was "No. That was not possible." And the meeting finished at that stage and I drove the two of them, the Japanese representative and his colleague, back to the Canberra airport. And in the car his colleague mentioned that "Wouldn't it be great for Dr Leong to come with Dr Garrett?" and he said "Of course!" so it was all a misunderstanding talking in English. So this is a very typical example of misinterpretation, of mistranslation.

Well it's an important example of the need to have multi-lingual people, people who speak the language when you're dealing with international visitors. You went to China with Dr John Stocker in 1992 and he remembers that visit with great affection, as being one of the good experiences of his time as the chief executive of the organisation. In retrospect, what do you think the importance of that visit was to CSIRO? And what were the long term consequences of that visit?

That was very important for both CSIRO and China. Dr Stocker was such a great linkage builder. He easily got along with people from China and he makes immediate friends with them, and he could understand the significance of the two organisations or the two countries working together. So it was just the nature of it for CSIRO and for China too. And through that visit, there was much understanding from the top of CSIRO. And actually this developed to the extent that I suggested to one of the leaders of CSIRO that perhaps CSIRO should have its executive meeting in China, and I think that eventuated some years ago after I retired. So that was a great trip of Dr Stocker to China and he struck up a great friendship with Dr Ren from the desalination company. The Lanxing Chemical Cleaning Company, which then developed into China's largest chemical -

Bluestar.

- Bluestar Chemical Cleaning Company in China.

And the trip that you had to China with Dr Garrett, how did that go?

That went very well. We were hoping to develop much more linkages, non-conventional, non-traditional linkages in China, and we succeeded in doing that which developed, for example, linkages with Huaneng Company, which is one of the largest power supply companies in China, and also with other institutions in China.

And what did Dr Garrett want to get out of this?

To show Australia and CSIRO support for the bi-lateral relationship. And at that time, it was just a year before the Beijing Olympics, 2008 Olympics. So his visit was in 2007 and we managed to promote the idea of carbon dioxide removal from the power plants, and we set up this demonstration plant in Beijing to put the carbon dioxide through a scavenger that would absorb the carbon dioxide and concentrate it. And that was later on inspected by both Minister Penny Wong and Prime Minister Kevin Rudd, when they visited China a year later. So that sort of built some political momentum for Australia to have a stronger say in China.

So we mentioned that in 1988 the International consulting activities were transferred to an arm of CSIRO Tech, but by the mid 90's CSIRO Tech had disappeared. What happened to that international consulting arm? Were those activities dispersed to divisions or did your group have something to do with that?

I think it was dispersed back to divisions. And I think CSIRO was more conscious of cost recovery and also the protection of intellectual property rights, that a lot of those consultancy works were under the control of the commercial groups of other divisions or institutes, or the whole organisation.

So in the year that we're talking about Dr Heidi being designated, the government business and international scientific liaison, was the year that what I would refer to here as the LIPI project that was established in that time, and I eventually was involved in that.

Yes.

Did your group have anything to do with that or was that negotiated entirely by the projects office of the Roy Green's Institute?

Linking with Indonesia

The LIPI project started much earlier than that. In fact Dr Stocker, on his first trip to Indonesia, at that time Australia was having a very difficult relationship with Indonesia and in fact the Australian ambassador to Jakarta couldn't manage an audience with the science minister in Indonesia, Dr Habibie. And when Dr Stocker visited Indonesia, we worked directly with LIPI and with other institutions and our partners in Indonesia, and secured this meeting with Dr Habibie independent of the Australian embassy. And the Australian ambassador came along with us and that shows how science interaction could promote political interaction when a political relationship is difficult. And in fact, Dr Habibie was saying that "Why did CSIRO want this trip of yours, Dr Stocker, wanting to sign this agreement with the University of Indonesia and not LIPI?" And Dr Stocker said, "Of course, we will be very happy to work with LIPI because there are so many similarities between the two organisations. So that opened up all these opportunities later on with LIPI. And of course, when we came back

to Canberra, of course the Australian ambassador was highly happy with CSIRO that we managed to secure support from Foreign Affairs to interact with LIPI. And in fact Dr Habibie was convinced by Dr Stocker that there is so much to impress him in CSIRO that he managed his first official visit to Australia later on.

Yeah, and that was in the mid-90s, wasn't it?

Yes.

He visited Australia and visited the various academies and CSIRO headquarters.

Yeah.

I remember that visit.

And did you go round with him to visits?

Only to CSIRO divisions.

And was Dr Stocker still there?

Yes, I think so. Because that was an official government visit, so it was all run and managed by Foreign Affairs. In fact I think that opened up a lot of other follow up activities because of that visit, and of course he became the President of Indonesia.

So soon after that or at that time there was good interactions between the plant industry and the equivalent part of LIPI and there was a lot of plant taxonomy work done and exchanges, and there was always the animal health laboratories that started a long time before that.

Yes.

This LIPI project that I'm talking about was funded by the United Nations. It was a World Bank project and the interaction may have commenced with that but it seemed to me to have been conducted by Trevor Redhead from the projects office of Roy Green Institute.

Yes.

But your group was involved with it in some way because I interacted with that nice lady, whose name I've forgotten.

Was it Sarah Ryan?

No. Anyway -

Jackie Wraight?

Yes.

Yeah, Jackie Wraight was looking after Indonesia at that stage.

Under you?

Yes.

Right, okay. So she would have interacted with Trevor Redhead in Roy Green's office?

Yes. She was involved in the Indonesian projects well before that.

So there were a range of projects that CSIRO did with Indonesia, coordinated by your office?

Yes.

One of the aspects of CSIRO's success is its strong connection of our scientists, the scientists of the organisation with international science. Were you ever part of that or was that all left to divisions and the scientists themselves?

Both I would say. I have my own interest in science and also I was able to facilitate a lot of understanding through the language, through the interpretation and translation. So as I mentioned earlier, there is so much opportunity for disasters through misinterpretation and loss in translation. And that's why a lot of divisions saw value in inviting me along on the overseas visits to the extent of paying for my trips, so that they wanted to make sure that everything is understood perfect. And I was quite proud and happy to be able to provide the service.

And how much did the internationalisation of the CSIRO workforce affect you? So for example, in the 1980s Albert Mau was the only person in the division who spoke Mandarin. By 1998, when Mr Ren or the Chinese Consul came to visit our Division in Clayton, we had 60 people in the room at Clayton who could all speak - and the meeting was conducted in Mandarin.

Right.

So was there a sense in which some of the expertise you were providing, it became much more wide spread in the organisation?

I would say so because of the internationalisation nature of CSIRO. But I would also point out that this arose from my earlier experience, and that was I was a member of the Australian Government's delegation to China to visit so called 'Spark Program', that is to encourage rural industrialisation project in China with the hope of sparking hundreds of industries back in the rural areas. So we visited this rural city, I wouldn't call it a town. In China every town is a big city in Australia. We visited this and had a good dinner with the Mayor of the city who was very keen to have Australian collaboration in developing industry in his area. So after this nice dinner, he proposed that "Why don't we sign an MOU for future collaboration?" and the leader of the delegation from the Australian government was put in a very awkward position. Because at that time it was too late to consult his home office back in Canberra, whether he should sign the MOU. And so I could see that he was in a very awkward position, so I jumped in and said "Well it may take time for us to develop an MOU through the first visit. May I suggest that we sign a Minute of our meeting that we will incorporate a sentence saying that we discussed the possibility of future collaboration, and we would explore further possibilities to make that happen?" So both sides accepted that. And in his official report, this Australian head of delegation wrote in his official report that any future

Australian delegation should include Dr Leong. Because I saved him from such embarrassment. And if you put a scientist maybe from a division who may understand the language, but who may not understand all this diplomatic complexity, then he may not be able to offer this alternative or this escape route. So you end up in a very difficult situation on both sides.

Reflections on the future

So do you think that CSIRO has got a policy about support for international science? So thinking about the legislation, the science and industry research Act, and CSIRO's responsibilities for international science, has the executive or the board got a policy which you could look to and say "This is what I have to implement."

I'm not aware of any updated one.

Was there one when you started though?

Well there was some sort of papers that would highlight and mention the responsibilities of the international group.

So that very high level words?

Yeah.

And then a long list of activities but nothing in between to interpret?

Mmhm.

So you mentioned Geoff Garrett saying that his role in that visit with China, I think, was to support the bi-lateral relationship between Australia and China by providing assistance through science?

Yes.

That seems to me to be the start of a policy.

Yes.

But that's not written down anywhere that you know of?

No, it was common understanding I would say, through our Act of facilitating Australia's international collaboration in science and technology. So all the previous visits by Dr Stocker and various chairmen of CSIRO, top executives of CSIRO, they would have performed that or satisfied that particular policy requirement.

That's right, so basically it's saying it's a good idea but it doesn't say how much you should spend on it, how much you should give or spend with China versus Japan, versus all the South Pacific countries. And there's a related question too which has to do with CSIRO's responsibilities to facilitate international scientific cooperation on the one hand, and on the other hand Australia's aid obligations in relation to particularly the Pacific nations, some of

which aid will in fact be technology or technology transfer.

Yes.

Was that something that you had to work on and think about?

Ideally it would be good but then I don't think there would be support within CSIRO because we would expect Foreign Affairs and the Australian government to take the lead role. And CSIRO could only do its part in providing the technical and the scientific support, but not through the whole policy framework and funding support.

So when you started in this role in the 80s, there were very few international students at Australian Universities -

Yes.

- By the time you left in 2010, over 25% or there was a huge number of international students studying in Australian Universities. So during that time there was a huge rise in the interest of Australian Universities particularly in China and India and Malaysia. What affect did that sort of change of the nature of the educational opportunities in Australia have on the role of CSIRO in interacting with Asia? So were CSIRO in danger of being swamped by the University interest?

Yes and no. There is a mutual benefit for CSIRO to work with Universities in, for example, I mean Australian Universities, in co-supervising (co-supervising) PhD students - I mean foreign students. So that's it. And that's a 'yes' aspect. And a negative aspect is given the current atmosphere of security and intellectual property -

And the suspicion of Chinese companies.

Yep, I don't know whether we should be accepting too many students. Although the students that came to CSIRO, I'm sure, would be good students of CSIRO. And for example, under the program that I put in place before I retired, that is accepting the agreement with the Chinese Ministry of Education, that CSIRO would accept PhD students into CSIRO. CSIRO would have the right to accept or to reject, or to specify what type of students they want. So it could work to CSIRO's advantage of accepting more foreign students. And in fact, I'm sure a lot of the scientists within CSIRO would agree with that.

They'd have to be co-supervised with an Australian University would they?

Not necessarily.

But a Chinese University degree?

Yeah. The scheme that I put in place before I retired was with the Chinese Ministry of Education and they would send Chinese PhD students to CSIRO under supervision for a year or two, and then they would go back to China to submit their thesis and get their degrees from Chinese Universities.

So how was that mutually beneficial?

Oh yes.

CSIRO got links with Universities.

And then it would develop into future linkages as well because the students would become leaders in the University and they would promote this linkage and they would treasure this linkage.

A long term benefit.

Yes.

And my recollection is that when you retired, or just before you retired from CSIRO, you got a lifetime achievement award?

Yes. That was quite an honour but as I mentioned during my acceptance speech, it was all due to all the people within CSIRO that supported me, from top down to bottom up, including the receptionist. They were so friendly to all our foreign visitors that the first impression was perfect, they felt welcome. And I was honoured because my great mentor, Dr Jim Peacock, also received that award, and many other prominent scientists within CSIRO.

And even a very prominent lawyer in CSIRO received one.

Yes.

Let's have a short break.

Yeah, I must mention that it was an honour to accept that lifetime achievement award in the same list as the prominent lawyer, Terry Healy. I was so honoured.

And I was in the audience that day listening to both of your speeches. So what have you done since you've left? You've got an honorary fellowship. What sort of activities have you done in the decade since you left CSIRO?

Yeah at one stage I was actually offered a contract with Discovery but I said "As long as I'm not paid and as long as I come when I'm required. I want to have some freedom." And that was accepted, so I was with Discovery showing off the great work of CSIRO to foreign visitors, to overseas visitors and delegations. And I think the emphasis after a few years, I think Discovery has discontinued that emphasis of showing off to overseas visitors. And then my friend at Land and Water, he heads up the group of this computer simulation using a software package that you look at crop productivity under various environmental input, including water, nutrient and all these other climate changes and so on. And he came to me and said "I've got quite a few Chinese PhD students coming in, and Post Docs from China coming to my group. Would you mind helping me assist with the language? We wanted to promote more use of English in the group, otherwise they will speak just Mandarin among themselves." So I said "Yes, provided I don't have an office. I don't get paid. I don't have a laptop. I don't have any overhead. All I need is this key card that I can come in and go whenever you want me." And I've been doing that since then, and it was just renewed for another year as of today.

Very good. So that's a very useful activity.

Yes, it is so stimulating and so fulfilling to see that young people would take up things so quickly and so easily. It must be different from old people like me.

And if you were setting up the Australian Innovation System, particularly thinking about these links with the International Scientific Community, would CSIRO still be part of our innovation system? Or would some other organisation take over?

I think CSIRO would still be an important part of that. From what we have achieved so far internationally, I think the name itself is so well known and it certainly helps Australian industry and the Australian government to develop its international policy and strategy.

Very good. So Ta-Yan, thank you very much for spending this time with us today and being part of our oral history project. Thank you.

Thank you for the opportunity too.

[END OF TRANSCRIPT]