

SCIENCE HISTORY INSTITUTE

**JOHN WOOLSTON**

Transcript of an Interview  
Conducted by

W. Boyd Rayward

at

CIMMYT  
Texcoco de Mora, Mexico  
on

19 and 21 November 2001

(With Subsequent Corrections and Additions)

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## ABSTRACT

**John Woolston** grew up in a suburb of London, England. Though he originally intended to study humanities, he was assigned by his school to the science track. He entered King's College London, where he studied nuclear physics and radio electronics in his physics curriculum. He spent three years in National Service, devising practical solutions for the military effort against the Third Reich. After studying in Paris, France, for several months he returned to England to a job with the Department of Scientific and Industrial Research (DSIR). He and his new wife then moved to Washington, DC, to the British Science Mission, where he was responsible for evaluating designs of computers as a means of organizing information and technologies. Thus arose his interest in modern publication methods.

From DC to England and back to Chalk River, Canada, now working for Atomic Energy of Canada Limited (AECL), where he was Technical Information Officer, Woolston collected, collated, and copied documents; and he became secretary of the library committee, responsible for editing AECL publications and eventually for document security classification, at that point as Head of Technical Information Branch. When the International Atomic Energy Agency (IAEA) was established, Woolston began to attend annual meetings in Vienna, Austria, to discuss the work of the Scientific and Technical Information Division (STI), viz. running a library and documentation service for documents related to peaceful uses of atomic energy. Woolston became Director upon Bernard Gross's retirement. With Lev Issaev and Raymond Wakerling, he established INIS to replace and expand *Nuclear Science Abstracts*.

After three years at INIS, Woolston wanted to return to Canada. Committed to making sure scientific and technological information was managed effectively for the benefit of developing as well as developed nations, he accepted David Hopper's offer of the directorship of the Information Sciences Division in the International Development Research Centre (IDRC) newly established in Ottawa, Canada. There Woolston found that setting up the International System for Agricultural Science and Technology (AGRIS) was more difficult than INIS, even with help of Raymond Aubrac and John Sherrod of Food and Agricultural Organization of the United Nations (FAO). There were political implications and inter-agency debates, as well as intra-agency arguments over the philosophy of information collection, organization, and dissemination. Woolston's beloved mission-orientation and contributor-participation gave way to top-down discipline-orientation. FAO set up World Agricultural Information Centre (WAICENT) to replace AGRIS, which is now in severe decline, while INIS continues to grow.

His objections overruled, Woolston took early retirement and began work on Development Information Science System (DEVISIS), an information system for social and economic development. He spent three years working for the International Center for Agricultural Research in the Dry Areas (ICARDA) and then returned to DEVISIS. The study committee decided to default to INIS's format to perform functions for bibliographic information, abstracts, library information, acquisitions, and retrieval.

Integrated Scientific Information System (ISIS), the cataloging system IDRC had used from the beginning, was in the public domain, but it was too costly for most developing nations, as it required a mainframe computer, so Arthur and Marian Vespry and Kate Wild computerized

ISIS in the service bureau until Faye Daneliuk was able to develop a minicomputer version (MINISIS), and eventually Del Bigio produced a personal computer version called CDS/ISIS (Computerized Documentation Service/ISIS).

Woolston describes many fascinating people, incidents, and occasions during his varied career. He explains his desire to involve participating nations in the contributions to the systems they use. He praises his many colleagues, often adding interesting anecdotes that elucidate their characters. He maintains an optimistic outlook himself, and of course he continues to work in his retirement.

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**INTERVIEWER:** W. Boyd Rayward

**LOCATION:** CIMMYT, Texcoco de Mora, Mexico

**DATE:** 19 and 21 November 2001

**RAYWARD:** John, tell me about [ . . . ] that double strand of your life that you were just mentioning.

**WOOLSTON:** [Well], this really begins when I was already with the Canadian atomic energy program in the second half of the 1950s and first half of the 1960s. Of course, we worked very closely with the Atomic Energy Commission in the United States. I used to be invited to attend their meetings and got to know many of their people. [ . . . ] I was influenced a lot by what was being said in the United States about the organization of scientific information. [ . . . ] One of the critical [events] was a report to the President of the United States by [ . . . ] Alvin [M.] Weinberg, who was the director of the Oak Ridge National Laboratory, an institution that was contracted by the Atomic Energy Commission to do [ . . . ] research in this field.<sup>1</sup> [He had chaired] an advisory committee [to prepare this report and] invested a lot of his own intellect in trying to see where we should go next.

He strongly believed that scientists should be themselves involved, that it wasn't enough to do research and teaching and leave information to [ . . . ] people who were not scientists [and who were not capable of interpreting the information] that was available [to respond] to the people who had information needs.

Weinberg [ . . . ] initiated [the] concept of the specialized scientific information center in which scientists would be involved, perhaps on secondment from research [for] part of their time, or for periods of time between research activities, to analyze—in fact, I think he had the word “analysis” in there—specialized scientific [information].

**RAYWARD:** Information Analysis Centers.

**WOOLSTON:** Information Analysis Centers, right. [Weinberg] expected his scientists to become involved [in this], and [indeed, Oak Ridge] National Laboratory eventually set up a series of specialized information analysis centers. That's right. [SIAC]. SIACs we called them.

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<sup>1</sup> President's Science Advisory Committee. *Science, Government and Information: The Responsibilities of the Technical Community and the Government in the Transfer of Information: Report, January 10, 1963.* US Government Printing Office, 1963.

[And] I think all the way through my career, even though I spent a lot of my time working with the broad-based, international mission-oriented cooperative systems [. . .], gathering published information or quasi-published information, that [is], technical [reports], non-conventional literature as well as conventional literature, and putting them into a single system so that every library doesn't have to catalog [them], make its own separate cataloguing of documents that lots of other people had already catalogued, but to have something that could be downloaded from a master database. Even though I spent a lot of my time working with that, I also continued to believe that you needed sharply focused information operations on specialized topics, particularly the hot topics, things that were very important to the missions <T: 05 min>.

So I speak of two threads being intertwined. One was the massive effort to inventory and catalog the documents pertaining to a mission, and the other [part of the twine] was to [. . .] have sharply focused, highly intelligent information analysis [for] those topics [. . .] of [significant] importance [. . .] at the time.

**RAYWARD:** John, tell me something [of] what led up to this [. . .] interest that you developed so strongly later on; tell me a little about your origins and some of the sorts of things that led you in the direction that your career finally took.

**WOOLSTON:** Well, it's very flattering to be invited to talk about oneself, but of course people do like talking about themselves, [about] what they remember, and revisiting the past can be fun. I don't know that my story is all that exciting. My origins are really quite humble.<sup>2</sup> My father [Eric Claud Woolston] was a Tommy, a private soldier in the First World War. He was wounded, and then he was gassed. His convalescence from the gassing took a long time. Of course, as soon as he was better, he took up smoking again, and then smoked until he was seventy [laughter] and died when he was eighty-six—nothing to do with smoking.

When he was demobilized from the First World War, he got a job in an insurance [society]. You couldn't call it a company; it was one of these societies where people [contributed] and then [received] money when they had problems or died. [. . .] My mother [Grace Mildred Day] had been working [as a sales person] in a shop [. . .]. Of course in those days, ladies didn't work after they were married. I was born one year after they were married. This was in London, [England], and all my early life was in suburbs of London. My father would commute on the train to his office in the center of the city, and I went to the local schools. There was not enough money in the family for us even to imagine that they could pay for my education, so whatever I was going to be able to do would depend on winning scholarships for advancements to higher levels of education. I suppose the first great turning point in my life was at the age of eleven. In England in those days, at the age of eleven, or eleven-plus as they used to call it, you took a series of examinations which determined whether you went into a more academic program—what was then usually called a grammar school—or

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<sup>2</sup> John Woolston was born in London, England on 1924-08-10

whether you stayed in the regular stream, and in those days that went to fourteen or fifteen at most, [whereas the] academic stream went to sixteen or eighteen.<sup>3</sup> I've often wondered why I did well in the eleven-plus examination. I have one little theory, which probably isn't worth recording. We could chop it out afterwards depending on who's interested. One of the questions we were asked was, "What is your favorite sport?" I think [. . .] many of my peers [of] that age wrote about football or cricket. I was never any good at football or cricket, largely because I'm very short-sighted and can't keep my eye on the ball<T: 10 min>, at least not if it's that far away. I gave a story about a little game that I played by myself in the garden at the back of [our] house where my father had built a concrete path that went round the garden with some right angles in it. The top of the concrete was curved so that the rain would fall off the edges. The task that I gave myself was to take a ball, and kicking it very gently, to go all the way around the paths, taking the right angle bends without the ball rolling to the edge. [. . .] If I got all the way around, I went around again, and then I saw how many times I could go around before [the ball dropped] off the edge. Somehow or other, I had an idea that that story [played] an important part [in] the decision of the examiners to promote me to the more academic secondary school. Sometimes I think that perhaps they felt that what I had chosen to describe indicated a degree of self-sufficiency, at least somebody who wasn't just following the herd. [laughter]

So I got into a school, which had just gone through a major change. In the [1920s], many of the secondary schools in Britain had become co-educational, but in the early [1930s], they decided that [had] really [. . .] been a mistake, so they started separating the boys from the girls again. [The first year in] the school I went to [. . .] there were still girls [. . .], but [thereafter] we were just boys. We had a whole raft of new teachers. These were young teachers, and they were very stimulating teachers. They weren't all new young teachers, but probably a good half of them were, including a new young head teacher. [. . .] They tried not to show it, because that wouldn't have been correct, but I think they were all politically sensitive, probably rather [socialist, a] reaction to the great depression, and the [feeling] that the world had to change and [. . .] there was too much oppression of the poor by the capitalists.

So we were influenced by those things. But it was more a process of osmosis. There was nothing overt about [it]. But we were certainly imbued with the idea that learning was great and [. . .] there were going to be opportunities in the future.

We took a whole raft of subjects, humanities and sciences [. . .]. My performance through the years fluctuated. Sometimes it was not so good, and sometimes it was better, but I managed to stay in the A-stream. The next big examinations, [and] I suppose [as a] result [this] was the second turning point in my life, came when we were sixteen years old. We took [. . .] eight or nine different subjects, each of which was graded, and I had a rather balanced set of results. I think if I remember correctly, that I did well in geography and history, [but] not quite

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<sup>3</sup> The eleven-plus examinations were first implemented in England and Wales in 1944 as a way for students to be selected for various secondary schools. The exams are still used by some grammar schools to determine selection despite controversy. For more see Joel B. Montague. "The 'Eleven-Plus' Battle in Education in England." *The Clearing House* (1958): 259-262.

as well in French and Latin, probably [very] well in English, and then I had some good marks on the science side as well. Then we went back after the examinations. Normally speaking, [. . .] the school would have lost most of its students at [. . .] age sixteen <T: 15 min>. A small group would carry on to age eighteen, essentially [as] preparation for university, but of course by this time the [Second World] War was in progress. In fact, we weren't even in London. We were down in the darkest Wales and the head teacher assembled [in the gymnasium] all of us who [wanted] to stay on from sixteen to eighteen [. . .].

The [reasons] there were so many: London was being bombed, [and] parents felt that their [. . .] boys were going to [. . .] the Army at age eighteen [and] there wasn't much point in starting to do something else when they were sixteen, so they might as well stay in school, and they were out of the bombing [. . .] by staying in school. The government had also introduced—and this was a great benefit to my parents—a very small subsidy. We received a few pounds a month from the government if you had a child in school after the age of sixteen.

Anyway, we go back, and the head teacher makes a little speech to this group that is much larger than normal, points that out, and adds that his teaching staff is much fewer than normal because in fact, quite a few of our teachers had been mobilized and gone off to fight the War (World War II). [. . .] He said he was going to have a difficult job providing for all of us, and [. . .] to figure it [. . .] out [. . .] he'd like to know those who [wanted a] program [in the humanities] to go to [one] end of the gymnasium [and] those who [wanted] to take a science program to go to the other end. [We began to segregate, and I started to walk to the end that was identified for the humanities. I started to walk to the end for the humanities and he said, "Not you, Woolston. You go to that end." I was so scared of this guy, I did as I was told. So I ended up at the science end, and then for the next two years was in an extensive program in physics, chemistry, pure and applied mathematics. Then came the final examinations and, at age eighteen, I belonged to a nation at war.]

[Now], I [. . .] guess the third [turning point then] was [the decision of] what they were going to do with me next [. . .]—this was 1942 when I finished school. Many of my fellow students [were] drafted into the Army [. . .] the Air Force or the Navy, but some of us [were directed] to go to university. Because of my weak eyesight, I would [. . .] probably not have been drafted [into the forces], but anyway, they sent me and they even decided where we were going, what courses we were going to take, and I was sent to the University of London, King's College [King's College London], to take an accelerated honors degree in physics with, believe it or not, special subjects: 1) nuclear physics; 2) radio electronics.

When I came out of that in 1944, the War (World War II) was [still going on]. This was a really accelerated course. We had lectures on Saturdays. We had loads and loads of homework. The holidays were shortened right down. We had six weeks in the summer between the two years, [when] I worked in an electronics factory, <T: 20 min> but otherwise it was extremely intensive. No time for girls. [laughter]

[. . .] The war (World War II) was still on, so in 1944 I was directed again to where I'd work next, and they directed me [to] a unit in London [that] was doing *ad hoc* problem-solving

jobs for the Army and the Air Force. We had a raft of projects, problems [. . .] would come in [from the Army] and [the Air Force], then, using our connections with different universities, government labs and [industries], trying to find answers that would save lives. [One of] many cases: the Germans [. . .] laying mines [each] with [a bag of] dirt [and a] skull and crossbones on [the bag]. Their mine detectors [could] detect these mines, but ours [could not]. [Many] of [our] soldiers [were being] killed. [One of my senior colleagues brought a German bag from the front line in Europe, gave it to me] with the [instruction to find out what was special about the] dirt. [I took it to the physics department at King's College and we immediately discovered] the dirt was radioactive. [Then we advised the Army to take Geiger counters to the front line so our soldiers could also find the mines before stepping on them.] That was one of the easier [cases]. [laughter] Some of them were much more complicated.

I remember doing a project that involved finding the relative visibility of an aircraft against the night sky, depending on whether it flew in from a direction where the sun—though the sun was far below the horizon—was behind it, or if it flew in from [any] of the other three points of the compass, [let's say]. We got the Royal Air Force to fly planes and [had them] carry photometers, which measured the amount of light coming from different parts of the sky. So we had all sorts of [odd practical] projects like that.

**RAYWARD:** What was the unit called? Did it have a [special] name?

**WOOLSTON:** It was called SR-1, which was Scientific Research-1 [in the Ministry of Supply]. Of course, I was the most junior person in the office, being a brand new graduate, but they still gave me some jobs [. . .] to pursue, [while many of] the [. . .] more senior staff were also running around on other things.

After two years of that, the War [World War II] had finished, I did my third year of national service in an electronics lab [in Baldock, Hertfordshire], and then I was released. First time [in my life] that I'm free of direction. A colleague of mine had obtained a bursary from the French government to go and study in Paris, [France]. Another buddy of mine and I went to visit him on a motorcycle. We went across [. . .] on the boat [from Dover] to Calais, [France], and then [on the] motorbike down through all those war-torn areas. [This] was still very soon after the War (World War II). This was Easter, [1946]. We came to the top of this hill and there was all of Paris lying before us, all lit up. [Goodness]. What a sight. So I thought, "I'd like to do that, too." I applied [through] the French Embassy in London, and [. . .] of course [the] people who applied were mostly people in the arts [and] the humanities, [but] a physicist to be applying, this was extraordinary. [laughter]

So of course I was given the grant. It was very modest, and it became disastrously low after I got there, because that winter of [1947, 1948], not only was it terribly cold and there was no coal coming into Paris, [. . .] many foods <T: 25 min> were rationed, but there was also a whopping inflation which [. . .] my tiny little grant didn't keep up with.

[When] I got there, of course they had no idea what to do with me, so they decided to send me to see Professor [Frédéric] Joliot-Curie and [. . .] he would advise me on what kind of work I should do.

So I told him a little bit about what [I'd] been doing in England, in very bad French at that stage, and he advised me to go and see a particular professor at the Sorbonne [Paris-Sorbonne University] who said he'd like to get me started on a doctoral program, but that his labs had nothing in them. They'd been stripped during the occupation, but he had an arrangement with the French post office, [the PTT], which had a lab out in the suburbs of Paris, the part that they call the "Red Belt." It was called the "Red Belt" at that time [. . .]. It was where all the communists had their manifestations.<sup>4</sup> [The] French post office lab had equipment supplied, surplus from the forces, particularly the American Army.

So I started going out there on the bus, and it was a nice little group. [When my project] was defined, I drew a little drawing of the kind of apparatus that I would need. I'd been doing a fair bit of reading around this subject, and I'd put my drawing into the workshop to have this piece of apparatus built out of brass. And then I went to England for Christmas.

Well, I came back after Christmas and [asked], "Is my apparatus ready?" and they said, "No. You weren't really expecting it, were you? We have this tremendous backlog of work to be done, and maybe this time next year you'll have it."

Well, I still had a few more months to run on my first one-year grant, which I'm sure could have been renewed [because] I was in the doctoral program. I went to see my professor [and] told him I was really very sad about this, and that I think I'd better abandon [. . .] the idea of doing a doctorate. Around the same time, I had received a letter from London [. . .] based on what I had done in [my] three years [at SR-1 and] the [electronics lab], and offering me a job in the scientific civil service [. . .], the civilian side, that was quite attractive because we knew that [there] was going to be a big burgeoning of scientific research after the War (World War II) to try and do for the civilian economy what science had done for the War (World War II) effort [. . .].

So I told him I got this job offer. I hadn't at that point accepted it, but I said, "I think what I'd like to do is to learn a bit more about France and French culture." There was something called the "Course in French Civilization" at the Sorbonne where you had a lot of students—there were a lot of American GIs who were using their grants when they were demobilized [to study] there, and there were some quite young Brits and people from many different nationalities in fact who were taking these courses.

I took courses in the history of art and the <T: 30 min> French social institutions, history of France, French language of course. The total time [. . .] on this was probably not more

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<sup>4</sup> See Tyler Stovall. "From red belt to black belt: Race, class, and urban marginality in twentieth-century Paris." *L'Esprit créateur* 41, no. 3 (2001): 9-23.

than four to five months. [Then] we had exams, written and oral, and the biggest certificate I [ever] got, and in a way, the one I'm most proud of, is my certificate for getting a *degré élémentaire* in the “*Cours de Civilisation Française*”, with a *mention bien*. [At last, I had had some education in the humanities, and] then I went back to England [and] took up this job and gave up the idea of getting a doctorate.

This was in a department which had a long history. [It had] started during the First World War, called the Department of Scientific and Industrial Research [DSIR], which operated—I think it was fourteen - research establishments, but then also gave grants to a lot of other research institutions, industrial ones, and also universities, and individual grants, too. It did not have a huge budget, but I think it did have a lot of impact. I was in the headquarters unit working with a somewhat older group than it had been during the War (World War II), but people who were very experienced from whom I learned a lot [. . .] about the organization [and] administration of science. [. . .] It's amazing. [We] were still in the aftermath of the War (World War II). During the War (World War II) you give lots of big responsibilities to very young people. - the lieutenant who leads his men onto the battlefield is probably only twenty-two or twenty-three, you know - and that had carried over. They were still [. . .] trusting young people with responsibilities to a degree that I think we've stopped doing now.

So one of the things that I was entrusted with was being the secretary for a committee that involved the whole government, not just the DSIR, on what were called high-speed calculating machines, what we [. . .] now call computers. This committee was chaired by the Secretary of the Royal Society [Sir David Brunt ] who used to take me to lunch in the Athenaeum [Club]. [Here is] this callow youth going in with all these academic luminaries [into] the Athenaeum [. . .] Club, and we'd talk about the program for the committee. The committee consisted of one or two representatives of other key departments [of the] government but also people from industry and people from universities.

I think I mentioned to you before, Boyd, that one of the things we did, one of the little contracts that I had to place while working as secretary of this committee was somebody who would do the calculation of what was the maximum size of the high-speed calculating machine, given the heat that would be generated by the vacuum tubes that [would be] used to operate it because we didn't have transistors, we didn't have semiconductors in those days. The means of storing data within the high-speed calculator, one of them was, you had a long tube of mercury with an oscillator at one end and a microphone at the other, and the pulses were fed in at one end, the first end, they'd travel down the tube, but it would take time <T: 35 min>. That was sound, and sound travels slowly compared with electric currents. It would travel slowly down the tube, come out the other end, the pulses would be reshaped and put back in again, and [then] go down and round and round [. . .]. This was a way of storing binary digits before we had the kind of devices we have now. And all these things had to be developed, tested, and we were working with universities and industry to get these things done. So I got introduced to the hardware problems of computers.

[In May, 1949], I [married a Scottish lass, Isabella Robson Buck, whom I had met in Baldock when I was working at the electronics lab.] The next big turning point in my life was

[when a colleague] who was [. . .] a little bit more senior than myself [had also] married and [had] decided to turn down the offer of a posting to [the British Scientific Mission in] Washington, D.C., because [. . .] he and his new wife were [settled] down and they didn't want to be uprooted. So then I got offered the job. My wife was quite excited at the possibility as was I, and so we went to Washington [in November, 1950,] and [. . .] joined the staff of the [. . .] Mission, which was part of the British Embassy but in a different building, and was housed with Missions from other Commonwealth countries. So we had a Canadian, [. . .] a couple of Australians, a New Zealander, and a South African. [. . .] So we worked a lot together. My first job was to assist the director [Christopher Joliffe] with his responsibilities. One of mine was to chauffeur the guests to the cocktail parties that he gave at his house. [laughter]

**RAYWARD:** You must have had some more substantive matters that you were dealing with.

**WOOLSTON:** Yes. We worked very hard. There were a lot of things going on. I did a lot of arrangements for British scientific visitors coming to the United States. Dollars were very, very scarce in England at that time, so if they were going to spend money on sending a scientist to the United States, they wanted to be sure that he saw all the people [that would be] most relevant to his interests and [that he] got as much under his belt as he could in the time that was available. [. . .] I was setting up meetings and appointments [. . .] for visiting Brits.

One day it [was] mechanical engineering, the next day it would be forestry, and the next day it would be fire research or road research [. . .]. One learns a lot doing that kind of thing, and of course, one gets to know these senior scientists who are at a level where they [would] be paid to go on a trip to the United States.

**RAYWARD:** So who were some of these people, John? In the American establishment, you must have made a lot of contacts as well.

**WOOLSTON:** Yes. But [. . .] there was a couple of special areas that [they] designated as my responsibility, and one of those was computers, and that enabled me to go visit institutions in the United States and some private companies where computers were being designed and built and tested, [and] so I met the people who were doing that kind of work. It was still very early experimental development work. I remember going to MIT [Massachusetts Institute of Technology]. I went to Harvard [University]. I <T: 40 min> went to some start-up companies in places like Philadelphia, [Pennsylvania], which later became bought out by IBM [International Business Machines].

**RAYWARD:** So this is where [. . .] the early computers, [like] ENIAC [electronic numerical integrator and computer], and those things were being done?<sup>5</sup>

**WOOLSTON:** [Yes], that's right.

**RAYWARD:** You saw some of them as—

**WOOLSTON:** [I'd] seen the ones in Britain of course before I left, while I was doing this secretary work for the committee. In fact, one of my jobs was to tabulate the characteristics of each of the designs. So we developed a standard form—columns and rows for the characteristics or the numbers that would give you a bird's eye view of “What's this computer? What's its capacity? What technologies does it use within it?” and so on.

**RAYWARD:** What were some of your impressions about them? [. . .] You'd be able to compare what was happening in the two countries in a way that would be quite unusual.

**WOOLSTON:** Well, yes, and of course, in fact I was using my same form because I was going and visiting the computer installations, the computer development projects, in the United States, taking with me the same form that I'd used when I was secretary of the committee in England, getting this data from there, and then sending it back to the man who had succeeded me in England, so he could present it to the committee there.

[This was] all open [where] they knew what we were doing, and of course, I was also getting as much information as I could from Britain that I could give in exchange to my American contacts.

The other thing I was doing was for this man Urquhart whom we've talked about [. . .]. What were his initials?

**RAYWARD:** [D. J]. Donald [J].

**WOOLSTON:** Donald, who was in [the] DSIR at the time, and in charge of a group that [had been] stimulated by this famous report of [John D.] Bernal.

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<sup>5</sup> ENIAC was built between 1943 and 1945 and was the first large-scale computer to run without the hindrance of mechanical parts. For more see “ENIAC,” Computer History Museum, accessed May 1, 2015, <http://www.computerhistory.org/revolution/birth-of-the-computer/4/78>.

**RAYWARD:** I wanted to ask you about Bernal at some point.

**WOOLSTON:** Stimulated by [. . .] “We’ve got to do something about information. The traditional ways of publishing information are too slow.” During the War (World War II) [they] had learned to distribute and share information much more quickly. Maybe some of the ways that we had developed during the War (World War II) within the military establishment, much of [it] was and still was secret, but nevertheless could be applied in the more open scientific community, outside the military establishment, if we [could] only think of how to do it. Urquhart, of course, had quite a strong team at [the] DSIR, investigating all sorts of different ways of organizing [it], technologies to use with it. Edged punched cards, for example. So my other thing was to contact groups in the United States who were experimenting with this [. . .] thing, and I remember going to visit a lady. I think it was [at] the National Science Foundation [NSF]. I can’t remember [the] name.

**RAYWARD:** How about Helen [L.] Brownson?

**WOOLSTON:** No. There was a married couple who were both in this. [. . .] I remember this lady who demonstrated her set of edged punched cards, which were based [upon] the ingredients of different cocktail recipes, and if she had guests, she would first go to her liquor cabinet <**T: 45 min**> and see what ingredients she had. Then she’d put the needles through the edge-punched cards and shake out the recipes that she had the ingredients for [. . .]. Then she could offer those cocktails to her guests. [laughter]

So I was reporting back, mainly to Urquhart, on what I saw in the United States. I wish I could remember more names.

**RAYWARD:** We’ll perhaps come back to this, and with some more names. [. . .] People like [Calvin N.] Mooers, Zata coding, and I don’t know whether you had contact with some of those. Later on there was Mortimer Taube [and his] coordinate indexing.

**WOOLSTON:** Where was Mary Alexander? Was she in London [. . .]?

**RAYWARD:** I don’t know that name.

**WOOLSTON:** Of course, a man who became very influential in this too was Alexander King. Now, Alexander King had been [the] director of the U.K. [United Kingdom] Scientific Mission in Washington before I went there. My director [Angus McFarlane] was his successor.

Alexander King was now back in London and I think he was actually Urquhart's boss, and he became [fairly] active in OECD [Organisation for Economic Co-operation and Development].

[END OF AUDIO, WOOLSTON 1.1]

**RAYWARD:** So what were your impressions of some of the systems? I mean the punch card systems, of course, but then you were [also] looking at the [early] computers and their capabilities. Was it [ENIAC] that was in Philadelphia [. . .]?

**WOOLSTON:** Sorry?

**RAYWARD:** I was [. . .] trying to remember [. . .] one of the early computers, it was developed in Philadelphia, [and] you mentioned you were in Philadelphia.

**WOOLSTON:** There was the Eckert-Mauchly [Computer] Corporation, I think.<sup>6</sup> They were bought out by IBM. [. . .] I visited them, I know, and I think that was in Philadelphia. [. . .] This has happened several times, [I think], in the history of computers. You get a new idea, a new technology coming up, and you get start-up companies [where] it's really one bright individual who may even have a patent, who goes off, sets up his enterprise, gets some investors [so he can get] some money, and gathers a team around him. Once it is proved, then [it's] bought out by one of the big guys. I think that's happened in Silicon Valley, [California] just as it happened on the East Coast in the 1950s.

I was in Washington for three years. Our first son was born in Washington, [and] I wanted to know where I was going to spend the next big chunk of my life, where were my children going to grow up, and I was getting a bit edgy and I wasn't getting any response from London about what they intended to do with me next. I had some ideas about where I'd like to go, and one in particular on the British side of things. [Well], I might as well tell you now what that was. [. . .] One of the people who used to visit us in Washington and [for] whom [I] helped [to] set [. . .] itineraries and [. . .] meetings [. . .] was the Deputy Director of the Hydraulics Research Station in [Wallingford, England] on the Thames [River]. I had done some of this kind of work during the War (World War II) in connection with getting landing craft [on] beaches, knowing how deep the water would be on different types of beaches, so we had started a technical dialogue. He wanted to get [. . .] an information person in his establishment, but he

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<sup>6</sup> J. Presper Eckert and John Mauchly were central in the building of ENIAC at the University of Pennsylvania. They left after World War II to start Eckert-Mauchly Computer Corporation which was sold to Remington Rand in 1950 eventually becoming part of Unisys Corporation. For more see Arthur Lawrence Norberg. *Computers and Commerce: A Study of Technology and Management at Eckert-Mauchly Computer Company, Engineering Research Associates, and Remington Rand, 1946-1957.* MIT Press, 2005.

didn't have a position, [and] he told me that if he could get a position, I could have [the] job. And so I was anxious to get back to London and [get] into this, and it was a delightful location. It was a place where I would be very happy to bring up my family, so I was pestering London about this. London was being very slow to respond. I think my director in Washington didn't want me to go back. [. . .] I was useful to him.[But] in the course of this, I started making inquiries in Canada, and then I got a conditional offer of a job with the Canadian atomic energy program. Then London decided to take me back, [and so I went]. [. . .] To follow up on [the] question you asked a little while ago, Boyd, I would say, to be honest, that I wasn't really all that excited about the possibility of mechanical computer applications for information retrieval. I [reported] on them, they were interesting, but they [. . .] <T: 05 min> [also were] a little bit gimmicky. And what I was much more interested in was novel methods of publishing. I was a disciple of Bernal if you like. I did think that we published—of course, we still do—we published journals with hundreds of papers in them, [that] any one reader is probably only interested in one or two, and yet he subscribes to a journal that gives him ninety-five that he's not really interested in. [Bernal] had a scheme where you would be on demand, and you would [. . .] buy only those that you particularly wanted.

So I was a disciple of Bernal and the concept of separates. Separates either [. . .] that looked like articles out of journals, [or separates] that [looked] like technical reports. I thought that it would be a good idea to stimulate interest in Britain about this, by reporting on the way in which Americans were using technical reports to pass around scientific [and technical] information. Urquhart backed me up on this. Urquhart suggested I write a paper [for] the *Journal of Documentation*, which is this one here. And Urquhart and I argued a bit about some of the things in the text, and I went back to England in June, [1953], and this got published in the December, [1953,] issue.<sup>7</sup> Actually, [. . .] I suppose, really it was pretty quick [. . .] compared with what things are nowadays. So I went back to England in June, [1953]. Her Majesty's coronation took place while we were at sea. It was the day after a storm that had raged for two or three days. [laughter]

**RAYWARD:** What was the source of the exchange with Urquhart in developing the paper? What was [it that you and] he [were] disagreeing about?

**WOOLSTON:** I think his concerns were largely [that] he didn't want to offend the American government authorities because many of the technical reports were produced by teams, whether in industry or universities, that were working with US government contracts. [They were] unclassified, it wasn't because [they were] secret or confidential or anything like that, [but] it was the practice, as I had observed, it was the practice for these people to give out copies of their reports, which in the first place were reports [to] the people who were giving them the money. They felt reasonably free to give out copies to anybody who was interested as long as

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<sup>7</sup> Woolston, John E. "American Technical Reports: Their Importance and How to Obtain Them." *Journal of Documentation* vol. 9, no. 4 (December 1953): 211-219

copies lasted. So I was saying, if you write and ask these people, they will very often put you on the mailing list. Urquhart was worried that the people who were actually funding these contracts might not like the idea of their contractors being quite so generous with the information that essentially they had bought. So he wanted me to take out some of that more advocacy language. I [would say], “Get in there. If you know somebody is working on the topic, and you’re working on the topic, write [to] him. Ask him to send you his reports, and you’ll send him whatever [you get, that] you’ve got.”

And so that got toned down a lot before it got published, but it was fun. But anyway, finally my <T: 10 min> security clearance came through to go work in the atomic energy field. I got the offer from Canada. I booked a ship going to Montreal, [Canada], in October of [1953], put in my resignation to DSIR. My last day at work was a half day. I was to be there just [in] the morning. Halfway through that morning, the deputy director of the hydraulic station came into my office and said, “John, I’ve got permission for that position. Are you still interested?” I said, “I’m going to Canada the day after tomorrow.” [laughter]

Well, Boyd, look, you’ve asked me to respond when you bring up particular names and tell what I remember about my encounters with the individuals. I have to put in a word of caution here, I think, because not only does one forget a lot after fifty years, but also I can’t really be sure that one’s memories are true [because] they’re reprocessed over the years, sometimes just in one’s own thoughts, sometimes in conversations with other people. I’m sure a lot of distortions come in. I’m a little afraid of telling some of these stories. All I can do is to tell them but with the warning [that] heavens knows how true they really are. [laughter]

Just before you switched on the machine, I was trying to remember the name of the man who developed the computer at Birkbeck College in the University of London [. . .]. As I [have] told you earlier [. . .] part of my job was to go and write down the characteristics of the computers that were operating or under development, so I went and visited him and took the data about his computer and then put that in the files of the committee [that I was serving]. I did remember this man’s name, although I can’t remember it at this moment.

Many years later I was a member of the committee advising the National Research Council [NRC] in Canada about its science information programs, and a new member joined the committee. This new member was the president of a small university in the city of Thunder Bay at the top end of Lake Superior. And this guy had the same name as the man that I had met at [Birkbeck] College. So at the coffee break on the first day, I went up to him and I said, “In 1946, I think it was, I took a bus out to Birkbeck College and I walked around the block, and I walked down a flight of iron stairs to a door in the basement and I went in there and saw a man with that name who had built a computer.” And he said, “The same. The same.” [And we’ll find his name.]

**RAYWARD:** [. . .] I thought just to fill in this period that we’re talking about and your career [is so interesting because] there [are] these natural breaks. You’re now about to go off to Canada, but I thought just before we leave that period, if you would tell me something about

some of those folks you were working with in that [inter]departmental committee on [high-speed calculating] machines that you were involved in. There was the chairman who was—

**WOOLSTON:** Sir David Brunt, yes, the Secretary to the Royal Society. He was very much a gentleman. <T: 15 min> Very dedicated. Must have had many, many responsibilities chairing committees, sitting on committees, advising the government on all sorts of scientific issues. But [. . .] whenever I had a meeting with him, he always seemed to give [. . .] me his full attention, and he would advise me, sometimes in very [. . .] quaint, indirect ways. I think I mentioned earlier, he used to take me to lunch in the Athenaeum [and] we would talk there very quietly and [he asked] me what I'd been doing, react, advise me what he'd like me to do next. I remember one embarrassing incident. My boss at DSIR was [. . .] Christopher Jolliffe. He taught me a great deal. [It was] perhaps on this occasion he didn't give me the best advice. [The] forms of address [were] still very important in Britain in those days. How did you address a letter to somebody [with whom] you were corresponding with [in] perhaps another institution? [The system in] the old British Civil Service [. . .] was simply to use last names. So he called me "Woolston," I called him "Jolliffe," but what did you do when the individual you were writing to was very, very much more senior than yourself? According to Jolliffe you still practiced the same thing. [It] was [the] tradition in the Civil Service. It was also tradition in the military. If you were an officer, you addressed your fellow officers in that way, irrespective of rank. And so I had gone to him to get his advice on a letter that I was sending to Sir David Brunt. And I had written at the top of the letter, "Dear Mr. Chairman." [And] he said, "You should say, 'Dear Brunt.'" I said, "I can't [say 'Dear Brunt']. He's [the] secretary of the Royal Society, for heaven's sake, and I'm just a callow youth."

"Well," he said, "If you don't want to say 'Dear Brunt,' [then] say 'Dear Chairman.'" So I said, "Dear Chairman." The next time we were face to face, he said, "Good morning, Mr. Secretary." That's all. That's all, but I mean I remember it to this day.

**RAYWARD:** [You] mentioned that [Patrick M.S. Blackett was on the committee].

**WOOLSTON:** Yes. P.M.S. Blackett was on the committee.<sup>8</sup> Lord Halsbury was on the committee.<sup>9</sup> He was chairman or managing director or top executive of a government . . . what do you call them? It's not a government department, but it is like a corporation owned by the government. A public corporation.

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<sup>8</sup> Blackett was an experimental physicist who won the 1948 Nobel Prize in Physics for his study of cosmic rays. For more see Mary Jo Nye. *Blackett: Physics, War, and Politics in the Twentieth Century*. Harvard University Press, 2004.

<sup>9</sup> John Anthony Hardinge Giffard, the third Earl of Halsbury, was managing director of the National Research Development Corporation.

**RAYWARD:** QuANGO [Quasi-autonomous Non-governmental Organization] I think they called them [once]. I don't [know what] they do now.

**WOOLSTON:** But this was set up with money from the government to promote inventions and the exploitation of the inventions. He was on the committee. He was all gung-ho for <T: 20 min> getting inventions, getting them patented, beating the Americans to the punch and then using them to commercial advantage.

I think there was a man from the Ferrari Corporation, which was [. . .] developing computer equipment at a factory in Manchester, [England]. I was telling you earlier about how one of the storage devices that was used in those days was the mercury tube, a tube full of mercury sending sound waves down, using the time it took for the sound to travel the length of the mercury tube as storage time for the data. Well, another one that was being worked on was a magnetic drum. And this is like your tape except instead of a tape it was a big drum, and you had heads touching the surface or very close to the surface, and the drum would spin and you would write on the track binary zero or binary one, and then when it came around, you would—the head—you would pick it up, either read it, or reinforce it and go around again. You'd spin the drum very fast. And I remember we went to this lab and they were going to do a demonstration for us. They switched it on, and the centrifugal force was too great and the whole piece of equipment collapsed. I would love to get back to London and find the minutes of this committee and remember all the names and tell you more stories, but it was a long time ago, Boyd.

**RAYWARD:** [. . .] Tell me about Bernal. You mentioned him as [an] influential ideas person at the time.

**WOOLSTON:** Yes. I am not sure whether I ever did meet Bernal or not. I have an idea that he may have been present at one of our committee meetings, but we talked about him a lot and especially about his recommendations for reorganizing scientific publishing. I don't think you had this tape recorder on when I was saying that the objection to the then method of publishing, which is still largely today's method of publishing, was that you would subscribe to a journal and end up reading only two or three of the papers out of the whole year. , so you were wasting a lot of your money and wasting a lot of paper and trees in the process. Even in libraries, very, very often you find that there are some papers that are read a lot, but there are other papers that are never read at all, and journals that sit on library shelves.

Bernal had realized this, and he'd also realized that during the War (World War II), we had developed, particularly the Americans had developed, [methods] of distributing information very rapidly in the form of technical reports where essentially one paper was one report and they targeted its distribution to the people who were really involved and would read it. So, Bernal thought that this mechanism, as a matter of efficiency, should be applied more generally across the business of scientific publishing, and I don't know whether it was he who coined the <T: 25

**min**> idea of separates—the term separate—to describe this, but as I understand it, [or] as I recall what I understood, he was not advocating the disappearance of the referee system for scientific articles. The articles would still be refereed, or at least you would distinguish those that were refereed from any that weren't, and [. . .] you would publish titles, or maybe it was abstracts, and then you could order just those ones that you wanted to [receive].

I think there was quite a lot of opposition to his point of view from people who feared the imposition of criteria that might not be generally acceptable in the freedom of science sense, that if you had in fact one publishing house for all or most of the scientific literature, the people in that publishing house could slow down or find reasons not to publish the things that they didn't like, and that what we had at the time with the multiplicity of journals and publishing houses, was a guarantee in itself of the freedom of expression in science. So there was opposition to his point of view.

**RAYWARD:** [Did] that also affect opposition to his politics, which, I gather, were fairly—

**WOOLSTON:** [He] was quite [left].

**RAYWARD:** He was [. . .] openly communist [I believe].

**WOOLSTON:** [. . .] Yes, I think that . . . because it came from him, there were [those] suspicions that this was Big Brother. [. . .]

**RAYWARD:** 1984 [was written around then].<sup>10</sup>

**WOOLSTON:** [. . .] It was in the [1940s] wasn't it?

**RAYWARD:** I thought it was.

**WOOLSTON:** [Yes]. It's almost contemporary perhaps. Anyway, I felt that the safeguards could be there, that the concept didn't necessarily imply [. . .] a czar who would determine what got published and what didn't get published, [that] you could still have the safeguards of the referee system, you [could still] have the safeguards essentially [of] a jury [of editors], a plurality of opinions or a plurality of channels by which different papers could be fed into the system, just as you have a plurality of editorial boards and publishers now, and therefore, the

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<sup>10</sup> George Orwell, *Nineteen Eighty-Four, a Novel*. London: Secker & Warburg, 1949

freedom of expression. If one body turned it down, you [could] send it to another body and still get it distributed.

**RAYWARD:** These ideas I imagine were of great interest to Urquhart.

**WOOLSTON:** Oh, yes, indeed. I think so. I think he was one of the people who led this type of discussion inside DSIR and generally [you'd get], "And [I'm] running over to OECD [Organisation for Economic Co-operation and Development] and talking about it." Alexander King was much involved in OECD at that time, and I think Alexander King was Urquhart's boss. But anyway, they were certainly both involved in [. . .] discussions of these ideas.

**RAYWARD:** What was your contact with Urquhart? What was he like?

**WOOLSTON:** I was not in his department. <T: 30 min> There's a name that keeps coming into my mind, Mary Alexander. Whenever you say Urquhart, I [. . .] think of Mary Alexander, and I'm not [. . .] sure why, whether she was a key member of his staff, or a kind of [interlocutor in] the United States in discussions about the things that Urquhart was involved [in]. It's funny. Maybe she's on your list of pioneers, too.

**RAYWARD:** I'm not familiar with her name. [Let me check it out.]

**WOOLSTON:** You're not familiar with that. Okay.

**RAYWARD:** But that means nothing.

**WOOLSTON:** [. . .] DSIR headquarters, there were different sections. The section where I was privileged to work was [. . .] involved in the issues of where the money should go. It was a powerful unit. In fact, [. . .] for most of the time I was there, [Urquhart's unit was well staffed and for much of my] time [they were] in a different building, [but] there were [not] many [of us in SR-1], and . . . we certainly didn't see each other on a regular basis. In fact, when I was in DSIR, until I went to Washington, I guess I didn't have that much to do with these things. Computers, yes, but information processing was not a [significant] topic for me. I was concerned about the headquarters' work on behalf of the fourteen DSIR research establishments. That was my main area. But when I went to Washington, [there] it was decided that one of my duties would be to act as an antenna in the United States for Urquhart [. . .]. I'm sure I had a long talk with him before I went, and I'm sure I had a long talk with him when I came back, and

maybe he came through a couple of times when I was there. I don't know. [I] can't remember now. But it was not a frequent or a close [personal] relationship.

**RAYWARD:** Speaking of being over in Washington at this time, too, I [wonder if you had] contact with Bernie [Bernard M.] Fry or some of those folks?

**WOOLSTON:** Bernie Fry [. . .] was in Washington [. . .]. His post was at the Catholic University [of America]. I remember him more as somebody I could phone up or go visit and ask, “[I] got [this inquiry] from London. Who do you think [. . .] could help me? Who should I see?” [I can't] say much more about him.

**RAYWARD:** What about Gene [Eugene B.] Jackson?

**WOOLSTON:** [. . .] I'm sorry. I can't remember where Gene Jackson was working.

**RAYWARD:** [. . .] In the early [1950s], there were some conferences at the University of Chicago on how to handle report literature and things like that <T: 35 min> during the period you were there. Did you have any contact with those folks, Jesse [H.] Shera, Margaret Egan . . . conference at the University of Chicago? Ralph Shaw at the—

**WOOLSTON:** Ralph Shaw and Shera, those names I [. . .] certainly remember as people whose material I was reading. I don't think I went to any meetings at the University of Chicago.

**RAYWARD:** [United States] Department of Agriculture?

**WOOLSTON:** No, I would say most of my contacts were with the [United States] Department of Commerce, particularly what . . . I'm not sure [whether it was] called NTIS [National Technical Information Service] at that time, but it became known as NTIS later. This was, of course, a massive operation for [. . .] managing the distribution of separates.

**RAYWARD:** [. . .] Doing Bernal's work.

**WOOLSTON:** [. . .] It didn't, of course, have the refereeing system. [While I was in Washington], we [also] had great expectations of what [the National Science Foundation] would be able to do.

[recording paused]

**RAYWARD:** John, your bosses, yes?

**WOOLSTON:** [Yes. Well], I've been pretty lucky in my bosses through the years. The rather dictatorial head teacher at school [clearly] had [ideas] about me. He [seemed to know] what was probably going to be best for me when he took me from the humanities side of the gymnasium and put me on the science side of the gymnasium. He was probably looking a long way ahead [. . .]. During the War (World War II), nobody would have financed me to go to university in the humanities, but I could be financed to go to university in science, and I was. They didn't just direct me there. They also gave me money to eat and drink—well, not drink there. And then in the SR-1, in the Ministry of Supply during the War (World War II) [. . .] my immediate boss was not too inspiring, but the boss of all of SR-1, a man named F.A. Vick, was somebody [who] taught me quite a bit, just by his example, not because he was teaching me - he was much too busy to teach me - but just because I was in his office waiting for instructions while he was on the telephone and seeing how he operated. And [. . .] as I think I mentioned in another context, when you're at war, you have to give even young people quite a bit of responsibility, so he was putting responsibilities on to me, sometimes just as a helper to [himself], but sometimes things that I [had to] go off and do by myself.

[Then] after Vick, I did one year in electronics lab in a place called Baldock in Hertfordshire, and the chief there, his name was Sutton. He was forty years old and a bachelor, [and] had worked very, very hard all through the War (World War II) on electronics systems for the Army and the Air Force. Again, he was rather autocratic. He was not very tolerant of nonsense, but he always set us a very good example. And I remember his coming up to me one day when I was standing at my apparatus and asking me <T: 40 min> a question, and I answered rather quickly. He said, "Woolston, why don't you think before you speak?" Very good advice that I haven't followed at any time in my life. [laughter][Sutton loved to tell puns. When I was about to leave for Paris, he asked me what I would be doing there. I explained that this would be defined when I would my interview with Frédéric Joliot-Curie, to which Sutton replied "I suppose it will be Some Jolly Old Curiosity." At DSIR], Jolliffe was excellent. I mean he not only taught by setting a good example. He taught [. . .]. [He would] sit down and [. . .] explain things to you and [he would say], "This is the way I would advise you to do it." Very often, "This is the way it is done in DSIR." The institution, which had been founded in 1917, had a culture of its own, and you tried to live within that culture, to be part of that culture, and in a way, I remember now, Urquhart was not. Urquhart was, in a way, an outsider [of] the organization, who was expecting it to do things that it really wasn't ready to do, at least at the time when he first promoted these things.

**RAYWARD:** He'd come in from the [. . .] Science Museum [. . .].

**WOOLSTON:** I think he had, [yes]. But [ . . . ] I'm sure that as the years went by [ . . . ] some of those years [ . . . ] when I was in Washington, there was an accommodation [ . . . ] between Urquhart and the rest of DSIR.

[Then] to continue with the list we've gone over so far, the next one would be Angus McFarlane who was director of the office in Washington where I had three years. He was a strong-minded boss, and he left me to my own devices quite a bit of the time, but [ . . . ] every now and then thought he [should] check on what I was doing and, if necessary, pull on the reins. And I remember one day, I guess [ . . . ] maybe I'd taken a long lunch or something, and he began to suspect that I wasn't working as hard as I might [ . . . ]. There were no [photocopy] machines in those days. If you sent a letter and you wanted copies of it, [the typist] had to put carbon papers behind [the original].

My secretary [ . . . ] used to make copies of all the letters that I dictated, [and] I always dictated [ . . . ]. These copies were on thin onionskin paper [with] different colors. The ones that went into the chronological file were pink. So he said, "Woolston, show me your pinks." [laughter] So I said, "Okay." I went back into my secretary's office and I got [there] eight or ten great big thick files, and [ . . . ] staggered back into his office [ . . . ] and put [them] on his desk and straightened up the files and stepped back.

"All right," he said. "Let me have a look." And I went out <T: 45 min> and [carried] on with what I was doing. And he came back [ . . . ] about half an hour [later] and [ . . . ] said, "I'm sorry." [Sometimes he] called me John, and he sometimes called me Woolston. "I'm sorry, John. You know, I had no idea [ . . . ] you were doing this much work." That was a [ . . . ] turning point in our relationship. The next boss [is] in Canada and I guess [we'll] talk about him when we get there.

[recording paused]

**RAYWARD:** Okay, John. Just a postscript you wanted to add to this.

**WOOLSTON:** [Yes]. This postscript is essentially a postscript to what I said about my years in Washington. Running in the back of my mind while we were talking was a name, Mary Alexander, and I just couldn't remember when we were talking before just where she fitted into this picture. However, after we [ . . . ] recorded the last session, we went down to my office and looked in the computer and were going through the stories about different pioneers, and one of those provided the answer.

Mary Alexander was in fact the person who came to Washington to replace me when I left. She came from Urquhart's team in DSIR, and not long after she arrived, she married Saul

Herner and thus became Mary [A.] Herner, which is how she is listed among the pioneers.<sup>11</sup> I think also I said that DSIR had a certain culture—

[END OF AUDIO, WOOLSTON 1.2]

[BEGIN TAPE SIDE 3]<sup>12</sup>

**RAYWARD:** John you were talking about Urquhart.

**WOOLSTON:** Yes, this was a postscript as to what was said earlier today in connection with my years in Washington, and Tape One ended when I was in the middle of the sentence saying that in a way, when he first arrived, Urquhart didn't quite fit in to the culture of DSIR. I'm sure of course that Urquhart saw us, the people who were already there, as old fuddy-duddies, and still living the years between the wars. Of course I was quite young. I had joined a group where many the people had been there before the Second World War, were still present, and I respected those people very much, and I would have felt honored if I was considered to be one of them. I think they did a marvelous job in the 1930s, during the Great Depression, where they had to count every sixpence. Anyway, I think by the time he left DSIR, he had converted some of the people, and perhaps he had qualified his position, too, so altogether I think with the passage of time, he and his group did indeed fit into the organization, its objectives and everything. Mary Alexander's coming to Washington and joining the team there I think was an example of how the whole thing began to come together.

**RAYWARD:** Did you have any contact much with Mary Alexander after that, or with the set-up in Washington, or were you now moving onto this new part of your career?

**WOOLSTON:** Well, of course after a few months back in the UK, I then emigrated to Canada, and I disappeared into the backwoods, two hundred kilometers northwest of Ottawa, [Canada]. I had a lot of things to do there. My family was young, and we didn't travel a great deal. So no, I don't think I really did maintain the contacts that I had built up in Washington, except to the extent that I developed ones with the people who were most concerned with the atomic energy information program.

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<sup>11</sup> Saul Herner, interview by Robert V. Williams in Fairfax Virginia, 16 July 1997 (Philadelphia: Science History Institute, Oral History Transcript #0164).

<sup>12</sup> The second cassette tape recording of this interview was not digitized. The transcript of tape sides 3 and 4, therefore, have not been subject to audit-edit, though these sections have been reviewed and corrected by Dr. Woolston.

**RAYWARD:** John, a point about the way in which these positions were titled and organized at the UK mission in Washington.

**WOOLSTON:** Yes. I have spoken, I think, on this tape or the previous tape about my boss in Washington who was Angus McFarlane, and I probably referred to him as the Director of the UK Scientific Mission in Washington. In fact, he had another title as well, and that was Science Attaché at the British Embassy. We all knew that, and it was sometimes used when the contacts were diplomatic, but a lot of the time we referred to him as Director, U.K. Scientific Mission, the way I've done it here. However, we noted, when we were looking at the little story about Mary Herner, Mary Alexander that was, that she had been described, and this may have been just a little typo, typing error, as Assistant Science Attaché. Well, I don't think she was, and I wasn't as her predecessor. I think there's just a tiny little word left out. In both cases, we were Assistant "to" the Science Attaché. [laughter].

**RAYWARD:** So John, we're at the stage now where you were offered a job in Canada with the—

**WOOLSTON:** Atomic Energy of Canada, Limited [AECL].

**RAYWARD:** Right. So tell us now how you got to Canada and what you found there and how the job developed, and eventually how it began to involve information functions that eventually took you abroad. But let's start at the beginning and let's get you over to Canada.

**WOOLSTON:** The organization that I went to join was called Atomic Energy of Canada, Limited. It was a corporation, but wholly owned by the government. Its antecedents go back to the middle years of the Second World War, alongside the big Manhattan Project in the United States. There was a smaller project started in Canada using different technologies, technologies based on heavy water, as an insurance policy in case one system didn't work, perhaps the other one would. Of course, the ultimate target in both programs in wartime had been military, but immediately the War (World War II) was over, Canada declared that it was not itself going to be involved in military uses of atomic energy, but only the peaceful ones.

The team in Canada during the War (World War II) had involved people of quite a few different nationalities—British and French, particularly—as well as Canadians. As soon as the War (World War II) was over, Britain and France set up their own nuclear research organizations, and most of their staff went back to their own countries. Just a few stayed in Canada. During the War (World War II), the organization had been largely under the National Research Council, although there was an industrial component as well. It was called Defense Industries Limited, another state-owned organization. The prospects for industrial applications

were quite important, of course, and the government decided not to leave this under the National Research Council, but to create a new state organization that would combine both the research people and those more concerned with the industrial engineering applications, and this was the Atomic Energy of Canada Limited, which was still a relatively new organization when I joined it in 1953.

I may have mentioned earlier on this tape that while I was in England, from June to October, 1953, the sleuths had been visiting my family, my friends and my former employers to check me out because in those days, anybody being involved in Atomic Energy of Canada Limited, or AECL as we called it, had to have security clearance because, although we were not interested in military applications, much of the information that we held was still classified because of its significance for military applications. I got my clearance. My wife and our eighteen-month old baby and I went by ship to Montreal in October. I had specifically negotiated with AECL that a few days after my arrival, I would take my first holiday, and we all went down, back to Washington to collect the 1951 Studebaker that I'd left in a garage there in June. It took a bit of starting, but we got it started, and we actually got it back to Canada before the first snow. We were rather fortunate in that regard.

The place where I was working, called Chalk River in the province of Ontario, about 200 kilometers northwest of Ottawa, had its own town, called Deep River which was another ten kilometers up the road on the banks of the Ottawa River, as was the main Chalk River establishment downstream. The Ottawa River at that point is huge, about two kilometers across. The far side was essentially uninhabited, and you could have half a mile of sand beach to yourself on a Sunday afternoon in the summer, if you crossed the river. Of course, in the winter, everything was frozen.

Deep River had a very high population of PhDs. It was a total population of about five thousand five hundred. I arrived there at the age of twenty-nine. One of the little things that I got to do when I first arrived was to find the average age of the professional staff, and it was twenty-nine. And ten years later I was thirty-nine and so was the average age of the professional staff. It was a young, a young group and of course they were all having babies. We had another one, so our second child was born in Deep River. Well, it was a great place to bring up kids. There were lots and lots of open-air activities, even in the winter. There were a couple of little ski hills nearby. I think that I have to admit that despite my previous international activities, my concentration for the first —oh, some years, through much of the 1950s in Chalk River was on local problems, Canadian problems.

I was in correspondence with our partners in other countries. We were exchanging documents. Just something that comes to mind, although Canada has both French and English-speaking populations, mostly at Chalk River they were Anglo folks, and I got the job of having to review and revise the translation of our annual report into French as one of my annual tasks.  
[laughter]

**RAYWARD:** John, can you tell us what actually was the job that you were doing?

**WOOLSTON:** [Yes], maybe I should have talked about that sooner, Boyd. The title of the position that I was offered was Technical Information Officer, but it was explained to me that I would be essentially an assistant to the chief scientist—he was called the Senior Vice President (Science) in AECL. He was W.B. [Wilfred B.] Lewis, and Boyd, I have a biography of W.B. Lewis here.<sup>13</sup> I didn't write it. I think it was very well done. It was a PhD project, and then the lady's thesis was published. W.B. Lewis was a Brit, and he had been a very important person in the development of radar in Britain during the War (World War II). He was a physicist. He had started off in Cambridge, at Clarendon Laboratory, working on cyclotrons and things like that in the 1930s, and then, as I say, got into radar, became, I guess, essentially Deputy Director and Chief Scientist of the program at Malvern in England, and was hired by NRC to lead the scientific side of its nuclear program almost immediately after the War (World War II). He was an amazing individual in many ways. I think everybody respected him and quite a few feared him because his ability to penetrate into any subject was fantastic. Physics was his main preoccupation, of course, and he had constant interaction with all the physics researchers at Chalk River, but that didn't prevent him from reading a few papers one night, and going and asking very penetrating questions of the metallurgists one day and then follow with the biologists next week. In a very real way, I think it can be said that he was the person who conceived what became the Canadian nuclear program for the production of electricity, and my job was to help him in every way I could. He had another assistant who was concerned with the administration and the financial aspects of the research program.

This was a big institution. I can't remember for sure, but I think we had something like seven hundred scientists in all of these different disciplines from biology and even a couple of economists, physicists, a lot of engineers, chemists, chemical engineers. We were processing nuclear fuels after irradiation, to separate the fission products from the residual uranium and the plutonium. So it covered the spectrum of nuclear activities at that time and gave Canada a voice in the councils with the United States and with the British particularly, over where we could go and where we would go in terms of applications especially for producing electricity.

What did I do on a day-to-day basis? Well, all sorts of things. One of the first things that comes to mind is that everybody in Chalk River who wrote letters or memoranda was required to make a carbon copy which came to me, and I went through all these and stapled little flags on the ones that I thought W.B. Lewis would want to see, so in fact I was feeding him with information from the staff of the organization.

**RAYWARD:** John, when you say letters, did personal correspondence have to be cleared, or what were the letters?

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<sup>13</sup> Ruth Fawcett, *Nuclear Pursuits: the Scientific Biography of Wilfrid Bennett Lewis*. Montreal: McGill-Queen's University Press, c1994

**WOOLSTON:** No. These were letters relating of course to the activities of “the Company,” as we called it, the programs. Personal letters, no. People didn’t write personal letters at work, usually. Or if they did, they never went into the system. But these letters also all went on files. We had a central registry where all the files were kept, so every letter had several carbons. I’m sure all hell would have let loose if we found letters on files that were not also in the copies sent to W.B. Lewis. I doubt if that ever happened. I don’t recall any time when it did.

We were seeing just about everything that was being recorded. A lot of the reports that were written about the progress of the work were identified as internal reports, but they were all put through a system and a copy deposited in the Scientific Documents Office, which was in fact not initially attached to the library, but later became part of the library organization.

All right. There are so many things that run through one’s mind. It’s very hard to know which ones to tackle first. But I got given odd jobs by my boss. Since we’ve talked about computers, perhaps one of the first ones would be a little bit amusing. We were coming up to the time when salaries were to be adjusted, and my boss said, “Look, on a confidential basis, I’m going to give you the names, the salaries, present salaries, the date of birth and the year of graduation of all the research staff. And please, would you plot these on a graph paper so that we could relate salary either to age or salary to years since graduation, and see whether we can draw a line through this, which is the normal average progression of a researcher with age or years of experience.” And I thought, “Oh, this is an opportunity.” Yes, I did plot the points, and I have to say that even on first sight it looked like there was a cloud of points rather than a distribution along a line. However, our accounting department had recently acquired a new IBM machine—this was probably 1954 now—which was programmed by wiring a board, and input was on punch cards.

Now, in fact, of course, the accounting department also had information about the salaries of people, so there was no breaking of confidence when I went to see them and said, “What I’d like to do is a least-squares fit to these points to see if we can come up with a line.” This was fun for them because this was different from their normal work. And we did this, and I got the line and I drew it through the points I already had on the piece of paper. It looked like a beautiful fit. I was very proud of this. And then my boss said, “Oh, look, I’m awfully sorry but there was one person I left out of that list that I gave you.” And this person was in fact probably the oldest person on the scientific staff. He was an ancient old chap of about forty-nine or fifty, you see. And so he gave me that, and his salary, and so then we had to re-run the program with one more point. There was another line that fitted the points perfectly, but it was at a very different slope. And then of course I realized that how careful you have to be about believing these sorts of things. It all sounds scientific—“I’ve got a least-squares fit,” but just one more point. We were only doing the research staff. We weren’t doing all the professional staff. I think I gave you a figure of something like around seven hundred for all professional staff, let’s say all graduate staff. These were the researchers, and there were something like seventy or eighty of them, so one point in seventy or eighty made an enormous difference to the picture. So he had to go back to use his judgment on some of the increases and not rely on the line. [laughter]

But almost as soon as I arrived, they started giving me other functions. There was a library there. The library was governed, I suppose, by a committee, and one of our older scientists was chairman of the committee, and then there was a representative of the physicists, and a representative of the chemists and so on, who sat on this committee and who, for example, passed judgment on the librarian's recommendations about what books we should buy and what journals we should subscribe to, and also brought to the table any complaints there might have been from the staff about things they didn't like or things they'd like to have that they didn't have. The library committee had always had a secretary, and the secretary was in fact responsible for the administration aspects of the library. It was the secretary who signed the purchases and who, with the librarian, would make recommendations about salary increases for the staff or all those factors that intervene between librarians on the one hand and users on the other.

The man who had been secretary wanted out, and they said, "Oh, well, you know John Woolston, he's here now. We can make him secretary of the library committee." And that meant that on a day-to-day basis, the librarian reported to me. That would have been the end of 1953, the beginning of 1954. And from then until 1989, I'd always had a library somewhere within my responsibilities. So it presaged what was going to happen for the next thirty-five years.

Well, it didn't end there, because anything that had an information component to it also got added to my tasks. I started being responsible for the review of those of AECL's publications that were going to be published rather than just internal reports, be they technical reports or be they articles going to journals. Obviously I wasn't in a position to judge the metallurgy in a paper on metallurgical research or the physics in a paper on nuclear physics. But I did quite often edit, and in some cases re-write, the papers if they were not as clear as perhaps they should be in the interests of the company's image outside. I had a colleague who would serve with public relations. It was not really that that I was doing. It was more on the scientific material.

And then of course, one thing led to the other, and eventually the print shop was added to the things that I was responsible for. The photography shop, the internal repository of documents, both our own and those that we received, particularly from the British and the Americans. Then I was made the assistant to the man who decided what was to be secret and what was not to be secret. I then had to go down to Ottawa once a month and review the patent applications that had been filed to see whether these could be released or whether they were to be held under a Canadian law which enabled us to classify as secret, at least for the time being, a patent if it was deemed to be of significance to military applications.

So, after a number of years, I can't remember exactly when, they decided that they should recognize the fact that I was doing these many different things, and I got a new title as Head of the Technical Information Branch, and the library, print shop, photo shop, etc. were all designated as part of the Technical Information Branch. I then said, "Well, okay, then perhaps I should be close to the people who were on my staff." At this time I had a staff of eighty to a hundred people. Instead of being right next door to the Senior Vice President Science and reading the carbon copies for him, I should be transferred to a place where my staff were. "Oh,

no,” said the Senior Vice President. “No way.” There was his office, his secretary, and then my office, and he would pop out and call me in. As I said to one of my colleagues around that time, “Well, I guess it’s a comfort to me to know I’m a comfort to him.” Shall we take a break for a moment? [laughter]

**RAYWARD:** Sure.

[recording paused]

**WOOLSTON:** Well, after that little break, Boyd, what I’d like to turn to next is the international aspects of my work with AECL at Chalk River. Along the same corridor where I had my office, there was an office for the American liaison person and another one for the British liaison person, and we used to walk in and out of each other’s offices in the course of the day and so we were discussing the issues that affected us all, very often political developments in the world, the United Nations [U.N.], and so on. And of course, through these people I was able to meet and get in touch with my opposite numbers who were in charge of technical information in the U.K. and the US particularly. Then eventually I started setting up document exchanges for unclassified literature with other countries as well. I remember particularly going—I can’t remember exactly when—visiting my opposite number in France.

**RAYWARD:** Who was that, John?

**WOOLSTON:** Monsieur Guilloux. At Saclay, outside Paris, and he showing me the vast card catalogue that he had built there of all the documents that were in the Saclay library, very, very detailed, very deep subject index, all on catalogue cards. We all realized that things would have to change. This couldn’t go on and on and on. But one really, the most significant event in this area was a speech that President [Dwight D.] Eisenhower made, and I think this was in the early part of 1955,<sup>14</sup> in which he proposed his “Atoms for Peace” program, and one immediate component of that program was to have a conference organized by the United Nations on the peaceful uses of atomic energy, to which all countries would be invited to participate, all countries would be invited to send papers, and it was decided to have it in Geneva, [Switzerland], and there would be exhibits there as well at the old League of Nations building.<sup>15</sup> In fact, it ended up of course with several parallel sessions because there were so many papers presented.

Lewis of course was in charge of putting together the Canadian contribution. I was his assistant. I was now working many more hours per day, editing the papers, chasing the authors to get their material in on time. We were trying to provide photographs and diagrams and so on,

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<sup>14</sup> The speech was given before the General Assembly of the UN Tuesday, 8<sup>th</sup> December 1953

<sup>15</sup> International Conference on the Peaceful Uses of Atomic Energy, Geneva, August 8-20, 1955

meeting the United Nations' rules about how papers should be constructed, what was the maximum length, whether there was an abstract, getting French translations made, and all this stuff—contracting translators. And the government then named the members of its delegation.

Initially I was not to be a member of the delegation. There were many people who were more senior than I was at that time. But when we were only two or three weeks from the start of the conference, the United Nations decided that there was to be another session in the program, which would be on bilateral cooperation in the peaceful uses of atomic energy. Now, earlier that year or the year before, I think the year before, 1954, Canada and India had signed an agreement under which we would help build in India a reactor which was essentially a duplicate of the first big one that was built at Chalk River, what we called NRX—National Research X in Chalk River. A copy of this was to be built at Bombay, India. Already in 1955 we had about forty Indians training at Chalk River. Now there was to be a paper about this cooperation, and the authors were to be my boss for Canada, Lewis, and Homi Bhabha, who was the head of the Indian atomic energy program. A very charismatic individual. So Lewis called me in and said, “I don't have time to write this paper. You draft something for me, but it doesn't have to be too long. Four or five pages.” So this is what I did. And then we had to get it over to India for Bhabha to see it, and we didn't have fax in those days. I can't quite remember how we did send it at this point. The technologies have moved on so much since 1955. [laughter]

But anyway, we got approval back from Bhabha, and then there was also an exhibit from Canada in a very prominent position in one of the halls of the old League of Nations buildings. Right behind the main conference room, in fact. And they decided that they hadn't got enough staff to man the exhibits in the delegation as presently named, and that I would be sent as well. So at the last moment, they got me a seat on the plane. In those days, of course, planes had fans on the front and the fans went round and round and round, and that drove it through the air. It took about fourteen hours to get to London, and then you switched to another plane and went down to Geneva.

This was the summer and the planes were full, and I had a first-class seat, which is like the seats in the old Pullman trains in the United States. There was one seat on each side of the aisle, a nice big round one and you could lean back. You could tip it right back and a footrest came up and you were able to lie almost flat. So I went to London, managed to have one day between arriving in London and departure for Geneva which I spent with my parents in the suburbs of London, and went on to Geneva. There was a man from the Canadian Mission waiting to meet me at the airport. “Well, what's going on?” He was so solicitous: “Are you all right? Are you tired? Did you have a good journey? And would you like to have a beer and a sandwich before we leave the airport?” And I wondered what's going on. Well, it turned out I arrived at about noon on Saturday, and the meeting was to start on Monday. I knew what was in the exhibit because I'd seen some of the preparations in Canada before it went. And then he came to the point. He said, “Look, tomorrow, the Secretary General of the United Nations is going to come around and have a look at the exhibit.” He said, “On the Canadian exhibit, we've got painters, sign writers, carpenters, electricians - they've all been hired, they're all there, but on the Canadian team, there's nobody who speaks French. There's nobody to tell them effectively what to do. We understand you speak French, and we want you to come up there and

be the go-between between the Canadian team who's setting up the exhibit and the workmen who are actually doing it."

So, okay, we jump in the Canadian Mission car. We go up to the *Palais de Nations*. Oh, and then he said, "We're sorry, but the hotel is full. So we don't have a room for you, but we're getting a room this afternoon—we're going to rent a room in an apartment where there'll be one or two other people from the Canadian group. This is in a private house, and the owners are away, and they're renting out their apartment while they're away for their long summer vacation." So I go up there to the *Palais des Nations*. It was in turmoil. And we worked until two o'clock the next morning. There was a car waiting to take me back down to where I was to stay, and of course the first thing I do when I got in there—"I'm so tired, but before I'll go to bed, I'll run a bath." The car was to pick me up about six hours later and take me to the *Hotel de la Paix*, which is a five-star hotel on the waterfront where the main delegation was staying, to get my breakfast, and then to take me back up to the *Palais des Nations* to start work again. So, here we are, we all pitched in, we're all working, and then the Secretary General is coming around in the afternoon, and an hour before he arrives, we kick all the boxes under the tables. It's still only like seventy percent ready, but we make it look as though it's all ready, and W.B. Lewis comes in with the Secretary General. My boss, incidentally, was on the Secretary General's Science Advisory Committee, so he already knew the Secretary General of the U.N. It must have been Dag [H.A.C.] Hammarskjöld.

**RAYWARD:** I was going to ask you if Dag Hammarskjöld—

**WOOLSTON:** Yes, it was Dag Hammarskjöld. And of course, as soon as he'd gone out, we pulled all the boxes out from under the tables again and continued our work. So it's another two o'clock in the morning, but now we're ready for the opening the next day. I go back to the apartment, run another bath. I knew that I'm going to be spending a lot of the next day walking up and down on the marble floor, as an exhibit attendant, explaining things to people, showing them what we've got there, but that seemed like light work compared to what I'd been doing up to now. So I go there, and about ten o'clock, the President of AECL comes into the exhibit area waving a bunch of keys, and he comes to me, "John, they tell me you know something about documentation." He said, "This is the key to the Canadian office, which is room number so-and-so and down the hall in the *Palais des Nations*," but you can't get in because there are things behind the door which opens inwards; you can unlock it, but you can't get in. So what you have to do is go to the next office, which is the Australian office. They will let you in, and then there's a connecting door between the Australian office and the Canadian office. You go through there and the room is full of documents." These are the papers for the conference. In all different languages, with not just the original papers, but also the revised versions of the papers, their abstracts separately from the—

[END OF TAPE, SIDE 3]

**WOOLSTON:** At the end of the last tape I was in the middle of a sentence saying how the president of AECL authorized me to recruit any of the members of the delegation to help with the sorting of these documents which had been dumped in there in totally haphazard order. No order. And he said, “What I’d like you to do is to pick out the papers that are likely to interest each member of the delegation for the following day, and to bring them over to the hotel, labeled for the appropriate members of the delegation so that they can read them the night before and be prepared for what’s going to happen the next day. Don’t bring everything to the hotel. You bring what you think will be of interest for each member of the delegation in these individual packages.”

So again I was there until two o’clock in the morning. In fact, that was the night we actually climbed out over the gate, because by the time we went to go out of the *Palais des Nations*, they’d closed the gates on the main avenue. There was a bunch of us. Some of them went back to the hotel. I was going back to this apartment. Well again, I ran a bath and went to bed, and got picked up again. This went on for about four nights and then one night I got back at a reasonable time. And there was this furious woman in the hallway of the apartment building saying, “You are the man who runs a bath at two o’clock in the morning, and it’s contrary to the municipal law of Geneva. You’re not supposed to run water after eleven o’clock because it disturbs the neighbors. And this is very, very bad,” “and we’re going to throw you out.” Of course I apologized profusely, and I guess at breakfast the next morning I told some of my colleagues this story, and fortunately, one of the more political members of the Canadian delegation left that day, and I got his room in the *Hotel de la Paix*. So now I was at least with the delegation at last, and it went on—it was a two-week meeting. I got a couple of hours off one day and went and bought myself a watch, which I still have. And this was my watch for the next thirty years, I guess. It doesn’t work anymore, but I can’t quite throw it away. It cost thirty dollars. Seventeen jewels. Went to the watch factory and bought it there. [laughter]

But I mean, it was solid work, and if I did have a little bit of time off from sorting documents, I went back to the exhibit. However, the glorious part was the presentation of the paper that I had written but which did not have my name on it. It was Bhabha who made the presentation and when he came out he said that Lewis and he had tossed a coin to see who would present it, and he had lost. So he had the paper on the rostrum. He’d marked certain paragraphs, and the way he did it was, he spoke *ex tempore* and then at a certain point would look down and read a paragraph of what I still like to think of as “my paper.” And then he’d stop and he’d talk again, chat away, and then he’d read another paragraph further along in the paper. As I say it was a great experience. I got to shake his hand. [laughter]

Finally I had to go back to Canada first-class on the airplane. I fell asleep in that chair for twelve hours. When I came back to life, we were already over Canada, not all that far from Montreal, and the stewardess said, “I’ve never seen anybody sleep for as long.” She said, “We didn’t want to wake you, but we kept checking to see whether you were really still asleep, and you missed the dinner completely.” They gave me a snack before I got off in Montreal.

That was a great experience. Of course, I did meet a lot of people while I was there, particularly people who were doing similar work to mine in other countries. And of course, leading up to the conference, it was like competitive declassification—things that had been secret right up to within weeks of the conference were being declassified either by the United States, in which case the Russians decided to match it, or the Byelorussians or by somebody else, and so very many of the papers came very late, just before the meeting took place. But it was exciting because in those few weeks we changed the world from a world where almost everything had been secret to a world in which virtually all that we were concerned with was now unclassified and could be published. And then of course we started much more publication.

Around this time, I already had contacts with the British people because in fact, before I went to Canada, I had gone to Harwell and met the British people who were engaged in information library type of activities there. So you know, even when I first started work in Canada, I could correspond with Martin Fishenden who was head of information at Harwell about problems I encountered both in the area of classification and all sorts of things about dealing with information. But I think it was around the time or shortly after that conference in Geneva that Ed [Edward J.] Brunenkant, who was Head, DTI—Director of Technical Information in the US Atomic Energy Commission, invited me to go and attend meetings of the committee that he had of his own staff, a management committee for the technical information program in the United States. I remember the first meeting was in a gorgeous hotel in Berkeley, California, and Ed and another fellow and I, after the meeting was over, rented a car, went up and spent one night in the deep fog in Yosemite Valley. We didn't see Yosemite Valley. It was kind of cold and wet, but we sat around and drank. I stayed on another couple of extra days and walked the streets of San Francisco. It was very exciting. Of course, I went back to Canada and there was still snow there. [laughter]

But from then on, I attended these meetings. They were not usually in places as nice as Berkeley, California, but Knoxville, Tennessee or Washington, DC, was more typical. And I got to know the people who were producing nuclear science abstracts.

**RAYWARD:** Could I interrupt you? Why did Brunenkant invite you along? Was he inviting similar people in similar positions?

**WOOLSTON:** No, I was the only non-American. So I started going to these meetings and enjoyed very much the opening of a window onto another big operation. Of course, I had, and all my colleagues at Chalk River had, been users of *Nuclear Science Abstracts*, which we regarded as a wonderful tool for the work that we had to do. We had great admiration for the people who produced it.

There was some tension between Oak Ridge where *Nuclear Science Abstracts* was produced and Washington, which had to provide the resources because Washington was putting pressure on them to be as efficient and as cost-effective as possible, and yet of course the work was extremely labor-intensive. The man in charge, I think the very first time I went to Oak

Ridge, was Bob [Robert] Shannon. He had been a submarine commander in the Second World War and he really knew how to run a tight ship. How had they got the staff to do this work, all this abstracting, indexing, structuring? It was not a computerized operation. To produce this thing on schedule, every issue often bigger than the last one, required a large effort. I was very interested in that. They explained to me that many of their staff were former high school science teachers in the state of Tennessee, but the government was able to offer higher salaries than the schools, and so these people had been willing to give up one kind of work for a better-paying other kind of work. This must have had a disastrous effect on science teaching in Tennessee because there were a lot of them, but it had a wonderful result for the product.

Many years later when I visited in the Soviet Union and was able to visit some of the libraries there, I think the most dog-eared documents in the library were their copies of *Nuclear Science Abstracts*. I stood near the counter and watched the *Nuclear Science Abstracts* coming back in, other people taking them out, other people waiting for them to be brought back so that they could take them out. I think it was one of the most effective science abstracting services that had ever been produced up to that time, so I had immense admiration for Bob Shannon and his predecessors who got it started. Margaret—(her second name was German beginning with “P”—I wish I could remember) was a librarian, not one of the high school science teachers. But she could explain things so clearly: the processes by which the whole thing was constructed, and how much time was taken for different aspects.

Bill [William M.] Vaden was another man at Oak Ridge whom I got to know a lot later when I was in Vienna and he used to come and work with us in the preparation of INIS. One of the most impressive people in the committee that Ed had was a man from the Lawrence Radiation Laboratory, in fact our host in Berkeley: Ray [Raymond K.] Wakerling. His name also comes up again later in the context of INIS. I remember we had a little party at his house on a hill overlooking the Bay—flowers everywhere. Oh, it was so different from Canada under the snow. [laughter]

[recording paused]

Boyd, of course, we switched off that tape a few minutes ago, and it’s now come back on again, and the reason it was switched off was because I suddenly had a thought that I may have made a mix-up between the first United Nations Conference on the Peaceful Uses of Atomic Energy which was held in Geneva in 1955 and the second which was held in 1958. I think that, you know, although the story I gave you about the papers and the exhibit and the documentation and the delegation and hot baths certainly took place in 1955, the paper about the Canadian-Indian cooperation and the building of a replica of NRX in India, that paper I’m beginning to think was more likely at the second conference in 1958. So we may have to revise when we come to transcribe this little bit of the story.

The second conference in 1958 was even bigger than the first one. Many more papers were presented, on an even broader range of topics. There was an even bigger exhibit. However, the Canadian delegation was much better organized the second time. We did have enough people to man the exhibit. We did have enough people to handle the documentation, which this

time was my number one job. It ended up as my number one job in 1955, but that was not why I was sent there. You know, on second thoughts, I think it was in 1958 that the paper was given on the Canada-India reactor, and that exercise in international cooperation.

Ed Brunenkant was at the 1958 meeting, and after that meeting he invited all the information people to a conference on nuclear information that the United States sponsored in Italy at a resort called Stresa on Lago Maggiore. It was in a very old-fashioned five-star hotel on the shore of the lake. There were a lot of people there and I think it's fair to say that a lot of us didn't know exactly quite why we were there. Certainly Ed was formulating ideas for more international cooperation in this area.

Boyd, I'm really sorry. I'm getting my conferences mixed up. I started talking about the meeting that Ed Brunenkant organized in Stresa, and I put it after the Geneva conference in 1958. There was a third Geneva conference in 1964 and I think that, again, I was jumping the gun and the conference that Ed organized in Stresa was actually in 1964. My goodness, one really needs to be somewhere where one can check dates before one speaks. I apologize for the inconvenience this is causing to you and to anybody who transcribes this tape. [laughter]

Boyd, I think we now have one real strong data point on the calendar, so I think I'm back on track as far as dates are concerned. Let's hope so.

In 1963, toward the end of the year, Ed Brunenkant was having one of his meetings and invited me to go to Washington, D.C. I had just sold—"sold" is the wrong word—I had just abandoned my 1951 Studebaker and had bought a ten-year-old Pontiac, and so my wife and I decided we would go down together by car, and she would visit old friends while I was working, and we'd do some Christmas shopping. As we were preparing for this, one day I walked across the hall to the U.S. Liaison Office. The secretary there was crying. She'd just heard the news of the assassination of President [John F.] Kennedy, and we arrived in Washington when Washington was in a state of a great gloom. Ed, too, was personally very affected by the assassination of JFK. He spoke very woefully of the fact that this was the first time in his life that he'd worked for a president who was of the same generation as himself. He'd been a great admirer of what JFK had been attempting to do.

I found out then that Ed was a lawyer by training. He was not a scientist. He was not a librarian. He was a lawyer by training, and he was always thinking about a grand design. I think it was probably in 1963 that I first talked about how Ed would "blue sky." He would dream aloud about the things that he would like to see done not only in his own technical information program, not solely by the United States, but in cooperation of the entire international community. He would often put this—I supposed because of his training and the framework of people making agreements to do things. But of course, as I said, we came away without anything conclusive in the form of grand design, but I realized that we were starting a dialogue—and of course he had dialogues with other people and not just with me in Canada, but also with the Brits and the French, and the Germans, and so on—a discussion was starting about "where do we go from here?"

The following year, 1964, we had the Third International Conference on the Peaceful Uses of Atomic Energy in Geneva. I can't remember whether it was bigger than 1958 or just almost as big as 1958, but I think in 1964 one began to realize that some of the steam was going out of the excitement of such huge conferences. In fact, the next one didn't take place until 1971, the fourth one, and there has been none that I know of since 1971, as far as I know, since 1971.

Anyway, it was after the 1964 conference that Ed got us all to go to Stresa where the United States hosted a meeting of the information people in the atomic energy field. I think it was there that in a very tentative, as yet unformulated, way he sowed the seeds of what eventually became INIS [International Nuclear Information System]. I don't think we understood where he was driving. To be honest, I'm not sure that Ed knew where he was going. He just knew that we've got to go somewhere. He would talk about he had extrapolated the growth of *Nuclear Science Abstracts*, realized that it was getting bigger and bigger, and it would need more and more budget, more and more people, and it was going to be impossible for the United States Atomic Energy Commission to carry the burden for the whole world alone. He had Chuck [Charles] Gottschalk, who's another person whose name will come up in this connection perhaps again, Charles Gottschalk, who later went to work with UNESCO. Sometimes we said he was Ed's "hatchet man" at Stresa, because he was going around pinning down the individual delegates and trying to get them to explain what they would like to see in terms of international cooperation, and saying, "Look, you can't get away with riding on our effort. You're going to have to get involved. You're going to have to participate somehow if this always increasing volume of nuclear literature is to be accessible to us all."

It's a beautiful place, Stresa, and I have very happy memories of that meeting, but still coming away from it with a certain discomfort about how do we solve these problems.

Another strand had started at the 1958 conference. In 1956, I think it was, the treaty setting up the International Atomic Energy Agency (IAEA) in Vienna had been agreed. In 1957 they opened the doors of their headquarters in Vienna, and in 1958, there was a director of the Division of Scientific and Technical Information at the conference in Geneva. He was an Australian by the name of [John Edward] Cummins, and he convened a small meeting of people like Fishenden and myself and John Sherrod from the United States—and Cummins said he would like to establish a continuing panel that would advise him on his program in Vienna. I was to be a regular member of this panel. We had this preliminary meeting in Geneva in 1958, and from then on I was getting once a year a ticket, a free ticket to Vienna, to attend the meetings of the panel. Cummins himself would chair the meetings. He was not in the job for very long—two or three years—and then he was succeeded by a Brazilian, Bernard Gross. Actually, he was an immigrant from Austria himself. So an immigrant to Brazil from Austria, and therefore by taking the job in Vienna, he came back home. He was in the job until I took over in 1967.

We used to go to Vienna once a year and discuss the work of the Scientific and Technical Information Division (STI), which was huge. It had roughly the same scope as the job I had myself at Chalk River, but for a much larger organization and with a much bigger budget.

It involved running a library, yes, but also ran a documentation service, international documentation related to peaceful uses of atomic energy. It involved a program of scientific meetings. The agency held many scientific meetings in the course of a year, probably fourteen, fifteen, big ones, different places in the world, some of them in Vienna. The organization of these conferences was done by the STI division. It was also responsible for a big publications program, not only the publications of the proceedings of all these conferences and symposia, but also commissioned state-of-the-art reviews, on different aspects of the IAEA's functions. We used to go there and make suggestions for improving the program or using different technologies for getting things done. When they switched to offset printing, Martin Fishenden gave them a little pep talk on how they should establish a "house style" for the appearance of their publications. Oh, lots of little issues, and some big ones as the years went by.

**RAYWARD:** John, was Brunenkant at these meetings?

**WOOLSTON:** In the beginning, no. I had visited Brunenkant in Washington DC. I was talking often with him often on the phone, but it was John Sherrod, who had recently moved to the Atomic Energy Commission from the Library of Congress, that he delegated to go to the meetings in Vienna. And I seem to remember that it was Ray Wakerling who represented the United States at some of these meetings.

By 1965 I'd already been at Chalk River for twelve years, and my kids were getting into their early teens. I was getting more and more interested in our international connections and my masters in AECL began to realize that I was a bit restless and I couldn't go on doing the same things until I reached retirement age, so they proposed that I should go to England as the Canadian liaison officer with the Atomic Energy Authority in England: in other words, as the counterpart of the British person that I'd been working with in Chalk River who'd come from England as the liaison officer in Canada. My nomination was accepted at the other end, and I remember that my wife and I pored over diagrams of a house that would be allocated for the use of me and my family. This would have been in Lancashire near Risley, which was a big center for the Atomic Energy Authority. We even had a reservation on a ship that would take us back across the Atlantic to England. We were wondering about what things we should take with us. Of course we wouldn't really know how long the assignment would last. Then one day sitting in my office, the telephone rang, and it was Ed Brunenkant, and he, referring to the then director of STI in Vienna, said, "You know, Gross is going to retire, and so there's got to be a new director of STI in Vienna, and John, the United States would like to nominate you." And I said, "What do you mean, 'the United States,' Ed?" He said, "I've already talked to the State Department, and we would like to nominate you for the job of director of STI in Vienna." I said, "Ed, look, I just accepted to go to the U.K. as the liaison officer for AECL in England. You know, you're putting me in a very awkward situation. What am I going to do?" Ed, whose professional qualification was that of a lawyer, always came out as a good cross-examiner. He said, "Well, John, which of those two jobs would you rather have?" I said, "Well, I guess I have to admit I'd rather be in Vienna." He said, "Well, then we should give it a try, shouldn't we?" And I said, "All right. I'll go and talk to the people in our head office in Ottawa and see what they say."

So the people in head office said, “Well, we are committed to the Brits. We’d better go talk to them.” So they dispatched their international liaison man, Ward Greenwood, whom I should have named before this. He was a graduate of the University of Manitoba who had been recruited to deputize for me in the technical information branch at Chalk River, He had worked with me in Chalk River, but after a couple of years, he was nabbed by AECL’s president and taken to the head office in Ottawa. He was a real Canadian with a Canadian accent, not like mine, and he was a very good worker, a very skillful diplomatic diplomat. He’d been trained in physics, but he had a talent for quiet diplomacy.

Ward went over to England and, as a result of that, it was agreed not only that the United States would nominate me for the job, but so also would Canada and the United Kingdom. The Director General in Vienna was surprised by having three countries nominate the same person for the job that was coming up, and there wasn’t much else he could do about it, was there? But the initial euphoria changed a little bit later when the Agency decided to give Dr. Gross another year in the job. This was essentially so that he would qualify for a U.N. pension, which was generous for him, but it meant that I had to hang around for a year, and I was not very happy about this, not very happy at all, because by this time, I could have been in England if I’d stayed with my original assignment.

Also, as we get into the beginning of 1966, another event occurred to presage the future. It was a message from Vienna that, at the request of the United States, they were going to convene a special meeting of the panel that I’d been attending since 1959, and it was convened at fairly short notice. Ed sent John Sherrod as his representative to this meeting, and then there were the usual others. Lev [L.] Issaev from the Soviet Union, Martin Fishenden for the U.K., me for Canada. John Sherrod made a presentation. We looked at each other and we said, “What’s he talking about?” We did not understand what John had in mind. We were flummoxed. We’d come all the way to Vienna. And so was Gross. Gross, who had been involved in the discussions about why it was necessary to convene this special meeting, he didn’t understand what was really being proposed. In fact, the meeting was scheduled, I think it was for two days—being a special meeting it wasn’t the usual week that we’d had earlier on. Finally I remember Gross saying, “Well, I don’t think we can go any further. We’ve still got a day to go. I suggest that you break up and walk around and talk to different people in the division, and we’ll have a session at the end. See what you can suggest about the work of the division, or if you have further ideas on the subjects that Mr. Sherrod has raised.” There was absolutely no doubt that John was sincere about something. He was very sincere, very committed to something. But we couldn’t understand it. I think now, looking back on it, it was because what John wanted to do was to introduce the concept of much closer international cooperation and sharing of duties, without specifying anything very precisely. Because if he specified one thing precisely, there would probably be people saying, “Well, we don’t really want that, you see,” and then the whole concept might get lost in details.

We broke up. We went away. Later in that summer of 1966, the next step was taken. On the advice of the United States, the Agency—the International Atomic Energy Agency—hired two consultants, one nominated by the United States and one nominated by the Soviet Union.

Ray Wakerling went from the United States and Lev Issaev came from the Soviet Union, and they spent I think it would probably a couple of months in Vienna trying to come to an agreement about where we should go. It was they who dreamed up the name INIS. And there were some informal consultations with other people by these consultants while this was going on, not actually with me. I think John Sherrod also joined them at one stage and Loll Rolling from Euratom as it was then called, which eventually became part of the European Community and now the European Union. I don't think it's on this tape, but I think in other conversations, Boyd, I've talked about the Gordon Conferences in New Hampshire, Vermont, how I had attended one.

**RAYWARD:** John, they're not on the tapes. They were in conversations between us.

**WOOLSTON:** And how I had attended one back in the 1950s. And I also went to one in 1966, and when we arrived, we learned that Rolling and Sherrod were coming in and had some big ideas, or big new decisions to tell us about. So the program was adjusted and they were given time to make their presentation, having returned from Vienna. John now talked about an International Nuclear Information System, used the term INIS, explained that the United States,

[END OF AUDIO, WOOLSTON 1.4]

**WOOLSTON:** [. . .] On the [end of the] last [tape] I was talking about the Gordon Conference and how John Sherrod and Loll Rolling from Euratom [European Atomic Energy Community] had come to the Gordon Conference and were giving a talk about what had happened in the last couple of months in Vienna, [Austria], between the consultants from the United States and the Soviet Union and the adoption of INIS, International Nuclear Information System, as the name for this new program. I remember [Sherrod] giving this presentation. I was [. . .] sitting, fidgeting, in the back row, because I was learning for the first time about developments of which [I'd] not been aware. As he ended his presentation and he looked up to where I was sitting, and he said, "Sitting in the back row over there is John Woolston, who is going to implement this." I felt a little unhappy that they hadn't briefed me on this before they came to the more public presentation, and of course I didn't know what to say. [Now], I realized I was going to have a much bigger job than the one I had believed I was undertaking when I [. . .] accepted the nomination. It was not going to be the life as my predecessor had led it. It was going to be something a lot more political [and] a lot more visible in the world.

Also [. . .] once it became known that I was going to be the next director of the division, people began to tell me a lot more about what life was like working in this agency in Vienna [. . .] how terribly politicized it was, and how paranoid many members of the staff were about whether [. . .] their [rooms were] bugged. People would walk up and down in the corridor rather than have meetings in their offices. The building, of course, was very conducive to this sort of paranoia. It had been the Grand Hotel in Vienna before the War (World War II) [and] the Russian headquarters during the occupation of the Russian Zone [in] Vienna. All the rooms had

double doors. You had a great big solid wooden door, and you opened that and you were confronted with a second door that was covered with green baize. The first door opened outwards. The next one opened inwards. And of course [. . .] it was a hotel. There were some ancient bathrooms without any water attached to every office.

[But], one thing that I learned as a result of this chatter and gossip was that [. . .] people were getting [direction] by the Director General [Sigvard Eklund] and by the layers of authority under the Director General, but [. . .] they paid most attention to [. . .] the direction they got from their national missions in Vienna. For example, people who were members of the staff and citizens of the Soviet Union normally had [their] lunch not in the [Agency's restaurant] but in the Soviet Mission. This is where they were [. . .] given their orders [. . .] what to do, what not to do, and I <T: 05 min> first got wind of the fact that the Agency expected to be able to talk to me through the Canadian Mission.

So in a partly conscious, partly unconscious way, I decided that I had to get a message across to them that I was my own man, and [. . .] I would not [. . .] be seen as taking direction from the Canadian Mission, and that I would call the shots on their technical merits, not as a result of [any political] point of view. So, I wondered, "How am I going to do this?"

Well, the most obvious way came when I got a letter giving me a date when I was to start work in 1967, and [it stated] a salary which was the same as had been stated to me [the year] before [. . .]. By Canadian standards, it was great, [but] I said, "I want [an] increment [. . .]. The salary scale is set annually [. . .]. I want one increment on that because it's a year since you first offered me [the] job, and I've been developing over the course of the last year [. . .]."

Oh, no. There was no way they could do that, absolutely no way they could do that. I said, "Well, if you want me to go there, you have to do it. I think this is only right. You kept me waiting, cooling my heels for a year." So, of course, they go immediately to the Canadian Mission to put pressure on me [. . .]. My friend, Ward Greenwood, the man I was telling you about before, he was very upset that I was making a fuss about this one increment [. . .]. I said, "No. I've given up so much for this thing, I'm not going to give in on this. I've got to make the point that I'm not taking orders from Missions, yours or the United States' or anybody else."

So finally, the Director General gave in, and I was to get one increment on my starting salary. But this did send the message, and the Canadian Mission I know [. . .] told the Director General, "You won't be able to get us to tell Woolston what to do." In December, [1966], the Agency convened a big meeting. [. . .] There were about thirty countries there to discuss the INIS concept, to review the report that Wakerling and Issaev had prepared. Well, Wakerling and Issaev had agreed with their political masters on a few basic points, but no details. In other words, they had agreed that it would be a computerized system, and this of course was what the Russians wanted. The Russians wanted a window on American computer technology. They had agreed that the carrier language of the system would be English, which is what the Americans wanted, because they didn't want to get mixed up in lots of other languages, [but] they hadn't, for example, agreed whether or not abstracts would be part of the system. They hadn't agreed on [a] subject scope of the system. There were lots of details that hadn't been agreed, and nobody

knew what the bibliographic description rules would be. Nobody knew what the indexing rules would be.

So this meeting was convened, and I remember going down the hall on the way to the meeting. I was with the South African chap who was the protocol man in the Agency, who introduced me to <T: 10 min> the Director General. Now, of course, the Director General and I knew each other [very] well as a result of [all the] messages, but now we were face to face and had to shake hands, and I can still remember [that he said], “This is the man who’s given me so much trouble.” Anyway, [. . .] it became apparent within about an hour why I had been met by Fischer, the protocol man, and why he had engaged me in quite an intensive conversation before the meeting started. [. . .] The meeting began as usual for such an occasion with the director of the division, the Brazilian, Gross, who was now in his extended term of office as chairman, and they decided to appoint a committee of the whole with me as chairman. Of course, most of the people in the room knew that I was going to be the next director. So here I am [on the podium] in this [. . .] great hall with a horseshoe of seats, [. . .] twenty or [so national] representatives, [and] each one [with] one or two representatives from his national mission to advise him. It was an intensely political thing. For the rest of the world, if the United States and the Soviet Union can agree on something, don’t let’s fuss about technical points, bibliographic descriptions [or] anything like that. What we’ve got to do is to make sure that this little window in the Cold War will get bigger and [. . .] a little warmth can be generated.

But nobody was giving me direction and [. . .] there were windows up there with interpreters. [. . .] I think it [lasted for] three days, but it was tremendously exciting. I wasn’t disengaged from the discussion. [. . .] Because I was chairman did not mean [. . .] I was neutralized; [. . .] I still participated to a degree on things that [I figured] were important, and I tried to bring people back to technical issues. [. . .] If I was going to have to implement this, I didn’t want to have something that was meaningless in terms of its effectiveness, in terms of its operational possibilities. I didn’t want to have something that would just be a concept that would [. . .] be nice in principle but fade away because you [couldn’t] decide how to operate it, how to do it.

Of course everybody was talking about *Nuclear Science Abstracts*.<sup>16</sup> [. . .] All these people in the front row, the representatives at the meeting, that’s what they had depended on for years. That’s what they knew, loved, and wanted to make sure that if there was something new, it was going to give them what *Nuclear Science Abstracts* [had been giving] them, especially if the United States were to bow out of *Nuclear Science Abstracts*. [. . .] Brunenkant was [present], and he gave [. . .] an assurance [somewhat qualified] that the United States wasn’t going to stop *Nuclear Science Abstracts* until INIS had more or less caught up with it.

So it was a great surprise <T: 15 min> when the Russians said that they [would not provide] abstracts, at least [in] the beginning, [and] we [shouldn’t immediately require]

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<sup>16</sup> Nuclear Science Abstracts is a bibliographic database providing text and abstracts from literature in nuclear science and technology published between 1948 and 1976.

abstracts. Privately they just said, “We have no way of writing abstracts in English. We just don’t have the people to write abstracts in English for Russian literature.” [. . .] Martin Fishenden from the UK [stood] up and [said], “Well, I don’t know why we’re here. What we’re trying to do is to replace something that will succeed *Nuclear Science Abstracts*, and here we are talking about something that doesn’t have abstracts. I think it’s a *sine qua non* that we have to have abstracts.” [. . .] Because I was sitting in the chair and [. . .] saw the man who was sitting behind him from the British tap him on the shoulder, get him to turn around, and then they got into an intense conversation. [. . .] I had other speakers waiting to speak, up comes Fishenden’s hand again. I said, “Just a moment, Martin. Let’s hear what [some others have] to say.” There was still Martin waving his hand, so [. . .] as soon as I could, I said, “All right, Martin. You have your second chance.” [. . .] He stood up, and he just said, “I withdraw my statement about abstracts. I think [that, yes], we can start [without] abstracts. [I] just hope that they [will] come later.” [Clearly he had been given a] political direction [not to] rock the boat. “We’ve got to get a positive result from this meeting [. . .]. I don’t have a record of that meeting here, but it was stimulating, but it made us realize we’ve got a long way to go. There are a lot of problems to solve. That was in December [1966]. I was due to start in Vienna on the first of July [1967], but then they said, “Well, look, we’d like you to come on the first of April for two months as a consultant and Gross will take leave [. . .]. You come for two months, that’s April, May, and then you go back home to Canada and prepare your shipments and bring your family [. . .] the first of July,” so [I spent] June in Canada [. . .], but effectively I was director from the first of April. [. . .]

So that’s the end, I guess, of that chapter. Of course, I remained on the books of AECL while I was in Vienna. My colleagues [. . .] would come [for] various Agency meetings, and we’d go out and drink wine and have dinners in the Heurigen in the northern part of Vienna - [we] had a house on the northern edge of Vienna . . . so I kept in touch with what was going on at Chalk River, and very much in the expectation that that’s where I would go [. . .] after I finished.

My initial appointment was for two years. [My primary responsibility was to launch INIS and this would need another year. Dr Sigvard Eklund, the IAEA Director General], asked me to [. . .] take a renewal and [. . .] offered me a promotion to a higher grade. Well, I got the promotion to the higher grade, but I [. . .] stayed [only the] one more year, so I was there for a total of three years, plus the few months at the beginning when I was [consulting]. I guess that’s the end of that Chalk River chapter, more or less. We have to go on to the IAEA [International Atomic Energy Agency] in the next chapter.

[recording paused]

**RAYWARD:** John, <T: 20 min> time now to move on to that next chapter where you move to Vienna and begin your work in the IAEA and begin the work that leads to the creation of INIS.

**WOOLSTON:** [Yes]. Thank you, Boyd. Just before you switched on the tape we were trying to remember whether or not I was talking on tape yesterday when I was telling you about the

situation in the Agency headquarters in Vienna, the [. . .] atmosphere in which we worked. Since we can't remember whether or not it is on tape, you had suggested I quickly say it again.

We must remember that in 1967, when I started work there, we were in the middle of the Cold War, one of the coldest parts of the Cold War, and this was very much reflected in the Agency where both the Soviet Union and the United States were of course very strongly represented. The sheer atmosphere was not conducive to open communication. The building was the old Grand Hotel from I don't know how many years before. Every office had in fact been a hotel room. When you came down the corridor to your office, you opened the outside door and it came outwards. You were then confronted with a huge mass of green baize which was on the lining of the inside door, which you then opened inwards.

Of course each room had a bathroom attached and the bath hadn't been used for umpteen years, and it was just a [. . .] somewhat spooky [. . .] place anyway. It had also been the headquarters of the Russian occupation forces in Vienna in the *Third Man* days, so one had that part of the atmosphere. There was the fear that every room had been bugged by the other side, and so very often you'd see people walking in pairs around the corridors because they thought that was a safe place to have their private conversations.

There was the fact that many members of the staff would go to lunch, particularly the Soviet staff members, would go to lunch at the Soviet Mission where one imagined they were telling their masters there what they'd been hearing in the Agency this morning, and getting their instructions for what to say in the afternoon.

There was a [. . .] feeling of intrigue going on, which was difficult. But to counter that, the INIS program was almost a breath of fresh air, because [it] was seen as [. . .] an opportunity for Soviet-American cooperation, that they had agreed to try, and everybody else [said], "Well, look, let's help them. [Let's don't] stand in the way." So INIS in a way was a flagship project for the Agency, a very unusual thing, for information to become a very important priority for an entire institution. [. . .] I knew that I [. . .] was going to be able to buy a million-dollar mainframe computer that the board of governors of the Agency was very [. . .] likely to approve that purchase. We would have to go through a lot of paperwork and negotiation beforehand, but in the end, [we] would [get it]. <T: 25 min>

[. . .] The Division of Scientific and Technical Information was a very large one [with many] staff. [The biggest] section [produced] the Agency's publications. [It] included a raft of editors, [. . .] translators, designers, a print shop, a [very] big print shop. [I had] people concerned with the distribution of the publications. That component of the division, which I inherited from Dr. Gross, was rather fortunately taken away from me after I'd been there [. . .] about [a] year. [. . .] The Director General decided that I did have an awful lot of things on my plate. He wanted me to concentrate on INIS, and they decided to make the publications a separate division with its own director. It was a very easy transfer and the German [gentleman] who came in to be the first Director of Publication, he and I got along very well, so it was a smooth transfer. [It] relieved me of a lot of administrative work.

There was a small group concerned with the organization of [. . .] scientific conferences. There was a library, which was a problem in the sense that the man who had been chief librarian for the previous five years was required to go under the Agency's policy that professional staff should not remain in the Agency for more than five years. [They must] then go back to their own country and [simply] be replaced. This was a policy introduced by Dr. Eklund [. . .]. It wasn't a general policy over the whole of the U.N., and of course he himself had inherited some staff [that] had already got permanent contracts, but he believed that a turnover [. . .] in staff kept the organization alive, and [I think he was right]. We had a lot of trouble recruiting a new librarian. [It seemed there was an international dearth of librarians. Finally we] got [the] man who had [worked] as librarian with me in Chalk River many years before. He was [H.] Arthur Vespry from Trinidad, [. . .] now a Canadian.[. . .] It was a worry. It seemed that nobody wanted to come and work in Vienna, which was ridiculous because it was a very nice job with a good salary and tax-free status. But then [in] 1967, [these] were [. . .] glory days in [. . .] world economy, [. . .] lots of new universities [were] being created and lots of job opportunities for librarians [. . .].

[Then], I think this is the last of the groups [. . .] I was responsible for, [there was] what had been called the Documentation Unit. [It] was immediately renamed the INIS Unit, so that was an indication of the direction in which we were going. That unit included a number of scientists who were essentially bibliographers [. . .]. We published bibliographies, quite extensive ones. They also helped in the identification of people to write state-of-the-art reviews [of] different aspects of nuclear science applications. <T: 30 min>

I think I was very well welcomed into the Agency by my colleagues who were the directors of the other divisions, and perhaps the most interesting situation was the sandwich that I found myself in, because my [. . .] immediate boss was the Deputy Director General in charge of three divisions. I was called Director. He was Deputy Director General, [and he] was a Russian, Ivan [S.] Zheludev. [. . .] He was an extremely intelligent man, and when I arrived there he had not been long in the job, and he had not been long outside the Soviet Union. He had actually done some cooperative work with India, but his English was still not very great. I was with him for three years, and in [those] three years his English improved so quickly, by the time I left he was making jokes, play on words, puns and all sorts of things in English. He was from [the] Institute of Crystallography, [USSR Academy of Sciences] in Moscow. He was tough and he would tease me and sometimes he'd be gruff, but I had a lot of respect for him.

The man who had been head of the Documentation section and who became, therefore, head of the INIS section, was another Soviet [citizen], and in this case, everyone told me, "He's a spy. He's a spy. He's from the [KGB]" And so I was in [the] Russian sandwich, [the] Soviet sandwich, between [M.V.] Ivanov and Zheludev. Ivanov was tough himself. He would sometimes sit in my office for a long, long time arguing for something that to my mind didn't seem at all important [. . .]. Then he'd try to bargain. "Well, you give me this, and I'll give you something else. This is very important for us." It was not an easy relationship. Fortunately, of course, INIS didn't wholly depend on him, not by any means.

[Oh, yes, of course, very important.] The computer section was also in my division, and so I was able very often to convince Ivanov [of] something that he perhaps wasn't too keen on, [but] still had to be done because that was the only way of doing it on a computer. I can't remember for the moment the name of the man who was in charge of the computer when I first arrived, but he also was about to leave. He was American. He had assembled a good team. Perhaps the most notable of those was a man called Giampaolo Del Bigio, [an] Italian who had previously worked for Olivetti in Italy. Olivetti had <T: 35 min> given up the kind of work that he was doing. They had recruited a bunch of [very] bright people, and so several of these very bright people were released onto the market about the same time, and Del Bigio ended up [. . .] with the IAEA, and he'd been there [. . .] a year or two before I got there [. . .]. He had developed a suite of programs called "Gipsy" that enabled him on the equipment [that] we then had to process some of the bibliographic data.<sup>17</sup> He was obviously going to be the key person in the development of the software for INIS. He was very quiet. [. . .] He [came] to [. . .] meetings [to] state what was possible, what was not possible, [and] he always presented [the] technical aspects. He never [. . .] took a political position or a personal position [. . .]. It was the facts. So he was a very [. . .] valuable member of the team.

I'm going to be sorry, I'm sure, very regretful after we finish this story and I get to hear what I said on this tape, that I will [. . .] probably [have] missed out some of the other people, have named some and not named others. I guess that's the risks in this type of capturing the stories about those years. Maybe I'll have a chance to fill in any important gaps on another occasion.

Anyway, that was the team that I inherited there. We decided we had to start on INIS, [because] we had to start somewhere, and we started on rules for bibliographic description. There was a [. . .] three-[. . .] person team that we assembled just to show . . . not because bibliographic description rules were the most important [. . .] but because we had to get something under our belts, something out of the way, pending international negotiations on some of the larger issues, like what kind of indexing [we] were going to use, what [. . .] mechanisms [. . .] we [were] going to use for bringing the information in and for distributing it. The three-person team included Abe [Abraham] Lebowitz. [He'd] already joined the Atomic Energy Commission but had been with Henriette [D.] Avram at the Library of Congress, so [he] was [. . .] well acquainted with the way in which bibliographic description rules were developing in the United States.

We had Margaret Gossett, who was librarian at the British Atomic Energy Research Establishment at Harwell, [England], and she came in and she was wonderful, not because of what she put on the table [. . .] but because she came with an open mind and would ask questions of her colleagues in the group. The other person was from a Scandinavian country. Oh dear, I can't remember—Norway, Sweden, Finland. [. . .] These three got to work together, consulted other people, and looked at what was being done in Paris at UNESCO [United

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<sup>17</sup> Giampaolo Del Bigio. "GIPSY: a generalized information processing system." In *Proceedings of the April 30--May 2, 1968, spring joint computer conference*, pp. 183-191. ACM, 1968.

Nations Educational Scientific and Cultural Organization] in connection with its UNISIST [United Nations International Scientific Information System] program [to facilitate access to all scientific and technical information]. We were [. . .] looking to UNISIST to tell us [the rules for bibliographic description and details such as recommended abbreviations].

<T: 40 min> The UNESCO folk, they too had their political problems, and they felt that they were not in a position to issue world standards; [. . .] ISO [International Organization for Standardization] would have to do that. So they would always qualify what they said, and of course they were also maneuvering between IFLA [International Federation of Library Associations and Institutions] and FID [International Federation for Information and Documentation]. [I was in frequent consultation with] Adam Wysocki [who came from Poland and was director of the relevant division at UNESCO. We developed a friendly relationship which lasted into my later years in Canada]. Adam [achieved] a lot, [but] it was always in the form of recommendations rather than, “This is it. [It] is final.”

Anyway, we came [up] with some tentative rules ourselves, and then [. . .] these were eventually reviewed by the main participating countries. Because there was [an] overall desire to make [INIS] happen, to make it happen soon [. . .], people just accepted things that [. . .] had [there] been more time, they might have argued [. . .].

Of course, when I was appointed, the INIS project had not been officially approved by the Board of Governors of the IAEA as something [to] be done. That process had to be gone through, and it went through in association with the development of budgets for [. . .] successive years. Part of my duty was preparing papers to be submitted to the Board of Governors to explain what we did, what we were trying to do, what would be required in terms of staff and equipment, and ultimately dollars.

[recording paused]

Just a little comment [. . .] after my last words, we had a little break and Boyd and I took the opportunity to check back to some of our sources. Unfortunately, perhaps I did not do enough preparation for this part of the process, and I should have read some of these things last week and had them fresher in my mind. But, I think just before we switched off the tape I had been saying that one of my duties was to prepare presentations for the Board of Governors of the IAEA, but of course I had to get the advice of the countries that would be participating in INIS and doing all the work of preparing input. So we in fact didn't, in the Secretariat of the IAEA, prepare those papers without getting the advice of at least the big contributors, future contributors, for the INIS system. In the early part of 1968 we [convened] an international team that worked under the chairmanship of [Herbert] Coblans, who came from ASLIB [Association of Special Libraries and Information Bureau in the U.K.]. [. . .] Del Bigio, who [. . .] had been our man working with the bibliographic description group, [now became] our man working with [a] team [that] was asked to prepare a draft of a final proposal for setting up INIS. [The principal members were Lev] Issaev from the Soviet Union, Rolling from Euratom, Bill Vaden from the United States. These are people who had been <T: 45 min> previously involved, in the case of Issaev, with the original U.S.-Soviet discussions in 1966. And [. . .] one or two others who had

more recently become involved at the national level. I have very fond memories of [Igor] Tikhonov also from the USSR and a German representative, [. . .] G. Wenske.

[A] set of recommendations [. . .] from this team were then submitted to a meeting at which we had [twenty-three countries and four international organizations represented, and then ultimately, through this process, first the team, then the meeting, then, dotting I's and crossing T's, the papers that the Secretariat presented to the IAEA Director General and that he then presented to the Board of Governors.

During and even after this process, there were still many things to be settled. We had to settle a character set for INIS, which was done based on what was being recommended again in UNISIST. I was traveling to Paris, and meeting with Wysocki. He came to Vienna. So that we tried to stay consistent with what was developing for other information systems in other discipline- and mission-oriented fields.]

[END OF AUDIO, WOOLSTON 1.5]

**RAYWARD:** So, subject indexing.

**WOOLSTON:** Yes, We just changed the tape and I signaled as we were leaving the last tape [. . .] I was going to talk about subject indexing and the decision to develop a thesaurus that would be used for subject indexing in INIS. A thesaurus had been developed, or at least a list of recommended terms had been developed. I can't remember whether it was actually called a thesaurus or had the structure of a thesaurus, but it had been developed by the Euratom organization, and many of us just wanted to say, "Well, let's take the Euratom thesaurus and use it for INIS. I mean, there isn't anything else, [and] why not just take what has been done? A lot of effort and thought has already gone into this." But that was one of the political issues that came up, because Euratom was not a member of the International Atomic Energy Agency. The countries that were members of Euratom were members of the International Atomic Energy Agency and they would have been reasonably happy, I think, in all cases, if we had been able just to adopt the Euratom thesaurus. But the Soviet Union was, of course, very suspicious in the Cold War days [. . .] what was Euratom, and what were the ambitions [of Euratom] for taking over areas of operation from the IAEA, and which, [. . .] had that happened, might have pushed the Russians out of the picture again.

A very strong motivation, I think, for the Soviet Union in taking part in the INIS program was to get access to the technologies and methodologies that were being used in the West, particularly the computer technologies, where they saw that there were a lot of things [. . .] they could learn about how information systems were built, what kind of software was used, what kinds of hardware were used. [They foresaw that INIS] would provide them with a window on Western developments in the computer field.

So there was a lot of negotiation. Some of it I was involved in, some of it I'm sure went on behind the scenes in the different missions [in] Vienna, but it was clear that we were not going to be able to start from scratch and build a new thesaurus. We didn't have time. The INIS schedule wouldn't have allowed that. So it was finally agreed that IAEA would give a contract to Euratom [. . .] essentially to develop a thesaurus for INIS, which we essentially were buying and which would be ours, and therefore not just IAEA but all the members of the IAEA [would] hold it, own it, and [have] the right to develop it in [. . .] whatever directions they chose in the years thereafter.

Sometime before this happened, I had a very interesting dinner with the man in charge of the group at Euratom, a German by the name of Rudolf Bree. [. . .] This man became a very good collaborator, both with INIS and later with AGRIS [International System for Agricultural Science and Technology], and somebody [. . .] whose company I enjoyed a lot. My youngest son and his daughter fell in love at one point. It was just an early teenage thing, but I mean, it kind of cemented [a] relationship between the families as well as between him and <T: 05 min> me.

In fact, I [. . .] first met Bree in Canada, I think it was in the [1950s] when he came with a team from NATO [North Atlantic Treaty Organization] to consult about information developments that were taking place in Canada. [. . .] While I was still at Chalk River, I had visited Euratom and Bree's operation to see whether there was anything that was immediately applicable to the work that I was doing at Chalk River, so I wasn't meeting Bree for the first time in the professional sense, but he decided that it was time for us to [make it] on a more personal level. When he knew that I was going to a [meeting in Paris, a UNISIST] meeting in Paris that he would also be attending, he phoned me in Vienna a few days in advance and invited me to have dinner with him at his hotel in Paris. I went there and we had a very nice meal and some wine, and then he started telling me about what he had done during the War (World War II). He had been in charge of the production of what we now call "Cruise Missiles," the "Flying Bombs" as we called them in England at the time. The Germans called them [the] V-1 [weapon], which were targeted on London [. . .] starting in the summer of 1944. And how he had been responsible for the production of these things in the Volkswagen factory. [How] on one occasion he had been required to report directly to [Adolf] Hitler on the progress of this work. Of course I told him my stories about receiving his little toys, and in particular [how] one of them had almost ruined the experiments I was doing in my final examinations for my bachelor's degree in physics at the University of London.

Obviously there was a [little] bit of treading gently because of this conversation, but in retrospect I think it made our future relationship very much easier and much warmer. Eventually [our two families] had a holiday together in Crete, [Greece]. I regret that I haven't stayed in touch with Bree. I wandered [. . .] in all sorts [of] different directions. We did stay in touch for some years [. . .] because of my son and his daughter, but also professionally [. . .] as long as we were still both going to Paris and participating in UNISIST meetings. He was older than I am, and retired before I did.

But he, of course, honored every aspect of the agreement that we had for the production and delivery of a thesaurus. The IAEA hired Claudio Todeschini, another Italian, and posted him to <T: 10 min> Luxembourg [. . .] to act as our liaison [officer with the] team that was preparing [. . .] the initial version of the thesaurus to be adopted for INIS.<sup>18</sup>

What other stories can I tell you about those INIS years? There were so many. I suppose [they were] in some ways the most exciting years of my life. The computer was a big issue. We knew we were going to have to get a mainframe computer and that we would need software for operating it. Del Bigio was working on how to adapt the concepts of his Gipsy, and there was a decision, this may have come somewhat later, to adopt a particular commercial software package to use for retrieval. It's stupid of me, I just can't remember the name of it at the moment.

But we had to know what machine we were working with. We had to know what machine would be purchased and installed. I think everybody knew that in the end it was going to be an IBM machine. But, very properly, the administrators in the IAEA said, "We can't just go and buy from one possible supplier without getting competitive bids from other suppliers." This somewhat alarmed my boss, the Deputy Director General, who was very often adept at putting a complex situation in a very [. . .] simple nutshell. He said to me, "I don't care what computer you buy as long as it's from IBM." Well, in fact we did get competitive bids, and they—

**RAYWARD:** John, I'm reminded [of] your early work where [you were] actually drawing up comparative analyses of early computing equipment [. . .]. Did [this] stand you in good stead here? Who drew up the specifications for what you needed?

**WOOLSTON:** Well, I guess one leaves out so much in a story like this, and then one realizes, "Let's go back and fill that bit in." I think I explained that the man who was in charge of the computer section when I arrived was to leave fairly shortly, so we [. . .] had [to make] a recruitment and we [. . .] hired Jim [James] Gilchrist. Jim Gilchrist was an American. He had been a Marine, and he still had his hair cut very short. He had ten children. I remember the day he first came into my office on arriving in Vienna and I said, "Jim, your number one job is to devise the program for the computer [because it's] very important. We're using [an American] computer [and] the program we're using for calculating salaries, and actually paying salaries, allows for only [the] number of children expressed as a single digit. You've got to do something so that the computer can understand [that] there are two digits in the number of children." <T: 15 min> [. . .] My recollection is that Jim was a very good manager, [that] he kept the team working together very well. He knew how to provide the environment in which Del Bigio could do what he had to do in terms of programming.

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<sup>18</sup> Claudio Todeschini, interview by W. Boyd Rayward in Vienna, Austria, 13 June 2000 (Philadelphia: Science History Institute, Oral History Transcript #0209).

[What question was it?] I've lost my way in answering your last question, Boyd.

**RAYWARD:** [Well, no.] So, [with] Gilchrist coming along and in a sense being responsible for—

**WOOLSTON:** —the whole computer unit, and therefore he was also the one who, in the first place, would be talking with the sales people who were offering their competitive bids, but then before presenting recommendations to the Deputy Director General and the Director General, I was also seeing the sales people. At Jim's level, he was studying the details of the bids, feeding me with advice, which I then passed on with any comments of my own to the people at the top. A million dollars was a big sum of money. Anyway, this process finally culminated in a meeting [that] I had with the Director General and we presented the results of our examinations of [. . .] different bids. We did recommend the IBM [. . .] mainframe. I think it was quite clear [it] was the most suitable. We were not just doing it to please the Soviets [or the Americans]. We were doing it for very good technical reasons. The Director General accepted [that, and] he was able to consult with the Board of Governors, and we were about to announce the decision. But the Director General said to me, "John, we're going to be"—Jean, he always called me—"Jean, we're going to be moving into a different kind of situation in the Agency now, because once we have this computer in the door, we're not [. . .] going to [use] it [only] for INIS, we're going to be using it for a lot of other things. I don't know about computers, and my Deputy Directors General don't know about computers, and most of the Directors don't know about computers. "[You, Jean, you're] going to have to put on seminars or a course or something like that to teach us what it's all about"—essentially saying to me, "This is a condition I'm setting on [you for] my support for [the purchase of the computer; you must] get involved in spreading [an] understanding of what's involved in using computers."

I knew exactly what I was going to do. I went back to my office, I phoned the IBM salesman and I said, "[Could] you come round here right away?" And he came around, and I said, "Look, I think you've almost got it. There's one more thing you'll have to do." I said, "You know, at Poughkeepsie, [in] New York State, you have this very nice establishment where you provide courses to senior executives of American companies about what computers are, what they do, and what they may mean for business in the future." I said, "I want you to bring the Poughkeepsie team to Vienna and to give a course for the top brass of the IAEA." He said, "It's never been done outside the United States. I don't know if I could do that." I said, "You want this sale? [We must do it.]"

[I needed it]. He got [. . .] IBM to agree that they would do this. The Director General said, "Okay, this is great. <T: 20 min> We're not going to do it in Vienna where we would be bothered with telephone calls and people rushing into our offices, so we're going to go out of season to Salzburg, [Austria], do it in a hotel in Salzburg." [. . .] It was [to be] five [or] four-and-a-half [. . .] days. It was a wonderful experience because [. . .] two teachers came from the United States, and they found a bank in Salzburg which had an IBM computer, and they began

with lectures [. . .]. I still remember, [it began with quite] a [. . .] bit of formality [. . .], the way the IAEA operated, and so here we were with Director General, Deputy Directors General, the [. . .] Director General sits in the middle of the front row with a [Deputy Director] on each side and the Directors arranged in the back row, [and] this young man comes up onto the rostrum, and he starts in a very formal way addressing the group. He goes on [. . .] gets a little bit more casual in the way he's talking, finally poses what everybody in the room thought was a rhetorical question that he was going to answer himself, but [. . .] then he stopped. Nothing happened. And he looked down over the front of the rostrum, straight in the eyes of the Director General and said, "Well, Doctor, what do you think?" [Eklund responded with a shaken "Oh, oh, oh," and then [he] spat out the answer, but it was the right answer [. . .]. From then on, [our teacher] gradually got everybody involved in the discussion.

Then in the afternoon we wrote programs. [The first] afternoon we wrote [programs] in machine language, next day in COBOL [Common Business Oriented Language], [and the] next day in FORTRAN [Formula Translating Systems]. [Later] we went [. . .] to the bank, [where] they ran our programs for us. It was lots of fun, and on the last day, the Director General set up a banquet in the hotel in honor of our teachers, and he made a little speech [. . .]. I always remember him saying, "I've enjoyed this week. I've enjoyed this week so much. If I'm honest, I'll admit that, probably [within] a couple of months [. . .], I won't really remember very much of what I've been taught, how to program in COBOL, but," he said, "there's one thing I'll never forget, and that is my introduction to American teaching methods [. . .]. You know, we in Europe [are] used to sitting at the foot of an authority [. . .]; he speaks and we take notes. But this participation is so different and so exciting."

Boyd, I'm wandering all over the place—

**RAYWARD:** That's all right.

**WOOLSTON:** —telling you things that have got very little perhaps to do with the philosophy of information systems. Maybe I should come back to them. [Should] we switch this off for a minute or two?

[recording paused]

**RAYWARD:** So John, now you have the computer. There are all sorts of decisions to be made as to what the system will do, how you will manage the input. You've got to hire staff, and [. . .] within the context always of these complex political relationships. So could we now come to discuss some of those kinds of issue?

**WOOLSTON:** [Yes]. Thank you, Boyd. I think I needed that intervention of yours to bring me back on the main path because I've had a tendency, I know, and especially today, to wander off and [to] tell you little anecdotes about some of the people that I've been involved with.

**RAYWARD:** I think those are very important, so I don't think you should feel [. . .] that there's anything wrong with that.

**WOOLSTON:** [But], actually I think it's very important today, in this age of the Internet [. . .] **<T: 25 min>** when anybody and everybody can set up a web page and start offering information to the world, it's very important to remember that in those days, in the nineteen sixties, the public sector was much more important than it is today. The governments were much more important in terms of operating and providing services, particularly in this field.

We must remember that the IAEA is an intergovernmental organization. The members are governments, and the decision to set up INIS represented an agreement by governments to cooperate with each other [. . .]. The people [. . .] who provide the inputs would be either the governments themselves, their own departments and agencies, or people working under contract for those governments. Several governments could coalesce and agree to do it together and have a common input unit for several countries. Any of that could be done. But [. . .] whatever was going to happen was going to be done under the control of the governments.

There were people outside who were not in this picture who were saying, "Well, why do you bother to set up something completely new? Why [don't] you just peel out the relevant abstracts from the existing abstracting services and do some deal with them and then put these together and say, 'This is a nuclear abstracting service?'" But the political realities would not have allowed that, even if it would have worked. I don't think it would have worked because you don't have common standards. Despite all the efforts of UNISIST to get us to common standards, they certainly weren't available in the mid-[1960s].

I think what emerged with INIS was the first effort to build an information system that was a) international, b) cooperative in the sense it was cooperation among governments, and c) mission-oriented. This was not a discipline-oriented system [of] the type that we were very familiar with . . . physics abstracts, chemical abstracts, electrical engineering, whatever . . . disciplines. This was peaceful uses of atomic energy, and anything that related to that would be at least eligible in the first level for the system, be it physics, chemistry, metallurgy, reactor engineering, electricity production, whatever, as long as it was relevant to the mission of peaceful [. . .] applications of atomic energy. We had one big advantage. We didn't realize how big an advantage it was until FAO [Food and Agriculture Organization of the United Nations] started to try and build the AGRIS system, namely that in each country [we had] more or less a single entity that had most of the power for [interpreting] what would be done in that country in the field of nuclear science and its applications. In the United States you had the Atomic Energy Commission. In Canada, we had my own organization, the Atomic Energy of Canada Limited. And there were equivalent bodies in many countries, including developing countries who usually had some committee of the government and at least a small staff, including scientists, who [would keep an] eye on this thing in the national interest.

In agriculture, when we came to work on AGRIS, we found that in fact [. . .] responsibilities were much more diffused. There were so many different organizations with programs and policies, including information programs and policies, that very often it was hard to bring these together at the national level <T: 30 min> in order to get the cooperation at the international level. But in atomic energy that proved to be not such a big problem.

So I think one can say that almost from the very start, we knew that it was the member states of the IAEA who, individually or in little groups, either by themselves or with people working for them under contract, would be responsible for the input. We had to define [a] subject scope, and I think I [can] claim a certain responsibility for what was done [. . .]. I remember spending a whole weekend with an idea that I had, and the INIS classification scheme [has] undergone quite a few modifications, but it's still basically the same principle, that you write a classification scheme and [that] the sum total of that classification scheme is also a definition of the subject scope of the system. So if it fits one of those categories, then it's within the subject scope. In fact, when we did come to the implementation stage, and many of the countries were saying, "We can't do all this at once." It was relatively easy to sit down with them and say, "Well, which of these subject categories [should] we include in the initial partial version of INIS?" Say we had Category B3 and Category C4 or whatever to be included in the initial partial implementation of INIS, and we would only expand to full scope when everybody was more or less ready to do it, so the subject scope definition and the classification scheme were in fact one single exercise [. . .].

[Yes], indeed, there was a lot of discussion of course about the modalities of input. In what form would input be sent to the Agency? The most important thing, of course, was to identify the documents that contained the information, to have bibliographic descriptions of those documents, some indication, if necessary, of how you could get a copy if you were an interested user, some indication of the subject area which [. . .] in the first place, was [its] position in the classification scheme, but then to add the key words, descriptors, out of the thesaurus that we knew [would have] to become available.

There was also the question [of] abstracts. There was also the question of [the availability of] hard copy of the [whole document]. For the initial computer system where we [were] not [handling] abstracts, what means would be used to put in [. . .] a record without an abstract, [the] bibliographic description, subject, [and] other identifying things? Is it a journal article? Is it a chapter in a book [or] conference proceedings? Is it a thesis? Is it a patent? [. . .] We had to agree on some different carriers <T: 35 min> for this information.

I think we did allow for [. . .] input on magnetic tape. We hoped that the big contributors, for example the United States, would obviously be able to submit its input on magnetic tape. Of course, our big IBM mainframe computer had wheels going round and round to spin tapes.

We also got a [punched] paper tape format [. . .] for INIS input. We had [. . .], following UNISIST, defined a character set. We also agreed that countries who were not capable even of doing paper tape input, could submit input on worksheets. So we had to assemble a team of

people who would be able to transcribe worksheets onto paper or magnetic tape for entry into the system.

I know we talked about the possibility of collecting abstracts separately, in other words not receiving them in machine-readable form, but receiving them on paper, and issuing an abstract service on microfiche. To be honest, I don't remember now whether that was implemented [ . . . ]. You see, by the time I left IAEA, we'd only had a few months of operation. At that point we were not producing abstracts in the computer output, but I think it began to come quite soon afterwards. I don't know whether the abstracts on microfiche [ . . . ] were implemented or not.

On the hard copy, we said, okay, if something is readily available through commercial channels, in other words, if it is a journal or a commercially published book we'll rely on the publishing [ . . . ] and book retailing trade to make available the actual documents. On the other hand, if we're dealing with what was 'non-conventional' literature, such as technical reports and we would include in 'non-conventional' literature things like theses and perhaps even patents, then the inputting country was required to send a hard copy, nice clean, proper copy to the Agency. Indeed, there was a loop put into the program that required [ . . . ] the receipt of that copy before the bibliographic description was allowed to go out into the INIS output. Then we set up a microfiche clearinghouse. We took the original document . . . . [Well], of course, there was [the] possibility that the country [could be sending] it to us on microfiche, but what we expected to do [ . . . ] in most cases was to do the microfiching ourselves, putting our own header on it, along with the INIS reference number. So we began this microfiche clearinghouse operation under a member of the staff who was there in fact when I [had] arrived, an Indian by the name of Dr. Sheel. [ . . . ] And he recruited a very energetic Austrian lady, Maria Natlacen, to [ . . . ] run the shop with him. Between the two of them, they were ready. They got the microfiche clearing [and] production facility [ready], and [the] distribution <T: 40 min> facility ready, so that when we did start up in 1970 that aspect was also ready.

[ . . . ] I [have] talked a bit about the input mechanism. I should talk a little bit about the output mechanisms. The output mechanisms were essentially that a country could have a magnetic tape service if it so wished, and if it had [ . . . ] facilities to [be exploited] to produce SDI [selective dissemination of information] services for individual scientists or institutional users. There was also the creation of a printed output service, the INIS Atomindex, which we recognized was probably going to be the medium in which most of the users would see the results of INIS, at least for some years. [ . . . ] Eventually one hoped the abstracts would be included there, too, that eventually it may come to [being] recognized as a legitimate successor of *Nuclear Science Abstracts*. But of course, I was only there for the first few months of output, and it certainly didn't come anywhere close to what *Nuclear Science Abstracts* had done and [was] still doing.

I think [that] there is something very important that needs to be said in [the] context of, not only INIS, but all other systems that have been or might be thought of in this area, and that is the identification of the system with a community of like-minded organizations, or organizations with common interests. When you talk about a discipline-oriented system, you

don't really know where all your clients are. Physics can be of interest in universities, in [ . . . ] public and private research laboratories, [where] there [would] be physicists. On the other hand, when you say nuclear science and its applications, well, nuclear science, yes, like physicists, could be quite widely disseminated, distributed. But when you start talking about applications, particularly in the context of those years, you're really identifying yourself with a national program in each country and a set of institutions that are working within that national program.

We sometimes heard [ . . . ] people say, "Look, this is not fair in a way [the] countries that are doing a lot of work [have] to do a lot of work in nuclear science applications, have to do a lot of work in generating the information and putting it into INIS. Some other people who are not doing very much, nevertheless they get all this output and they get it all for free, just because they're a member of the Agency, and they [haven't] done very much of the work, and these other people have done all the work." [ . . . ] I found myself saying, "No, it is fair. It is equitable, because countries that have a big program in nuclear science are not only big producers of information, they're also big users of information. So you shouldn't measure the benefit to a country simply by the size of the file that it receives from the Agency, but by the number of users [who] are able to benefit from that file. A country with a small program not only puts a small amount of information into INIS, but [it] is also [ . . . ] able to [take only] a <T: 45 min> proportionately small use of its products."

So I think, indeed, that a system of this type is equitable. But there's another important thing, and that is the fact that while the Agency is there to hold it all together and to do the central processing, most of the work is done in the countries, both in collecting [ . . . ] the information [and] providing the input to the system, and in exploiting the output for the benefit of their nationals. [We do] not [need] to use the expensive staff of the [IAEA] for these operations. We are providing [for] countries to do the job at home, to use their own people, to develop their own people so [that] they also [become] proficient in [ . . . ] building and exploiting information systems.

There's a learning process here, a development of [human] resources [ . . . ]. Industrialized countries [already had much of the] necessary capacity [ . . . ] and any [necessary] addition would [be] paid [within those countries. Developing countries then] would be encouraged to acquire new skills, new capacities.

[END OF AUDIO, WOOLSTON 1.6]

**WOOLSTON:** We came to the end of a tape and we're starting on the other side or a new tape, and I'm not sure whether we got or lost the last few words of what I was saying. I was saying that a system such as INIS provides an opportunity for building new capacities, new skills in developing countries. That to some extent, this might need the help of aid agencies for equipment, and would need the help of the IAEA in terms of training staff to ensure the necessary degree of consistency in the quality [and] presentation of input, and to help show them how they could use the output. [ . . . ] If you're not going to get any output, you have no incentive to [participate] at all.

[Even while] I was still there, we had envisaged training programs. We identified one of our staff members, Marlene Binggeli, [. . .] as responsible for the development of the training programs, and after I left this became quite important. When AGRIS was getting underway [. . .] the IAEA [and FAO] had combined [. . .] training [courses] for INIS and AGRIS, and Mrs. Binggeli worked with Mrs. [Maria Teresas] Martinelli of FAO in presenting joint courses [. . .]. The training program [became very] important, but [. . .] only after I left.

[recording paused]

We are picking up again after another little break, [after a] cup of tea. I hope that makes my mental processes work better. The sense of community involves institutions, but it also involves the key persons in those institutions, and especially during the time when INIS was being designed and brought to its first implementation. Many of these individuals came to Vienna to consult with us or to be members of the little groups that we put together to advise us.

I have to acknowledge that not only did they contribute a lot to the definition of what we were going to do, but we knew all the way along that the whole system would work only to the extent that they believed they owned it. In a very real sense, they should own it, and therefore be committed to participation in every sense of the word, not just filling in worksheets, but being part of the community that was working together to provide a really good service [. . .].

The man who had replaced me in Canada, [Geoffrey] Williams, [. . .] was always there if I needed him to give me an honest opinion about what we were proposing. [. . .] Bjorn Tell [. . .] came [to Vienna] several times [. . .] from Stockholm, [Sweden] to consult with us and to offer his advice. He [. . .] with the other Scandinavian countries were discussing a possible <T: 05 min> common regional input activity.

I had the pleasure of being invited at a very early stage to go to the Soviet Union and meet the people who would be involved in INIS there. [It] was in [. . .] December, [1967], that my boss, Professor [Ivan] Zheludev, called me [to say he'd] been asked by the authority in Moscow to invite me to go to Moscow and to Leningrad, [Soviet Union], and to meet the people who [were handling] information in the Soviet atomic energy program, and [he] said to me that I could choose [. . .] either [to] go in February, [1968] or later on [in] May or June, [1968].

He said, "Of course, if you go in February, it will be cold. It's winter," and I said, "But I'm a Canadian, you know. No problem for me." I actually went in February, [1968]. [I] spent much of the time in Moscow, but also went to Leningrad in the company of Tikhonov who later came [back] to Vienna and worked with the team that helped develop the final proposal for INIS. And Tikhonov became a man [. . .] with whom I could always have a down-to-earth discussion about technical aspects of INIS, and I enjoyed his partnership very much indeed.

Another very good friend [was] Jiri Hybner [. . .], who was in charge of nuclear information in Czechoslovakia at that time. He invited me to Prague, [Czechoslovakia], [and] in fact, he invited the whole family, the whole Woolston family, to go to Prague [in] what is now looked back upon as the Prague spring, I think it was May 1968, and he took me to visit many

different institutions. It was so exciting to see the way these people were communicating with each other, trusting each other in the new atmosphere [ . . . ] saying, “For years, you know, we’ve not been able to talk to each other as freely as we are now.” [ . . . ] In a funny [ . . . ] way, [this] spirit reminded me of what it had been in England in 1940 at the time immediately after the evacuation from Dunkirk, [France]. There was a weekend there and he took me and my family on a little tour of some of the spas in Czechoslovakia. We could always count on Czechoslovakia’s full participation in INIS. [ . . . ] I also had a Czech member of the staff [named] Gomulka in the INIS section in Vienna. He was in contact with his people back home, and we always received very good technical advice from the Czechs and, as soon as INIS started up, their keen participation. [ . . . ] I also went to Czechoslovakia later that year in October, 1968, after the Soviet invasion. It was very sad, the contrast. <T: 10 min>

At that time, too, there were Czech refugees wandering the streets of Vienna, and I remember one night I was walking from the Agency building to where I [had] parked my car, and a Czech man, I suppose he was about fifty years of age, [ . . . ] asked me for directions. Well, we realized fairly quickly that we actually both spoke better English than we spoke German, on both sides of the dialogue. He ended up coming home with me and spending the night in the house. He’d made a very dramatic decision. I mean, the poor guy had no idea, you know, whether he’d done the right thing or not. When my wife and I got up the next morning, we found him walking up and down in the garden, pretty distraught, [though], after a good breakfast we took him to the—well, we made a few phone calls [the previous evening]. We found out there was a reception center for Czech refugees. We took him down there and, of course, I [thought] I might [ . . . ] not see him again. I knew he smoked cigarettes because he smoked one or two of mine. So I gave him some money in case he would be back on the street again, and our telephone number. About four weeks later he came to the house and repaid the money. He took it as a loan. And he repaid it. [ . . . ] It would have been an offense to his dignity not to have accepted [ . . . ], and I’m sure he saved it up out of a pittance, out of a tiny little allowance. He was staying in [the] reception center for refugees just outside [ . . . ] Vienna. They were difficult days. But I keep digressing, and this is naughty of me because we don’t have that much time. [laughter]

**RAYWARD:** No, John. This is fine. But just apropos of that, you’ve mentioned [that in] the early days [ . . . ] there was [ . . . ] a window of cooperation opening up between the U.S. and USSR through something like INIS. I just wondered, [whether at] the period that you were there and getting the thing up and ready to run, if there were other major [ . . . ] political issues that arose around various decisions that you had to make. Here’s a particular kind of political arena with all sorts of things happening. Were there other occasions where [there were] political difficulties that you had to deal with, [that] were problematic?

**WOOLSTON:** Boyd, after all, let’s face it. This [was] more than thirty years ago. A lot of things have happened to me since, so [ . . . ] I’m not remembering all the details, and [ . . . ] I haven’t been doing the reading that perhaps I ought to have been doing in the time leading up to your visit. [But] the political difficulties that I recall [are] essentially all in that Cold War

context which was between the East—not just the Soviet Union, but the Soviet bloc—and the West—not just the United States but Western Europe as well. I think [I] mentioned how it manifested itself in [ . . . ] how Euratom should be treated within the Agency.

**RAYWARD:** [I imagine] the acquisition of the computer had an interesting dimension.

**WOOLSTON:** Yes, that had an interesting dimension. This was a very important incentive for the Russians to get access to the computer technology [via INIS]. I don't know how much benefit <T: 15 min> they got out of it in the long run, but it was certainly a motivation. And they had fixed their sights on what IBM was doing as being, [as they saw it], the leader. Of course, IBM fell a bit behind some of the others in the 1970s when the minicomputers came along, but Big Blue is still there. [laughter]

**RAYWARD:** Did Del Bigio, for example, hire Russian programmers?

**WOOLSTON:** Del Bigio's name comes up [ . . . ] in our conversations, both on and off this tape recorder, and I think of him as being a [ . . . ] key person in the whole development. [ . . . ] [He developed] the INIS software [partly on what he'd done before] and, yes, he did bring in programmers, or [we'd better] say the Agency brought in programmers, [because] I'm not sure that Del Bigio [had] the authority to select them, [and there] were one or two who came in from the Soviet Union, probably toward the end of my time there.

I remember [ . . . ] interviewing a very strong-minded lady [ . . . ] Helga Schmid, who applied for a job with the Agency just a few months before I left.<sup>19</sup> She and her husband were Austrian. Her husband had had a job in Belgium [ . . . ], and she had [also worked] in that country [but developing] software [ . . . ] for Euratom. So when [the couple] decided to come back to Vienna, she applied to the Agency for a job. [The Agency had quotas for] professional [level] staff [from different countries and its quota for Austrians] was not only full, but very much over-full. [ . . . ] The personnel department [at] the Agency had made it clear there was no way that I could propose the recruitment of an Austrian [at this level], along with which [would have come] some of the benefits of international status.

So we had a [very] difficult discussion with Mrs. Schmid about the terms under which she could be hired, and eventually a compromise was reached so she was put in [at] the highest level of the national staff. [ . . . ] She was somebody I learned to appreciate very much even in that little time [ . . . ] she was in the Agency [before I left.] But then subsequently [ . . . ] she transferred to the staff [at] FAO and I met her many more times in the FAO context . . . in the

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<sup>19</sup> Helga Schmid, interview by W. Boyd Rayward in Vienna, Austria, 14 June 2000 (Philadelphia: Science History Institute, Oral History Transcript #0207).

AGRIS context. Helga asked <T: 20 min> questions. Helga said, “Why? Why?” And she was not afraid to do that with anybody at any level. It’s very healthy. [I mean] it’s very healthy [. . .] to have Helga in your office asking [“Why?” You’d] better have an answer; otherwise you’d feel very conscious of [. . .] things that you should have done or [. . .] things that [you’ve got] to do. I think she was a great stimulus [. . .] just generally [. . .] among all of us concerned with INIS, [and very specially] in the computer section.

But to go back to the people in the countries that I came to work with, that wonderful year [. . .]—1968—was [the year] when I also went to Israel. [Of course] that was just a few months after the 1967 war, [when] the whole [Israeli] people [became] confident of what they could achieve [. . .], having, as they felt at the time [. . .], the security they needed to build up their society and to participate in [. . .] international [affairs]. That was the first time that I met Carl Keren [with whom] I also worked [. . .] later on in my IDRC [International Development Research Centre] capacity. Carl had been born in Germany, in the Rhineland, and had emigrated to Israel before the Second World War. [. . .] He still spoke not just a fluent German, but [a powerfully] exquisite Rhinelander German. [Later, when he came] to meetings in Vienna [. . .] and other places [and got] into conversations with Germans [. . .] they would congratulate him on his German, and then he would explain. [He had] modified [the spelling of his name] from its original German in order to make it more Hebrew, [so] they didn’t immediately recognize him as a German [. . .]. I’m afraid our relationship came to an end when I took [a] job in Syria, but I’m very sad about this because I don’t know what happened to him. He was older than I [was, and therefore], if he’s still alive, he’s older than I am now. But he was a very heavy smoker; well, I guess I was at that time, too.

Another person who reappeared many years later was Pedro Somora, the Mexican who attended [the] 1968 meeting on the preparation of the final proposal for INIS. [. . .] Pedro was in charge of information in the Mexican [institute responsible for nuclear science and its] atomic energy program [. . .]. He’s now retired, [still] living in Mexico [City] and we see each other every few months. He and his wife [take] a meal [with me] somewhere or another. I very much appreciate that relationship. <T: 25 min>

[recording paused]

**RAYWARD:** John, I have put it on. I want to make you aware that I am recording you.

**WOOLSTON:** You asked about the Russian [. . .] Ivanov, who was in charge of the INIS section and [who] was identified by most of my colleagues in the Agency as one [of the] group of Soviet members of the staff who were in fact also members of the staff of the Russian secret police.[. . .] I think I said on a previous occasion, Boyd, that he would often sit in my office with me and be very persistent on a matter that, you know, did not seem important to me, but seemed to be very important to him. And then he would try to bargain, “If you allow me this, [then] I’ll help you with something else.”

**RAYWARD:** Do you think he was representing particular interests of his other bosses in this way?

**WOOLSTON:** I think he was [. . .] working within the instructions that were given to him when he went to [the] Soviet Mission every day to have his lunch. Maybe he didn't get new instructions every day, but he got instructions from time to time, and then, of course, he had to do his best to fulfill them. Sometimes these were on subjects that were completely peripheral to INIS, but they were things that somehow or another he needed to get done, and if it required my signature or my cooperation, of course he would come and present the arguments for doing that. Sometimes I would feel, "Well, what's this got to do with [where] we're trying to get in our program?" He left before I did, but only just a short time before I [was going to leave].

We had not spent much time together in social situations, but he did suggest that we have an evening dinner together at a restaurant, more or less the last evening he was there, just the two of us. And in the course of that meal, he [. . .] apologized for the trouble he had caused me, and said that he [was] sometimes [obliged to argue] against what I was asking for, even though he knew that [it] was probably in the best interest of achieving [our] technical objectives. [He admitted] that he [had not] been free to [. . .] exercise his own judgment on those technical issues, which I thought was pretty decent of him. I wish [he'd hadn't] had to do those [. . .] things. They were quite often related to personnel matters [. . .]. The Russians had their sympathizers [among] certain members of the staff, and [there were] others who were perhaps making a bit of difficulty for them, and I had both kinds in the [staff] of [my] division.

[There's] one interesting story [. . .] about this Russian business. When my predecessor [. . .] Dr. Gross, [was leaving] he named three people on the staff and said that he regarded it as his own failure that [he had] not been able to get [these] three people promoted. They were [in] relatively low professional <T: 30 min> levels, and [. . .] he felt [that], with reference to other members of the staff, these people deserved promotion, and gave me some reasons why. And I said, "Well, you know, I very much appreciate that advice," and I'd do what I could while I was there to try and help these people along [. . .]. One of these was a woman who had a Russian passport, who was at the lowest professional level [. . .]. She was Jewish [and, having come to Vienna], had applied for a job [with] the Agency. The Agency rules required that they consult the country before hiring [a] person. So they had consulted the Soviet Mission, but they always put a deadline date on it. This was very necessary. "If we don't hear from you [by] such-and-such a date, we [shall] go ahead and hire this person."

Well, the bureaucracy in Moscow had not replied, [. . .] so they went ahead and hired this lady. [She] worked with my predecessor [for] some years, and he [appreciated what] she did [. . .]. When I came [. . .] I saw what she was doing, [and] I [also] thought she was doing very good work, but she was still in what was essentially the recruitment grade. She'd never [. . .] been promoted to the next one up which would be more appropriate to the level she was at. So when the annual cycle came around and it was time for me to offer proposals for promotions, I proposed a promotion for her. This of course had to go through my boss as well [as] going [through] the personnel department. So my boss, Professor Zheludev, at one of our meetings

said that he was sorry but he couldn't sign this thing, he couldn't approve this promotion. [. . .] Whenever he traveled, he would name one of his directors to be Acting Deputy Director General, so he said, "John, look, in two weeks' time, I'm going on a visit back to Moscow. I'll be gone for ten days. I intend to appoint you as Acting Deputy Director General while I'm away." And he said, "If you do anything about this while I'm away, I shall not protest [. . .] when I come back." So, [as Acting Deputy Director General], I was able to approve her promotion. [Some] things were done like that; [. . .] quite often things were done like that in the Agency, so that people didn't get themselves into hot water with their own countries, but the right things got done in the secretariat. [Well], I guess everybody knew it was a kind of a dance that . . . .

**RAYWARD:** John, one of the other things that I found interesting was this five-year [. . .] limit on appointments that the Director General Eklund [. . .] instituted. In conversation [. . .] you told me what I thought was a very interesting human tale about Eklund in respect to this.

**WOOLSTON:** [Yes]. It happened quite some years later, [in] 1975 [. . .] when I was in Geneva working at [the International Labour Office]. [At this time I was] Director of the DEVSIS [Development Science Information System] study team. But the IAEA also had a little office in the United Nations in Geneva, and the lady in charge of that had been a colleague when I was in Vienna, and she knew [that I was] in Geneva. One day she phoned me and said that Dr. Eklund, who was still [. . .] <T: 35 min> Director General of the IAEA, was going to be in town for a couple of days, and she thought he'd like to have a [. . .] conversation with me [. . .]. He usually spent a bit of time in the office around six o'clock, and if I should go over [then], we could have fifteen minutes or an hour, or whatever, however he felt. So I said, "Yes, of course. I would be delighted to do that." And when the moment came, she phoned me and it wasn't very far from the ILO down to what used [to] be the League of Nations building where he had his office. And he greeted me very warmly, and of course I told him what I was doing and [. . .] commented on how well INIS continued to be regarded by the member states at the Agency. Then at one moment when the conversation seemed to falter a bit, I came out and I said that I had something I'd like to essentially apologize for. And that was [. . .] when I had first arrived in the Agency with all this INIS work ahead of me, I discovered that the librarian, the person who was in charge of the library section of my division, was about to go back to the United States because the Agency would not be renewing his contract as he had already been there for almost five years, and that [he'd] had very good evaluations by my predecessor. [. . .] I didn't want to have [the] complication of [finding] a new librarian and get a new librarian up to steam. I was new myself [. . .]. It would have been a comfort [to] me if his contract could have been extended, and the Director General had said no, he had a policy, [nobody] except the people that had [. . .] come in the early stages [at] the Agency with permanent contracts, people that he was hiring in professional levels would not be allowed to stay more than five years. He wanted to have the turnover. He wanted them to go back to their countries after they'd put in their time in the Agency. Two years, then another two years, [then] maybe another eleven months while you were recruiting the [next] replacement, but no more. [. . .] He had explained to me at the time that the reason for this was that he felt many of the United Nations organizations were much too

bureaucratic, and the fact that they were so bureaucratic was because people had jobs for life and they were free to be bureaucratic because they had that tenure. I had let my unhappiness be seen right back then when I [. . .] first joined the Agency. I said, “You know, since I’ve left the Agency, and since I had gone to IDRC, I’ve come into contact with many other UN agencies.” I’d worked a lot more with UNESCO, with FAO, with United Nations in New York. [. . .] I now really understood what he was telling me in 1967, that [. . .] looking back on my days at the Agency, I thought the Agency was a very lively organization as compared with what [I’d] seen in some of these others, and that [it] was probably due to his policy of not letting people stay more than five years.

At this moment I happened to see his face. He’d gone white and his top lip was trembling. [I thought, “My] God, what have I said? What have I done?” [. . .] He took quite a little while before he spoke, and then he [. . .] blurted out. [He said], “Yes, John <T: 40 min> I believe my policy was right. I still believe it was right. But it’s very embarrassing [to] me to talk about it because I applied it to everybody but myself.” Then [I’d] realized what [I’d] done [. . .] and then I felt very bad because I’d brought it up. Somehow or other, I had been so stupid, [I’d] not realized that he might see it that way. Honestly, I hadn’t seen it that way [. . .]. You know, he’s Director General. He’s appointed by the Board of Governors. He’s something special. He’s not God, but he’s still something very special because he doesn’t owe his appointment to the system itself. He owes his appointment to something much bigger, and he has to manage the appointments of the [. . .] people within the hierarchical structure of the Agency. [But] anyway, I don’t know whether all these lessons will ever make me a tactful man. [laughter]

[recording paused]

While we were off the tape recorder, we had a little discussion about where to go next given our time limitations, and we felt I should now be wrapping up what I said about INIS, and the International Atomic Energy Agency, and move on to the transition that took me back to Canada. [. . .] Just incidentally, I have been try to [find the correct full names of people that I have already mentioned. The Russian that became a good friend is Igor Tikhonov.]

Anyway, here was I sitting in my office in Vienna, but coming to the end of my third year as a member of the staff [. . .] and having determined that I was going [. . .] back to Canada, but not knowing exactly what I would do [in the future.] But, damn it all, I was very busy. I really wasn’t dwelling on that question. I figured that it would all work out when I got there. In any case, I had my job with Atomic Energy of Canada Limited. I had [our] house in Deep River, and I would be going back there, and from there [. . .] would see what [might happen]. But one day I got a visitor from Canada, [. . .] Phil Tyas. Phil worked in various capacities in [the] Canadian Public Service. [. . .] I think at the time he was with the [. . .] Science Secretariat, [an] office very close to the Prime Minister. [. . .] Anyway, he [came to visit] me, in a kind of tentative way because [. . .] the matter was still subject to legislation in Parliament, [but it transpired] that big things were happening in Ottawa, [. . .] that these big things involved much more emphasis on information science, and that there [were going to] be [. . .] opportunities for people like me. [I don’t know] whether somebody had sent him or whether this was entirely on his own initiative, but [he] was certainly encouraging me to <T: 45 min> [return to Canada]. In

[due course, Parliament established the International Development Center to promote scientific research] in developing countries.

Ed Brunenkant had nominated Charlie Pelzer [. . .] to replace me at the Agency, and fortunately we did have a little overlap. [. . .] I enjoyed very much the time I spent with him. He was very friendly. He seemed to be very committed to continue what had been started. I felt that he would interact very well with the staff, and that the program was in safe hands. He helped me a lot in those last days, [with] all the good-byes, and then drove me to the airport, and I went away with quite a comfortable feeling. I felt I'd done the job. We'd brought out three or four issues of INIS Atomindex. I suppose, to be perfectly honest, there was a temptation to accept a [further] renewal of my stay. Of course, I would still be subject to the five-year limit, [and I'd] already done three. So it could have only been [two] years and—

[END OF AUDIO, WOOLSTON 1.7]

We are now on the other side of the tape. I don't know [whether anything] was lost there. But I was saying that I won't deny there was some temptation to stay on and continue to enjoy a very good salary [. . .], not having to pay income tax for another couple of years [. . .], to be able to buy cars and [other] things [. . .] duty-free, and have [a] disposable income for eating in nice restaurants.

But no, I really did make up my mind. My boys were now well into their teenage years, and I thought it was time for all of us to be [. . .] together in Canada. I went back [to Chalk River] and [. . .] an office very near where [I'd] been working before. I had an appointment with the president of AECL, [who] very [generously] said, "John, [. . .] you've done a good job in Vienna and a good job for Canada too, [because] Canada's name has been associated with the start-up of INIS," and he said, "[. . .] We don't expect you to go back necessarily into the kind of work that [you were] doing [before Vienna]. I just want to give you some time. Take your time. Go visit other people in AECL and other people in other places, if you like. You can take up to six months before you make up your mind."

There was another one of [the] Geneva Conferences [Peaceful Uses of Atomic Energy], coming up in [1971, and] he knew that [I'd] been much involved in the conferences [of 1955, 1958] and [1964]. He had appointed a man [with whom I'd previously] worked [. . .] to head up the preparations for the Geneva Conference, and he said, "To the extent that you have time and the interest [. . .] please help him as much as you can with the preparations for the [1971] Conference. But other than that, don't feel [. . .] you have to be [fitted in here]." I [started] by going [. . .] talking with the [various] senior people in AECL and my [former] boss [. . .] being one of them. [. . .] W.B. Lewis, [the] man [whom I've] talked about a lot earlier on in these tapes [. . .] was very welcoming. He had very much in mind, however, the fact that there was a growing movement in the world that was anti-nuclear, and he thought that I could help him and others by presenting the pro-nuclear arguments, explaining things to any kind of audience. [. . .]

He was [not] suggesting that I join the [public relations] staff, but [to work] with [himself] and others [. . .] to write papers, perhaps give talks [in] different places, and try and get a better awareness of what the program could do [. . .] without denying that there are risks in any kind of industrial development. [Although these risks] were different [from] those that you found <T: 05 min> in most other industrial situations, when looked at in [. . .] a reasonable, statistical way, they were equivalent to risks that are accepted every day by society.

I had no [quarrel] with that argument. [. . .] It wasn't because I didn't believe it. I believed it then [. . .]. I believe it now. I think the world has been absolutely damned stupid not to make [much more] use of nuclear power and avoid [producing] greenhouse gases, avoid [. . .] accidents in coal mines. [. . .] Chernobyl, of course, was the big undoing, which hadn't yet happened [. . .]. That didn't happen until [1986].

[But] it was so easy for the anti-nuclear lobby to put out arguments like, "You can't guarantee [there'll] be no radiation [. . .] escaping from that reactor, can you?" Well, you can't.

"And any amount of radiation can harm you, can it not?" Well, yes, [. . .] of course.

"Well, therefore, we shouldn't be doing this, should we?"

"No, but wait a minute. The amount of radiation that is likely to escape, assuming no major accident, is comparable and very much less than [the amount of] radiation you're receiving anyway from the cosmic rays and the radioactivity in the earth and the x-rays you [have] at the dentist [. . .]. The risk of the accident, you can't deny it's there, but it's so low compared with—and yes, the consequences could be bigger, but the possibility of it happening are less than, say, a chemical explosion [. . .]."

**RAYWARD:** And so Lewis had this in mind for you?

**WOOLSTON:** [Yes]. So I do believe that, over the last thirty, forty years we have missed in the world many opportunities to have a reasonably cheap, remarkably safe, and non-polluting source of energy in big amounts. [. . .] You listen to the radio and people [would] say [. . .] we've got to stop burning all these fossil fuels because they produce greenhouse gases, and we must concentrate on solar, wind, and tides. My goodness. Can you run Mexico City, [Mexico], on solar energy, or winds or tides? The quantity of electricity that the world is demanding is so huge, and these things are small compared [with] the demand. The supply that you [. . .] imagine, even with putting windmills [on] all the mountains around Mexico City, would never meet the power needs of the city itself. It's this question of powers of ten, Boyd—

**RAYWARD:** John, I want to bring you back to [. . .] the choices you had to make. I accept that there are strong arguments to be made for the safety [and value] of nuclear power, but—

**WOOLSTON:** We don't have enough time.

**RAYWARD:** No. So [. . .] now [you are] exploring one kind of position that Lewis is suggesting for you—

**WOOLSTON:** No, I didn't want to do that.

**RAYWARD:** But then there are other options that you are [obviously] looking at, at the same time.

**WOOLSTON:** Not because I didn't believe it. I didn't want to do it. I [felt] that I was now committed to this business of ensuring that <T: 10 min> scientific and technical information was managed in effective ways for the benefit of developing and developed countries alike, and that I could perhaps find something to do to that end in Canada. I wasn't thinking of going to another international organization, at least not in the near term. [. . .]

The man who had been Canadian ambassador in Vienna while I was there, had recently returned to Ottawa. The government in Ottawa had decided to save money by slashing its foreign service and reducing the number of embassies and the staff in the embassies, and reducing the number of people in the External Affairs, as we called it then, the External Affairs building in Ottawa. So a lot of senior people were being let go, including former ambassadors. This fellow had been given an office outside the External Affairs building and had been told that he was one of the people who [have been] cut, but they were giving him another year or year and a half, or whatever it was, to run an office to help find alternative employment for other senior people from External Affairs who would also be cut [. . .].

So anyway, I dropped in to see him, just to say hello and to chat about our days in Vienna. [. . .] Then he asked me what I was doing, and [. . .] told me about how he had already placed one External Affairs person who was going to become [secretary/treasurer] in this new organization called IDRC. He said that the president [. . .], the man who was named as president of IDRC, W. David Hopper, was indeed looking for somebody to manage [. . .], become director of the information sciences division there, and that he would urge me to go and see David Hopper, and I think they'd already talked about [it, about] me [. . .]. Anyway, it turned out David Hopper was traveling, so I went to see Hadley Bennett, who was the External Affairs man who [had] now [. . .] become [Secretary/Treasurer], and so I had my first introduction to IDRC when it was still a tiny little organization. He said he would make an appointment with David Hopper for me as soon as David was back in Ottawa, and that happened. You know, I was almost immediately offered the job. I didn't accept immediately because IDRC was still very much an unknown quantity for us in Ottawa, and I went around and [. . .] talked to a few other people about what they thought of the initiative, and whether they thought I would be suitable for the kind of work [. . .] the kind of mission, that IDRC was to follow.

I [had] a lot of encouragement from different people in the National Research Council, and in particular <T: 15 min>, one man [who'd] been a colleague all the time that I'd been [with] AECL, and he said, "Look, John, it's so much more fun [to work] in a new organization that is growing than to work in an old organization which is . . . well, may have been very successful. We have been very successful in AECL. We have power reactors in Canada, but let's face it, it's going to be a continuation of what we've done before. It's not going to be building completely new things. [. . .] I think you'd have much more fun in IDRC."

So I said, "Yes, I will accept the job." It was agreed that I would remain on the staff of AECL for the rest of 1970. Well, David Hopper talked to AECL. That I would stay on [the AECL] salary for the remainder of 1970, then I would go on IDRC payroll the first of January, but that during the last three months of 1970, I would spend some of my time in IDRC getting things ready to start, and some of my time in the first three months of [1971], going back to Chalk River where my family was, of course, and doing bits and pieces on the Geneva Conference that was coming up. [. . .] Then my family [would join] me at the end of the school year, [we'd find] some house to live in . . . [buy] a house in Ottawa. So that's the way it worked. So officially I came on the books of IDRC on the first of January [1971], but I had been sitting in meetings of the management committee there from about October [1970]. Then we can go on with the IDRC story after lunch. Is that all right?

**RAYWARD:** That sounds good. Just for the record, John, IDRC—

**WOOLSTON:** International Development Research Centre. I think it's kind of clumsy. We [have] got [into] this habit of just stringing nouns together. The French name for the organization [is far more descriptive. Translating it] into English [it becomes] The Research Center for International Development.

[recording paused]

Well, the last time I spoke into this funny little machine—that was about two-and-a-half hours ago, before lunch. Since then we've been out, [we've] had lunch, but I ended up in the office trying to put out some fires. So I'm perhaps a little bit breathless, and I hope I won't be more faltering than I was this morning in my account of those exciting events of the—well, we're now into the 1970s.

IDRC, International Development Research Centre, was set up by an act of the Canadian Parliament to help developing countries develop their research capacities in areas that [would] promote their development. David Hopper, who had worked with the Ford and Rockefeller Foundations in India during the Green Revolution, a graduate of Cornell University in Agricultural Economics [. . .] came back to Canada to become the first president of IDRC, <T: 20 min> and I guess he, in consultation with the main Canadian [International] Development Agency, CIDA, and with many other people, decided on the outline of the future areas of work.

Of course, before I met David, he had already had a first meeting of the IDRC Board of Governors, and [I'm] sure he must [have] sketched his proposals and got their agreement before he laid [them] out on the table for the rest of us. But he proposed action in four areas, each of which was to be represented by a division of the Center's headquarters staff, and each division to have its own director, program director we were sometimes called. What turned out to be the largest division was for Agriculture, Food, and Nutrition Sciences. The second largest division [. . .] was the Social Sciences division, which had a broad spectrum of sub-programs [. . .] initially with a fair emphasis on education. The third area was the Health Sciences [. . .] perhaps more concerned with preventive medicine than with therapeutic medicine. Then my division, the smallest of the four, was the Information Sciences Division. David had been impressed, [. . .] particularly when he was in India, and comparing the situation there with the situation that had existed when he was a student at Cornell, [. . .] realized that the deficiency in libraries in developing countries, along with deficiency in access to journals and other secondary services, made life very difficult for developing-country scientists, [. . .] particularly if they had done their PhD work in a more industrialized country, had been used to good libraries and reasonably good information services, they were frustrated when they went back to their own country [. . .] without what they had become used to.

So, for David, Information Sciences was, if you like, an innovation that IDRC was making that did not at that time have its equivalents in other development-aid agencies, even those, like IDRC, that were focused on research. He interviewed me but then left me to indicate the directions [. . .] I would propose to take [for constructing] a program to help developing countries build their own resources in this area. [. . .]

In the beginning of the very first tape here I talked about two entwined threads, one being ways to help developing countries to participate in international cooperative information systems, broad-based mission-oriented. The subject's scope [match] to the mission, the model of INIS, and [. . .] specialized information-analysis centers on the model proposed by Alvin Weinberg and implemented in various institutions, particularly in the United States, and especially in Alvin Weinberg's own institution at Oak Ridge National Laboratory.

So <T: 25 min> they were two of our main first objectives. There were others, [but] particularly we felt that industrial extension and advisory services would be quite important in building up industries and [. . .] employment opportunities for people in developing countries. We chose [Southeast Asia] as the [. . .] area [where] there [were prospects of good results, Cooperation was promised by the] Canadian Industrial Extension and Advisory Services operated by the National Research Council, [and planned to] set up a network among the organizations that were active, or had the capacity to become active in this type of work, in half a dozen nations of Southeast Asia. This activity was headed by a Chinese Canadian, Mr. Lang Wong who incidentally established IDRC's first regional office in Singapore. Technonet [Asia] was the immediate cause of the need to [have] a regional office, and he was acting regional director as well as head of Technonet until such time as David Hopper found the person that he had been looking for to become the longer-term director.

I don't want to dwell on Technonet and Industrial Information Services. I think we were able to achieve something [. . .] there, but I think you, Boyd, are more interested at the moment in what we were doing in the other areas [. . .] particularly with the cooperative information systems.

**RAYWARD:** Yes.

**WOOLSTON:** Of course I started with virtually no staff, not quite no staff. I found that they did have a secretary that they could assign to me, and after I'd been there some weeks, David Hopper walked into my room and said, "Oh, by the way, I've never told you, [have] I? You have two staff members working for you in Paris at OECD." What had happened was that a year before IDRC had [. . .] been started, and knowing that it was going to be involved in the information business, CIDA, the Canadian International Development Agency, had hired two young Canadian women and sent them to [. . .] the OECD Development Centre in Paris, to get acquainted with what that organization and other European-based organizations were doing in relation to information for developing countries. This was more of a top-down [. . .] thing that was involved, where institutions in the more advanced countries [would] offer to respond to [requests] for information from developing countries, but nevertheless, of course, it was what was known. It was based on some experience. One of the young ladies did not stay with IDRC after her tour of duty in Paris was finished, but the other one did. Her name is Kate Wild. She worked with IDRC for quite a long time, then had a long gap when she was working mostly with the International Labor Organization, then came back to IDRC and has just recently retired [.. .]. In the last <T: 30 min> few years of her career, well, her career so far, she had been working in the office in Johannesburg, [South Africa], and working with the United Nations [in a] regional organization in Africa [. . .] to [help] get the IDRC money to set up networks that would permit more free interchange of information inside Africa, as well as between Africa and the rest of the world. So Kate Wild's name will come up, I'm sure, from time to time as we go through this [IDRC] bit.

Very soon after I joined, I was able to hire Michael Brandreth. [. . .] I first hired Mike Brandreth when I was with AECL, and he had managed the information services in our second research establishment, which was located in Manitoba, [Canada]. But Mike was ready for a move and he came in and eventually became Deputy Director of the division. He concentrated mostly on the information related to the sciences [and thus] with agriculture and health, and gradually we expanded the staff. Gradually our budget rose . . . . I don't remember what it was in the beginning, but it was really very modest. But it expanded to fourteen, fifteen million [. . .] Canadian dollars a year by the time I [. . .] left the organization. Most of that money went to grants to institutions in developing countries, or in some cases to international organizations that were developing programs and systems in which the developing countries could participate [or benefit]. Most of that money, like 80 percent of that money . . . . Our headquarters' costs were typically not really more than about 20 percent of the [total funds] that were made available to us.

During the course of my stay there, I was invited to apply for the job of Director of CISTI, the Canadian Institute for Scientific and Technical Information. I was told I could have it if I wanted it. That was a huge operation. This [is] the National Science Library, together with a lot of national SDI services, [and] the public-sector Canadian national equivalent of Dialog in the United States, access to databases. CANOLE it was called. Originally it meant Canadian Online Experiment. [ . . . ] The former director, Jack Brown, had retired. I went out to CISTI and talked with the staff, and then I got some figures on the budget. Of course, it was a much bigger budget than mine in IDRC. But then I started asking questions about how much of that budget was committed. What percentage of it was discretionary? In other words, how much money would I have to do original things, innovative things? I found that compared with what I was doing in IDRC [ . . . ] there would be far less money available [for] discretionary activities. [ . . . ] In fact, [ . . . ] I would be spending most of my time administering a program that was already defined, <T: 35 min> [ . . . ] I declined the offer and stayed with IDRC.

[recording paused]

There are so many things I could talk about because the smorgasbord of activities of information sciences at IDRC became really quite broad. We were active in all parts of the developing world. But of course, we had to concentrate on what is most important for the exercise [we're] presently engaged in, and fortunately that coincides with the program that I had a particularly strong interest in. The antecedents, as far as I was concerned, go back actually to the days when I was still in Vienna.

FAO, the Food and Agricultural Organization of the United Nations with [ . . . ] headquarters in Rome, [Italy], had I guess been watching what we were doing in Vienna, and certainly John Sherrod, whose name we have given before on these tapes, when he was with Ed Brunenkant in the Atomic Energy Commission. He had now become Director of the National Agricultural Library [NAL] in the United States, and he was anxious to persuade FAO to initiate a program for [agricultural information] similar to the one that he had first spoken about in Vienna in 1965 or [1966]. [Sherrod] had [visited FAO]. [When Sherrod] went to NAL, he also took Abe Lebowitz with him, so now both of those were there, and both of those were ready to help in setting up the second mission-oriented international cooperative system. The name AGRIS was adopted. The FAO had [ . . . ] set up a study team with Harry East from ASLIB as its head. [I don't remember what organization had] commissioned [him, but H. Buntrock made a survey] of [agricultural] information services [ . . . ]. Leaving out all the little fringe ones, he demonstrated that there were some five hundred broad-based [services], at least broad in subject matter, [ . . . ] all of them seeking to serve the community of agricultural [ . . . ] scientists, still leaving gaps, and recommending [ . . . ] that international action should be taken to provide something more comprehensive, something more readily available, particularly [for] developing countries. The services that did exist, sure, some of them were free, but there were others [that] you [ . . . ] had to pay for, and [that], therefore, were not readily accessible in developing countries.

Somewhere in the early months of 1970, I got a call from Raymond Aubrac, [a hero of the French Resistance in the Second World War, at this time a senior figure in the FAO. He

invited me to visit] him and meet [a] study team; [. . .] this was almost [on] the point of start-up [. . .] not quite, [to share] our [IAEA] experience with them <T: 40 min>, and comment on [. . .] what they [had] on the table as very early proposals. [I'd] never been to Rome. It was very exciting. [. . .] Working with Aubrac was [. . .] Gerard Dubois, [a Belgian] who [. . .] as time went by, [also became] a very dear partner in this effort. It was largely Dubois who told me about Aubrac. [Later on I learned] a lot of things first hand from Raymond himself. [He had been born in 1914], went to MIT in the United States, did a master's degree in civil engineering [. . .] and [returned] to France just in time for the German invasion and occupation. He had [married Lucie], a *lycée* teacher, secondary school teacher, Lucie [Aubrac]. Raymond was [from] a Jewish family. Lucie was of a Catholic family. Neither of them [was] involved with [. . .] religious communities, and they had many other things to do. Raymond's parents [were killed] in Auschwitz, and that can never be erased. It's part of him. But he got into the Resistance Movement, as did Lucie, and [there were] many, many adventures. Raymond has published a book [. . .]; I have a copy in my hand, which he inscribed to me where he says "For John"—I'm translating—"For John Woolston, a little bit responsible for this book" [. . .] because I had begged him to write his memoirs.<sup>20</sup>

They had all kinds of adventures in the Resistance Movement. The most dramatic involved an affair with [Nikolaus] Klaus Barbie, [the Gestapo man] in Lyons, [France]. Barbie, as is well known, [. . .] had arrested the Resistance leaders when they met in Lyons. [. . .] One by one the others [were sent] to Paris and never came back. The Gestapo finished them off. But Raymond was still [. . .] in jail in Lyons, and Lucie [was] determined to rescue him. She was very pregnant with her second child. [So] she went to see Barbie and pretended to him that she and Raymond were not married, that he had got her pregnant, that her parents were going to be very angry with her if she wasn't married, and that she would like to have <T: 45 min> something done so that they could go through the formalities of marriage. Barbie thought this was ridiculous at first, [and] said, "No way. No way. Can't be done. He's under sentence of death . . . execution." Lucie said, "Yes, that is true, but the law of France still applies here, and the law of France allows for a person under sentence of execution to be married." Then Barbie [. . .] switched a bit and decided this was just a game, it was fun, and he'd go along with it. So it was agreed that they should get married at the *Mairie*, the town hall. He couldn't be married in prison. He had to be married [in] the town hall. So a time and date was set. Lucie and her comrades from the Resistance ambushed the truck that was taking Raymond there. I believe she killed the driver with her own machine gun, [and] Raymond and some other people jumped out the back. They were not expecting Raymond to be wearing a raincoat and therefore they mistook him to be Gestapo and shot him, [but] the bullet went in his mouth and out his cheek. It was very fortunate that it was really a wound from which he could recover very easily. The Resistance fighters got them away to a safe house, a secret place. They waited for a [low-flying] British plane to [. . .] pick them up [to] take them to England. [. . .] This British pilot [remains] the big hero for the Aubracs because he thought he was landing in a field to pick up one person, and there was Raymond, plus a very pregnant Lucie, [and] their first child. Raymond had quite a

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<sup>20</sup> Raymond Aubrac, *Où la mémoire s'attarde*. Odile Jacob, 1996.

job persuading him to try to take off with that lot. But he did take off. He got them [. . .] safely [to England].

[END OF AUDIO, WOOLSTON 1.8]

**WOOLSTON:** [I was saying how Lucie Aubrac got to England during the Second World War, and how a few] days later, Lucie had given birth to [their] second child, and a few days after that, General Charles de Gaulle came to the hospital and pinned the *Croix de Guerre* to Lucie's nightgown. [laughter]

**RAYWARD:** So, come back to Rome. You're [having a] meeting with Aubrac and—

**WOOLSTON:** Well, I have to say a little bit more about [Raymond] because it shows why he was so interested. As a civil engineer, he went to Morocco. He spent many years in Morocco helping there with the design of irrigation works, [the] production of [. . .] sugar, which [was] very important there. He found a great difficulty in getting the information he needed, very often information that he knew existed. He knew that surveys had been done [of] river basins [as well as other studies by various consultants], and yet [it was] very difficult to get access to them. At some point he sat down and [. . .] wrote a letter to the Director General [of] FAO and suggested that FAO should do something about [the] accessibility of existing [. . .] maps and [documents about] cultural practices, irrigation technologies and so on. After a while, he got a reply saying, "Yes, I think you're right. Will you come here on a six-month consultancy and tell us how to do it?" So he went to Rome, and there he [. . .] stayed. I'm missing out on [an awful] lot [of things], Boyd, [about] how he got involved with [various characters including] Ho Chi Minh and [. . .] Henry Kissinger.

**RAYWARD:** Are these things in his book?

**WOOLSTON:** Oh, yes. How he got involved with Henry Kissinger, when Henry Kissinger was working for Lyndon B. Johnson, and how they sat in a hotel in Saigon, [Vietnam], while Kissinger got messages from Johnson, and Aubrac took the weekly flight to Hanoi, [Vietnam], to present proposals to the North Vietnamese, and how he [believes he got very close to] an agreement, and then Johnson bombed Hanoi, and [that] put an end to [it]. [But thereafter] he could see Henry Kissinger any time he wanted to. They were such good friends.

**RAYWARD:** John, that's his story, [but] let's come back to yours. And you've given us [a] good background, I think, of—

**WOOLSTON:** Of the individual. He went to FAO, as I said, and he eventually became director of a huge group of staff, which included the information staff, but he was also responsible for all sorts of other things, liaison with [other] international organizations, protocol, etc. [. . .]. He was very close [to] the Director General. He sat with me during that visit, and we talked it over, and we felt that it was going to be a lot more difficult to build AGRIS than to build INIS, simply because the community of institutions is so much more complicated and so much more diverse, but [that] you know, “Let’s go ahead.”

A panel had been set up to advise FAO on the AGRIS scheme of things, and this panel was chaired by Sir Thomas Scrivener who was [. . .] Secretary of the Commonwealth Agricultural Bureaux [CAB], [who] were then producing what [were] the best-regarded information services in the English language. [. . .] Bureau was plural. It had an “x” on the end, [and] each bureau was attached to a particular institute in the U.K.. I think there was also one in Trinidad, and maybe one in India at that time. I’m not sure—where a particular type of agricultural research was done, and so the information was collected, abstracted, and subject indexed in an environment <T: 05 min> where that type of research was going on. So you had abstract services in dairy science, for example. The Commonwealth countries were members of an embracing organization, and they got privileged prices, but they still had to pay.

The other members of the advisory panel were also mostly people who were already active in information services. I remember particularly Philippe Aries from France who was managing a service. I think it was on tropical fruits. But he was also a philosopher. He was also somebody who [. . .] thought very deeply about what information services should [entail]. He was also a very good presenter of his own ideas, a very forceful and effective spokesman. And there was a Dutchman, and several others including Rudolph Bree [of whom we had] spoken [. . .] before.

But this was still before I got to IDRC. When I got to IDRC, things had moved on a little bit further. Of course we’re now talking about, let’s say, the beginning of [1971, and therefore, almost] twelve months after I’d made the first visit to Rome, having got the endorsement of David [Hopper, and] the fact that one of the aspects of my information sciences program would be to help in the development of cooperative information systems in which developing countries could participate, and I found myself back in Rome, talking [with] Aubrac about how the concept of AGRIS was getting along, where it was going, when it would be implemented. So he asked me to join the advisory panel [as a] member, [and] also to chair a group [that we] called the Implementation Advisory Committee.

Now, the idea was that the panel that was there with Sir Thomas Scrivener in the chair would set the general policy, but we in the implementation advisory group had to deal with all those little knotty problems that people would argue about on the design of the system. This got to be very problematic. [Our committee needed to maintain contact with the panel and many] other interests. I want to call them “vested interests,” the interests of the people who were already running the agricultural information services of different kinds—had proposed that there be a Level One AGRIS and a Level Two AGRIS. Level One would be what John Sherrod called a “quick and dirty” collection of bibliographic descriptions of articles and all sorts of documents

dealing with agricultural science and technology, essentially with no indexing, or just very shallow indexing. Adding abstracts and deep indexing would be done essentially by existing institutions, with some coordination from FAO, at Level Two. <T: 10 min>

I personally felt that this was a recipe for [getting] nowhere. If you wanted anything more than the “quick and the dirty,” you’d still be going to the services that are there now, [and] there was nothing to indicate that they would be able to offer anything because [they’d] still be managed by [. . .] their [existing institutions with all the] financial constraints [. . .] they already information for developing countries. Nobody really wanted to talk about the delivery of hard copies. Oh, sure, we had consultants. We had meetings about [. . .] document delivery services on microfiche. We talked about the INIS example, and [. . .] people said, “Well, that’s impossible. The volume is too great. FAO could never handle that.” We [seemed to be] getting nowhere.

By this time, INIS was accepting and distributing abstracts with their bibliographic records, and I [felt] quite strongly that this should be part of AGRIS. Forget Level One, Level Two. Just AGRIS, that it should be a combined function [. . .]; then the abstracts would be written by the people [. . .] who were submitting the input.

[recording paused]

We stopped there of course because the telephone rang in my apartment and I had to go and answer it. But what I was saying was that [the] whole objective of AGRIS, as it had been with INIS, [was] to get the work done in the countries that were participating and where the literature was produced. So if [it was] a publication in Egypt, why not let the Egyptians write the abstract. They would learn by doing so. They would be in control. They could decide how to do it and what to put in and what to leave out. [That, potentially], would also be far less costly than having abstracts written by PhDs in England or France or wherever. So I wanted to see something different about the [levels, either] to abandon the Level One, Level Two concepts, or to have a new definition for Level Two. In fact, what I did was to write a paper for the *Bulletin* of the International Association of Agricultural [Librarians and Documentalists] proposing that we should use a Level Two, the Alvin Weinberg model [of the] Specialized Information Analysis Centers, where we would be beyond bibliography, beyond just a secondary service.<sup>21</sup>  
<sup>22</sup> [We] would be into a tertiary service where [there would be] analysis of what was in the literature, state-of-the-art reviews, [and scientists responding to enquiries].

So I had that problem, but I knew what my position was. I had stated it, and of course that brought me into some degree of conflict with the Commonwealth Agricultural Bureau [CAB and with [. . .] various services [produced in] some of the other countries. But we had to stay within the rules of what had been defined, and I was content to proceed with the definition

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<sup>21</sup> The International Association of Agricultural Librarians and Documentalists was established in 1955 and is now known as the International Association of Agricultural Information Specialists.

<sup>22</sup> John Woolston, “AGRIS Tropical: an Alternative Strategy,” *Quarterly Bulletin of the International Association of Agricultural Documentalists* 22(1-2, 1977): 30-34

of the AGRIS Level One, hoping and believing that quite naturally abstracts would be added later, as they had at INIS. If we could get it started, if we got the bibliographic descriptions there and some indexing, <T: 15 min> the rest would follow.

Most of our meetings were in Rome, and I was going [. . .] quite frequently [for] Sir Thomas Scrivener's panel, and also to chair the Implementation Advisory [Committee]. But then one day we were invited by the Czechs to have one of our meetings in Prague, and that turned out, for me, to be the pivotal meeting in all this discussion about what is AGRIS [and] how are we going to implement it. The Czechs received us [. . .] warmly. I was able to renew my contact with my old friend Jiri Hybner, and in fact to get the people concerned about AGRIS to talk to the people concerned [with] INIS, and to suggest that they exchange experiences.

The meeting in Prague was not a very long one, but [. . .] I think everybody on the committee accepted that this was a decision [time], and FAO had said that they wanted the scope of the system to be equal to the scope of FAO itself. This would mean that it would include fisheries and forestry. That didn't make me very happy because I felt [. . .] the thing was big enough and clumsy enough as it was and I argued vociferously with Aubrac for making it two or three systems, saying, "Look, the community that is involved in fisheries is not the same as the community that's involved [in] plowing fields and scattering [. . .] seed," but, you know, he was working [on] instructions from [. . .] even higher up in the organization, so he couldn't budge on this, even if he had agreed with me. I don't know whether he did or not. [laughter]

The other thing from above was that we were to start up on the first of January, 1975. I can't remember the date of the Prague meeting but it was probably the first part of [1973], so we were probably less than two years [away from] the date when we were supposed to start. So I had a blackboard there, and a piece of chalk, and I was always a participating chairman [at] these meetings and so what I did was to ask the members, "What steps do we have to take, what things do we have to do to get to start-up? What are the things we [must] have [. . .] that we don't have in hand now?" We made a list. [Then] I said, "How many months does it take for each of these? Can some be done in parallel? Which ones can't start until some other one is finished?" And then we did a schedule, working back down from the first of January, 1975, slotting these things in, and we suddenly discovered that we would have had to have started a year ago if we were going to meet that starting date. We just didn't have enough time to do all those things by the first of January, 1975.

So [. . .] what's the next thing? Then, if we can't do all those things, we can't make all those things for ourselves, can we get them from somebody else? Can we adapt what somebody else is doing and use that? They were very reluctant [. . .]. Every institution in the world likes to do its own thing rather than be dependent on somebody else. So after [we'd] listened to and heard objections to using other things, I said, "Now, what about the International Atomic Energy Agency? It has computer programs to run INIS. Those programs could be used to run AGRIS. It has a staff that is involved in training people on particular rules of bibliographic description <T: 20 min>. If our rules of bibliographic description are essentially the same [. . .] there [had] to be some differences, but essentially the same, as the INIS rules, then it could run on the INIS programs." Oh, there was a lot of [disappointment], but they had to face reality [. . .]

.]. Finally, [at] the last meeting in the morning before we all went off to the airport [. . .], that meeting, in a really grudging way, the Implementation Advisory Committee authorized me to contact Ed Brunenkant, who was now Director of [what had been] my division in Vienna, to find out whether he would be willing to consider [. . .] letting FAO approach him, to set up an agreement to run AGRIS, using the facilities in Vienna.

So I got on my plane [. . .] back to Ottawa. The next morning I went to my office and [booked a call to Vienna, where] it was already midafternoon [. . .]. I told Ed, "I was in Prague yesterday, and I was authorized to put this question to you." [I put the question to him]. There was dead silence at the other end of the line. I thought [for a moment], "Oh, gosh. We've been cut off." I waited. And then he said, "Yes, John, I will." Just like that. And he did. He was faithful to those few words [in] every respect. [. . .] He made it easy for FAO to use his computer programs and facilities. Helga Schmid was hired by FAO, [and] now she got [a] professional position because FAO's Austrian quota was not complete. Maria Natlacen transferred, as I [think I] mentioned before. And FAO began to set up the AGRIS processing unit, as it became, in Vienna.

[recording paused]

Now, I've told you on this tape about how John Woolston was involved with AGRIS at the FAO [. . .] but what I [must also] tell you is how IDRC became involved with AGRIS in many [. . .] different ways. [I'll] probably [be able to give you] only [. . .] some examples, rather than anything that's at all complete.

First [. . .] we [recognized] FAO's concern that if it agreed to accept worksheets as a form of input [to] AGRIS, it would need a vast team of keypunchers, not only keypunchers, but proofreaders, people who could communicate back [with] the national input centers on errors and on problems [in] dealing with their input. [Believing] that it was very [. . .] important to get the developing-country input [from] the [earliest] stage, we couldn't see how the first participants in developing countries could do it any other way [. . .]. There had to be a team, [. . .] somebody had to pay for it, [and IDRC would] pay for it [. . .] on an experimental basis and on a small scale. So we actually gave money to FAO to hire some keypunchers and proofreaders, and put them in Helga's team in Vienna <**T: 25 min**>. FAO [wrote adequate] rules [so the team was] able to cope with the amount of input that [. . .] was [received. This lasted for] a few years. [. . .]

But to avoid too many problems in such a team, we also believed [there ought to be] a strong emphasis on training. So we made it known that we would make two people available, based [wherever] FAO thought best, and [. . .] they [wanted] it [to] be in Rome, who would be available to go out, provide training, and to help people with problems. We called this the AGRIS Troubleshooters. [. . .] IDRC hired Donald Leatherdale, British, who had worked at one time [in] the [Commonwealth Agricultural Bureau [CAB, and] who had [also] worked in Canada with the Canadian Department of Agriculture [. . .]. [As] the other [Troubleshooter, we recruited] Olga Lendvay. Olga had emigrated from Czechoslovakia to Argentina. [She now spoke fluent Spanish and was working for the] Inter-American Institute [. . .] in [. . .]

Agricultural Sciences, [which had] its main station at Turrialba in Costa Rica. [It has] a [good] library, [. . .] and she had [been providing] information services out of that library. She had [also] written what was called a primer for agricultural libraries in developing countries, [how to manage collections and] how to manage [. . .] services to your users.<sup>23</sup> This [book] was highly respected. It had been reprinted many times [and] was translated into several different languages. So Olga was very [. . .] sensitive to the needs of developing countries. She had also, just before we hired her, [been] working at the National Agricultural Library in Washington on a project funded by Rockefeller [for] CIMMYT [International Maize and Wheat Improvement Center]. [It resulted in a] massive [ten-year bibliography on winter maize].<sup>24</sup>

[Anyway], she joined our staff, and in fact, finally settled in Canada, but [. . .] first it meant she went to Rome and, [like Leartherdale], she started [extensive travel] to developing countries.

**RAYWARD:** And so these people were actually on your staff?

**WOOLSTON:** They were on my staff, posted to Rome. [I've] left out an important thing that I should have stated before [. . .] because it was important [for] IDRC as well as FAO. After the Prague meeting, we rapidly [developed an IDRC plan of] implementation, but, you know, the people on the advisory panel and the people on the [Implementation Advisory Committee], all of us were largely from developed countries. [There were few representatives] from [. . .] developing countries, [but] I particularly remember [Miss Teresa Malagarni] who was from [Turrialba], essentially representing the Latin American region. She was head of the information unit where Olga had previously worked. [. . .] But to a very large extent, it was still true [that] the design of the system and its implementation [had been] done by people from developed countries. So [we at] IDRC said, "Look, [if] FAO would convene a meeting only [of people from] developing countries to review the design of AGRIS, to comment on it, and [offer] suggestions for making it more appropriate for developing countries <T: 30 min> then IDRC would finance that. [We] would pay their travel expenses [. . .] and other costs of that [meeting]." And in fact, [we] published the report of that meeting.

The meeting was held in Rome. It was really very exciting. There was an Indian chap who had previously worked at FAO, as chairman, but for many of those people, [it] was the first time that they were coming to an international organization where people would actually listen

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<sup>23</sup> Olga Lendvay, *Primer for Agricultural Librarians*. Wageningen, Pudoc, 1980 (note: *Primer for agricultural libraries* [by] Dorothy Parker [and others]. Preliminary ed.; Oxford: International Association of Agricultural Librarians & Documentalists, 1967.)

<sup>24</sup> International Maize and Wheat Improvement Center. *Bibliography of Corn*. 3 vols; Prepared by the staff of the Biological Sciences Communication Project, George Washington University, under the sponsorship of the International Maize and Wheat Improvement Center. Metuchen, N.J., Scarecrow Press, 1971. Also *Bibliography of wheat*. 3 vols; Metuchen, N.J., Scarecrow Press, 1971.

to what they were [going] to suggest. I can't remember how many days, but I think probably three days [. . .]; then we went into [. . .] writing of the report. And—

**RAYWARD:** [Were you at] the meeting [. . .] John?

**WOOLSTON:** Yes, but as an observer, and one who kept quiet. If I was asked a question, “Why did the Implementation Advisory Committee suggest this?,” then of course I had to be ready to stand up and answer the question, but beyond [answering] questions, I was an observer. The group nominated out of their number a sub-group, which would be a drafting committee for their report. [So] FAO assigned a particular room for them to use, where the sub-group, I think there were only three or four people on the sub-group, would write their report. [When] we finished the [plenary] session, the drafting committee went to this room. A number of us were hanging around outside, but Gerard Dubois, the Belgian [on FAO staff] went into the room. So they said, “Mr. Dubois, why are you here?” And he said, “I’m here because I will help you put [your] report in FAO language.” They said, “We don’t care if our report is in FAO language. We’re sorry. We’d like to be polite, Mr. Dubois, but we don’t need you here.” He was quite upset, because this was not FAO’s way of doing things. [. . .] I had to calm him down, and I said, “[Look], Gerard, IDRC is paying for this meeting, and I’m quite happy that they should write their own report.” Anyway, they did. It was a beautiful report. It’s all [on] about four pages. But [they’re saying], “What we want to see is all those five hundred services [. . .] that Buntrock identified should be replaced by one comprehensive system [. . .] in which we can [all] participate.” Then they made another series of recommendations about document availability, the use of different languages, etc., some of which FAO was able to implement, some of which it was not.

I’ll come back now to IDRC [in] the days before and immediately after [the first set of actions. I’ve recorded] how we helped [to] set up an input processing capability [and] how we [provided] the AGRIS [Troubleshooters] who [traveled to developing] countries and [advised their] input teams. We also helped to fund the first regional centers. [For example], the countries [of] Southeast Asia [had already established] SCRGA, the Southeast Center for Research and Graduate Studies in Agriculture [in] Los Banos, the Philippines, [and] they [wanted] it <T: 35 min> [to act for them in AGRIS.] Joe Drillon [. . .] was director of SCRGA, and I went to Los Banos and negotiated [an IDRC grant] with him [. . .]. Philippine salaries at that time were very low. [. . .] You could buy the time of [. . .] well-educated and very hard-working people for very little money. [They] set up [. . .] without using our funds, quite a powerful team and [. . .] SCRGA [contributed] a lot of high-quality input [to AGRIS].

In Latin America, we were able to give support to IAICA at its base [in] Turrialba, in Costa Rica. Eventually [it] moved to San Jose, Costa Rica. We were able to give them support, beef up their staff, [and] buy some equipment and supplies. [Initially, Latin American] input came from [this] regional center, [but as time passed] many of the countries started doing it on a national basis. [As] countries [started] doing [input] on a national basis, they [obtained] training at the regional center [. . .].

[We also] worked quite a lot with the Caribbean countries. The Spanish-speaking countries, like the Dominican Republic, were [quite] happy to work [through] Costa Rica. The English-speaking countries were not quite as comfortable with that, and we entertained a number of proposals [from the] English-speaking Caribbean, but the politics [. . .] there [can be] very complex, and after [many] years I find it hard to remember exactly how it finally got figured out, but I know that an institute on the campus [of] the University of the West Indies in Port-of-Spain, [Trinidad and Tobago], was doing [. . .] work related to AGRIS [on a regional basis].

[IDRC] also [supported] some national projects. The major one was in Egypt; there's a lot of agricultural literature published in Egypt. There's [also] quite a lot of agricultural research done in Egypt, [and we helped them to set up their AGRIS input]. They set it up. We provided some funds [and we furnished some] advice.

**RAYWARD:** They published in Arabic?

**WOOLSTON:** Almost everything does have an English language title and an English language abstract, but [. . .] the full text [may well be] in Arabic. Very often, Boyd, in this business, it's not so much the detailed content of [a journal article that is] important to somebody elsewhere in the world. It's the knowledge that [this author has] worked on <**T: 40 min**> [the topic] and [may merit] contacting. [We also supported] a number of [other] national programs.

One of the saddest things, in my opinion, [was] that my own country, Canada, developed a very ambiguous attitude towards AGRIS. The man in the Department of Agriculture who was responsible for [its] international relations, [. . .] was on the executive board of [the Commonwealth Agricultural Board]. After Sir Thomas Scrivener retired, I [had become] chairman also of the Panel. [So now] I [was] chairman of both [the Panel and the Implementation Advisory Committee] in the last year or [two] leading up to implementation.[. . .] Sir Thomas Scrivener's successor saw AGRIS very much as a threat [to CAB], and through his executive board, he was able to persuade many of the Commonwealth countries that they might be hurting CAB by participating in AGRIS. There was an on-and-off representation of Canadian literature in AGRIS. It was on for several years when NAL said, "Look, the United States [cannot afford to] miss out on Canadian literature and, if Canada doesn't report to AGRIS, we have to go on putting it into AGRICOLA [Agricultural Online Access]," which [was] the NAL's own service. So [. . .] the Canadian literature was being described and indexed by NAL in [. . .] Bethesda, and Canada agreed to let NAL download this material for AGRIS. So for a number of years, [. . .] Canadian literature was in AGRIS, but the input had not been prepared in Canada. It had been prepared in NAL. Well, that was sad.

**RAYWARD:** Well, the Americans agreed to participate by downloading the work that had been done for AGRICOLA.

**WOOLSTON:** [Yes. And], Boyd, now you've touched a very interesting subject, [because] I had told you that John Sherrod had said that he thought AGRIS Level One should be quick and dirty and wouldn't [have] anything more than shallow indexing. He was persuaded to accept that one should at least name the commodities that were [dealt with] in [any] particular document, [that was] being reported to AGRIS. So we had commodity indexing. We [also] had some geographic indexing. But as John's people used to say, "The people at the staff of NAL are not agricultural scientists, and therefore, they [felt that they could not] be asked to do any deeper indexing <T: 45 min>, and indeed, [that] if they [were] required [. . .] to do [any] deeper indexing, [well], they would make mistakes which would [cause] the system [to] come into ill repute. And anyway, no, no way NAL is not going to do this."

However, as we came up towards the implementation time, there did come about an agreement, very qualified on the part of the United States, that we should develop a multilingual [source] for agriculture. It eventually got the name AGROVOC [Agricultural Vocabulary].<sup>25</sup> [. . .] Following on the precedent from IAEA, [FAO] decided to farm out production of this to the European Community [based in Luxembourg which] had [said] that they would like to [act as a] regional center [in] AGRIS, and they were putting resources into a unit that would process national input, and merge it to forward to AGRIS.

And so the European Community volunteered to host the production of the AGROVOC, given of course that they had strong language capabilities. We needed English, French and Spanish—

[END OF AUDIO, WOOLSTON 1.9]

[On] the last tape I was explaining [about] how FAO and the European Community got together to develop AGROVOC, and to do this at the [Community's center in Luxembourg, where] they had the capabilities [to handle] English and French. [Although] FAO [did not] require German, [it] obviously had no objection [if the Community chose to do it]. At that time Spain was not part of the European Community, but Spanish was an official language of FAO.<sup>26</sup>

If I recall correctly, IDRC came in and helped to fund the Spanish language presence in [AGROVOC]. We also provided Donald Leatherdale, the man who [. . .] had [been] an AGRIS Troubleshooter, to work with the team in Luxembourg.

**RAYWARD:** Again, are these people part of IDRC staff, or [. . .] would you provide funds for [the] other people to hire them?

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<sup>25</sup> Donald Leatherdale, Roy Mack, and G. Eric Tidbur, *AGROVOC: a multilingual thesaurus of agricultural terminology*. Apimondia, by arrangement with the Commission of the European Communities, 1982.

<sup>26</sup> Spain joined the European Community in 1986.

**WOOLSTON:** In Don Leatherdale's case, he was still on my staff. In fact, now I try to think about the chronology, I'm not sure whether the Luxembourg stint on AGROVOC came before [his] stint as an AGRIS [Troubleshooter]. He was a very important participant in [both]. In one of his earlier incarnations at CAB, he had become very much involved in taxonomy. At that time, he was doing taxonomy of fungi [. . .]. [On] this [new job], he was doing taxonomy of concepts, taxonomy of language, and matching them. [. . .] From all [I've] heard, he was a remarkable asset to the group [at the European Community].

**RAYWARD:** Did he, by the way, have any contact with Todeschini in the thesaurus context, because that was such a strong aspect of Todeschini's work?

**WOOLSTON:** I'm sure they knew each other because [Leatherdale] was [. . .] going to [Vienna] to liaise with Helga [Schmid] about problems of AGRIS input [when] he was an AGRIS Troubleshooter, [and] he had to find out what the troubles really were [. . .].

Helga [also] went to Luxembourg from time to time as the AGROVOC was being developed, and in fact, she was there when Don had [. . .] I don't know whether it was a heart attack. Now, I can't remember for sure, but he was very sick and had to [be] in [. . .] hospital [for a period of time]. It was Helga who was reporting to me in Ottawa about [Donald's condition], and we [were] very [worried for a time]. So [. . .] there were [many] little links between those [groups], particularly given that FAO was doing its processing in Vienna, [and that] the key staff [on] the FAO team in Vienna had previously been [on] the INIS team.

[Whenever] I saw [Donald], in Ottawa, [in Luxembourg, or] in [. . .] Rome, I said, "Don, keep it simple." I've forgotten how many terms the initial proposal had laid down, but the <T: 05 min> initial proposal for setting up AGROVOC had set [a limit to the number of] terms. It might have been four thousand. There's a little thing in the back of my head that says four thousand, but I'm not sure whether [it's] right. [Donald] and his colleagues [. . .] would have loved to have gone beyond this, and felt that everything would be so much easier, more precise, if [they'd] go beyond [what] they saw [. . .] as a constraint. And [I] was [. . .] saying, "Don, yes, I know. I don't disagree with you, but you've heard what the people at NAL say: "Unless AGROVOC is quite shallow, we won't do it." [. . .]. If we don't have NAL the whole thing is in danger of collapsing."

AGROVOC was produced. At the same time, and unbeknownst to us, CAB was working on a thesaurus. Now theirs was unilingual, [only] English, but theirs was very deep, many more terms than AGROVOC had [been given]. There was a CAB man actually in the team in Luxembourg. He didn't tell us [that] the people back home were working on a thesaurus. [However], through him, there was probably some input from the CAB [work into] the AGROVOC work. CAB came out with its thesaurus more or less at the same time as FAO and the European Community came out with AGROVOC.

And then there was a new director of NAL. The new director of NAL says, “AGROVOC [is] too shallow, we’re going to use the CAB thesaurus,” [laughter] and then poor Helga had to develop programs that would translate indexing from the CAB thesaurus to the nearest matching term in AGROVOC so that [we would] get [ . . . ] multilingual capacity, and you were throwing away information. Oh, it was so silly.

I said, when I was talking about INIS, [ . . . ] the politics were the politics of the Cold War. That was barely present at FAO because the Soviet Union was not a member of FAO. However, the Soviet Union said, “Even though we’re not a member of FAO, we’d like to be a member of AGRIS,” so they were invited to sit in on many of the meetings. They had a big problem [ . . . ]. When I was working with them [for] INIS. I had many, many contacts with Russians who were bilingual, but when I was working at FAO with AGRIS, [I] had contacts with Russians, quite senior Russian people from their agricultural ministry and [its] establishments, but we almost always had to work through an interpreter, because [their] agricultural sector did not have an English-language capability [in] the same way that the atomic energy sector had had. [ . . . ] Agriculture is [ . . . ] location-specific. Nuclear science—[if] something [ . . . ] is true, it’s true in Russia, and it’s true [ . . . ] everywhere else in the world. But in agriculture, what works on the steppes of Russia may or may not work on the prairies of the United States. [The Russians] hadn’t had the obligation to learn English in the same way [their] nuclear people had, but they were really interested, they did participate, and they provided input from very near the beginning.

[And we did have] politics. We [did] not have Cold War politics, [but it was inter-institutional] politics. <T: 10 min> [It] sometimes [ . . . ] got quite fiery. The French helped finance another study of Level Two, and [ . . . ] a very fine gentleman [ . . . ] Maurice Catherinet [ . . . ] was loaned by France to FAO to work on this study, along with some other people [ . . . ]. He elaborated a scheme [for] cooperation between the existing abstracting services and FAO, but that scheme [would have required] FAO getting out of certain areas [ . . . ]. [The] report came to the Panel when I was chairman, and I had [to enter into] a [ . . . ] debate with Maurice [ . . . ] while the members of the [Panel] listened [ . . . ]. [Then] we didn’t exactly vote, but came to [a] consensus [and] Maurice’s ideas [were] put on the back burner. Well, he was so unhappy [ . . . ]. He’s such a fine gentleman. I enjoyed his company so much, and I just hated to see him so disappointed, but [you] can’t fudge it. You can’t have something both ways. [I had] to choose one way or the other [ . . . ].

[recording paused]

You asked about how I had interacted [ . . . ] with ICSU-AB [International Council of Scientific Unions-Abstracting Board]. There was also an American organization, a federation of abstracting and indexing services—

**RAYWARD:** [Yes]. NFAIS [National Federation of Abstracting and Indexing Services].

**WOOLSTON:** [Yes], at the national level there, but then [. . .] the United States is so big, [it] was important too. ICSU-AB [. . .] was essentially composed of those abstracting and indexing services that [had] stood the test of time, and [almost] by definition [. . .] they were discipline-oriented [. . .], including the big guys like *Bulletin signalétique* and *Referativnyi Zhurnal*. [These] represented the strongest voices in [ICSU-AB]. I was invited to go and tell them what I was doing, because [these] organizations feared that we were treading [on] their territories. Since many of those were supported from public funds, they feared that [. . .] if [mission-based systems] like INIS and AGRIS succeeded and spread to other fields of economic activity [. . .] they might see the available funds [diverted to] international [. . .] organizations to [. . .] the detriment of the [. . .] discipline-oriented systems that were managed by [. . .] non-government organizations like the American Chemical Society [ACS]. <T: 15 min>

[. . .] There was an underlying tension there. I do not recall any sharp conflicts. [Any] discussion of these issues [usually ended] with, “Well, we’re going to have to wait and see how it goes, whether it does become a problem.”[. . .] We [now] have to admit [. . .] that the formula that we were working on in the [1960s] and [1970s, essentially] the [intergovernmental], mission-oriented systems, [has] halted. INIS is still functioning in a way that’s satisfactory to its participants. AGRIS has fallen on quite hard times. The original team [. . .] finally retired [. . .]; new people [came in. Very often new people] feel that things that were designed twenty years ago can’t be any good anymore because everything’s moved on, [you see]. The input to AGRIS was increasing, with a few little dips now and then, but it was increasing very steeply in the early 1990s. It [went up year by year, a] hundred and twenty thousand, one hundred and forty thousand, one hundred and fifty thousand [. . .], and then [came an overturn among senior staff at FAO, and] the [new] crew [believed they needed to make their own marks and] started chopping. [They began by bringing] the AGRIS processing unit [. . .] to Rome. [They] also [got out a] message [there] was a new concept called WAICENT, World Agricultural Information Centre, which [. . .] was to be a source of information from and about FAO.

[recording paused]

[Oh, I should have spoken long ago about a dear friend, Emile Samaha, a Lebanese, who had been managing information and AGRIS for FAO. When he retired, he was replaced by Anton] Mangstl, who is now the big chief of information in FAO, [came into] the job [with] some other new people who came in at the same time [and] proposed this WAICENT. The documents they produced made AGRIS a [. . .] sub-sub item under WAICENT. I made one protest, and [. . .] said, “For heaven’s sake, the world is not part of FAO; FAO is part of the world. [And look], as far as I’m concerned, AGRIS is the best example you can show me of FAO working with its member states. It’s not an FAO operation. It’s the member states who are producing [the input] and distributing the output. You’re just in the middle processing that stuff and providing a set of common services, but the real work is being done in your member countries. You [could] enjoy enormous benefits from this. You [could] show the other United Nations agencies how to work with your member states. And you go and put it at the bottom of the list, and put things that are done by the Secretariat at the top. This doesn’t make sense, man.” [. . .]

**RAYWARD:** Did you actually talk to Mangstl directly?

**WOOLSTON:** To Mangstl directly, no. But I did write comments that he must have seen.

**RAYWARD:** I was [interested] if there was a response to [this].

**WOOLSTON:** No, they just [plowed] ahead. [. . .] They weren't only hearing it from me. [They] were [hearing it from others]. Helga Schmid left in despair. <T: 20 min>

**RAYWARD:** Yes, she was very upset over the way it had gone.

**WOOLSTON:** Nowadays, [of course], there's much [. . .] more emphasis on private-sector initiatives. Anybody [can] set up a website and offer agricultural or any other type of information over the web, either for free or for payment. We're back to a situation [which] is probably [much worse than it was when] Buntrock [did his survey. If he] were alive today and [made a new] survey, instead of five hundred services, he'd probably find five thousand [with] a lot of [overlapping] and a lot of gaps [. . .]. When private-sector initiatives come in [. . .] they cream off the stuff that's going to be [more] saleable, and [much of] the less saleable material [might] not [be] there at all, and yet there may be [niches of] small groups of users, for whom [the contents are very] important. So there's none of that comprehensiveness that the developing-country people appealed for in [their choice of] AGRIS. [Yes], the top [figure] was over one hundred and fifty thousand records per year before it dropped.

**RAYWARD:** [Was it] the US [that continued] to be the major supplier of entries?

**WOOLSTON:** [Yes], dear old NAL has been very faithful.

**RAYWARD:** What about the British, [. . .] given the location of [. . .] CAB?

**WOOLSTON:** The U.K. government initially [. . .] nominated CAB to provide the input for the U.K., as did several other [Commonwealth] countries [. . .]. CAB stripped off its abstracts, [. . .] massaged the records, and sent them to the European Community, which then passed them [. . .] to AGRIS. They covered the major journals, but then that's what CAB does [. . .]. [It pays little attention to] the non-conventional literature, [technical reports], and [. . .] minor journals, [. . .] especially from [the] countries other than the UK. CAB did it for Canadian input too for a while. [Some time later, the U.K.] Ministry of Agriculture, [. . .] Fisheries, and Food [took over

the responsibility for U.K.'s AGRIS input. The Ministry has] changed its name [under] Tony Blair [. . .] [to] the Ministry of BSE [Bovine Spongiform Encephalopathy] of Foot and Mouth [Disease].<sup>27</sup>

[. . .] It would be so easy if we went back to the office to hit the buttons on the computer and see how much input has come each year from any country you'd care to name. I [have] done that from time to time, but not recently, I guess because I don't want to get mad [. . .]. [laughter]

Yes, I [have just] mentioned [the] name that I should have mentioned before. Emile Samaha was [. . .] at one time head of the National Documentation Center in Beirut, [Lebanon], [but] when the [. . .] civil war in Lebanon became so fierce, he got out of the country. I'm not sure [. . .] whether this was before or after [Raymond] Aubrac retired, but [Emile] contacted Aubrac, [who then phoned me saying] "Look, here's a man who speaks fluent English, French, and Arabic. Here's a man who has lots of experience in documentation [in] what is essentially still a developing country, [. . .] <T: 25 min> and I'd like to nominate him [as] somebody [. . .] IDRC [could] employ and use."

Oh, [I'd like] to tell you one other Aubrac story, because when Aubrac retired from FAO, he spent one year [with] the United Nations in New York, and [. . .] I wish I could tell you the story, but we don't have time. He agreed to be the European representative of IDRC [. . .] based in Paris [. . .]. He held that position [on] a part-time basis for ten years. It was wonderful. Canada's relations with France [were] always a little bit difficult because of the Québec situation, [but] we never had any problems once Aubrac was in that job. [When IDRC's] President went to France, Aubrac had paved the way. He saw all the top people, and [everybody and] everything went smoothly, nearly every time.

Okay, [we hired Samaha. It happened at a time when] the United Nations was [planning] a huge conference on science and technology [in] development in Vienna, using the facilities of the IAEA and [United Nations Industrial Development Organisation]. IDRC had promised to assist with the organization of this conference, [and we loaned Samaha for a year at the United Nations in New York].

**RAYWARD:** So that work is coming through your division—the assistance that IDRC is to provide [to] the conference.

**WOOLSTON:** I'm not 100 percent sure about that first year, [whether Samaha] was actually [on] my budget or [that of IDRC's President, but he was] identified with me [very] much of the time. In [the] team that was setting up the conference, he was the person who was looking after

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<sup>27</sup> In 2001 the United Kingdom's Ministry of Agriculture, Fisheries, and Food became part of the current Department for Environment, Food, and Rural Affairs.

the [component of] information, information systems and access to information, so it probably was out of my budget, yes.

He [then] spent some time as an AGRIS Troubleshooter, probably replacing Leatherdale, but then [. . .] FAO hired him [as Director of the Division]. There [was] some difficulty about this because [Edouard] Saouma, who was also a Maronite Lebanese, was [FAO's Director General], and Saouma didn't want it to be thought that he was just hiring his own compatriots and coreligionists. [. . .] In some ways it was a constraint on Emile because other directors could go to the Director General with their problems, but he didn't want to be seen to be going to the Director General and using the fact that they had this common culture as undue privilege. But, [well], he <T: 30 min> coped [very] well. [. . .] He and I shared very [. . .] similar views about the objectives of AGRIS and the program that should be followed, and of course Mangstl came in only [after] Emile reached retirement age [and left FAO].

After the start-up of AGRIS [. . .] the FAO people asked me what [they] should [. . .] do about the Panel and the Implementation Advisory Committee, the two bodies of which [I'd] been chairman in the last year or two. I said, "It's time for a change. Now you have real participants in the system, and instead of depending on a few [. . .] "experts," your consultations should be with the people [that] are actually doing the work." They said, "Well, how can you have one hundred and twenty, or whatever was the number of the members of FAO representatives sitting in a committee? First of all, it costs an enormous amount of money just to convene it." I said that I [felt] that there were ways around this. [For example, you] could encourage the setting up of regional consultations. [Let's say] this year [we] have a consultation of all the people in Latin America who are participating in AGRIS. Some FAO staff go to Latin America, and the meeting is held there [. . .]. Then they elect one of their number to sit on a [. . .] small committee that meets more frequently in Rome. [The regional] body meets [perhaps] every [three or four] years [. . .]. The person who is going to represent them in Rome [would need some] travel money [to] go around Latin America and keep in touch with [. . .] colleagues in that area [. . .]. Do that for other regions of the world, and then you can have a small committee [to meet] in Rome.

They didn't find that feasible, but they did abolish the panels, and so they went the whole way and started having annual, or biennial [. . .] AGRIS consultations in Rome. I said, "[Well, you know, you] made the decision. [We] will support [. . .] what [you] decided to do." I started calling it the "AGRIS Parliament," and [. . .] every time [. . .] one of these consultations [was] coming up, IDRC [would], in consultation with FAO, [give] tickets and travel expenses to ten or twelve people [from] developing countries to attend the meeting, people who [. . .] otherwise [would not] be able [. . .] to attend.

I didn't like the format [. . .]. Abe Lebowitz also ended up [. . .] in the FAO team. [. . .] A big tragedy hit Abe when he was with NAL. His daughter was raped and murdered in Washington [. . .]. He and his family decided [. . .] they [could not] stay there and they [migrated] to Israel. I met him there a couple times [. . .]. He also consulted for IDRC for a year, but then [. . .] <T: 35 min> he got a job with FAO [. . .], [so we had a team with] an Israeli-

American [. . .] Jew as the right-hand man of a Lebanese Maronite. Sorry, Boyd. I got a little bit lost there.

[recording paused]

Sorry about that little wandering away. I keep making digressions, don't I? But I was saying I wasn't [. . .] happy with the format of the AGRIS consultations, [what we] sometimes called the "AGRIS Parliament," because you had a huge number of people in a huge hall, and at one end of the hall you had a dais [. . .]. On the dais you had the Chairman, who was [. . .] somebody from a developing country who'd been hand-picked by the Secretariat [and] voted in by the membership because they had no other [option. They] did this as soon as [they] arrived [. . .], many of the people [. . .] had never been to Rome before, and they didn't know what the hell was going on [. . .] so they did what they were asked to do, and they elected this individual to be Chairman [. . .].

Then Emile sat on one side of [the Chairman] and Abe [. . .] sat on the other side, [. . .] and [they] whispered in his ears [. . .]. They were [. . .] a couple of meters above the level of [. . .] everybody else, and so you had a strong feeling that the Secretariat was dominating the meeting. [. . .] Many of the people in the room had no experience [of] international gatherings. They were so shy. They didn't dare stand up and make their comments. And I often complained about this to both Emile and Abe, and said, "You know, you really should try to find a different system." To be fair, [. . .] there were more discussions than those that took place in the big hall. [Usually] the people who came [. . .] arrived a few days early or stayed [. . .] a few days after, and they'd [be] meeting, not necessarily that much with Emile and Abe, but with Helga and the other staff [. . .] who were responsible for processing the [input] they [send] in, and helping set up [. . .] necessary training or visits, or whatever. [. . .] I'm not suggesting it was a total loss, but [it] made the Secretariat more powerful than I thought it should [have been] *vis-a-vis* the participants.

So, the panels were gone. From then on I was not going to Rome on a regular basis, but over a period of time, I was invited back as a consultant to review the progress of AGRIS, [to indicate] where I thought [. . .] there were [new] opportunities for going further ahead, and [to take] advantage of new technology. I wrote a series of reports, probably three or four in all, after rather long periods of time in Rome [. . .]. The last one was subsequent to my retirement from ICARDA [International Center for Agricultural Research in the Dry Areas], therefore probably 1990, [when] I was three months in Rome [. . .] the longest time I was ever there on one visit.<sup>28</sup> I particularly remember being invited to speak <T: 40 min> at the [AGRIS Tenth Anniversary Symposium], which was in 1984.<sup>29</sup> I was still at IDRC [at the time], but by 1984 a terrible thing had happened to me at IDRC, [which I must] tell you later. Raymond Aubrac, who had retired from FAO [. . .] ten years before [. . .] was invited to chair the Tenth Anniversary Symposium.

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<sup>28</sup> J.E. Woolston, "Workshops on agricultural research management. A module on information services." *Working Paper Series-FAO Research Development Centre (FAO)* (1990).

<sup>29</sup> J. E. Woolston, "New technologies and the future development of AGRIS." In *AGRIS Tenth Anniversary Seminar. 1 Jun 1984. Rome (Italy)*. 1984.

[One of the speakers was a Brazilian, Ivano Marchesi, who had replaced Ed Brunenkant in Vienna and whose presence witnessed the] cooperation between INIS and AGRIS [. . .]. The last speaker was me [. . .]. I still remember Raymond introducing me to the [meeting], and saying, “Watch out. This man is dangerous.” [laughter]

I [. . .] tackled quite a few things, including the language problem. This was when there was a printed output from AGRIS AGRINDEX as in “index,” but it was getting enormous, and by 1984 we realized that there must be better ways [by] using [computers] to present the information to the user, [yet we] also [. . .] knew that many of our participants didn’t have the [computer] capacities for handling an output that was only in machine form, so there were a lot of agonies about what to do with the printed output.[This led to my] consultancies and, [especially as long as] Emile was there, we were corresponding. Where are we? It’s five o’clock, for heaven’s sake. Of course, the other thing that occupied me in parallel with AGRIS, or overlapping with AGRIS, was the proposal for a Development Sciences Information System, DEVSIS, and [where’s] a big story [. . .] to tell [later]. IDRC [had become] aware very early on that there [were] a lot of documents being produced about development, the needs for development, [the] situations in developing countries, the prescriptions for improving conditions there, [and the] projects [there] that were [. . .] proposed, carried out, [and] evaluated [. . .]. I began to feel that, just as we had defined a [. . .] <T: 45 min> mission-oriented [information] system for the promotion of the peaceful uses of atomic energy [and another for] promoting agriculture, we [could] have an information system [for the] diverse community, whose mission was social and economic development in the developing countries [. . .]. This community would consist of [organizations like Ministries of Planning in] developing [countries as well as] institutions in donor countries, institutions like the USAID [Agency for International Development] and the Canadian CIDA [and the various United Nations agencies], the aid givers. It would involve [many] academic [and charitable organizations]. There are [. . .] think tanks in developing countries that are concerned [about] their national economic and social development [. . .]. [All of these are] publishing papers and writing reports, [. . .] and they [are interested in each other’s policies and activities. They] could be [well] served by a cooperative mission-oriented international information system. I would say [1973], 1974—

[END OF AUDIO, WOOLSTON 1.10]

**WOOLSTON:** [. . .] I had started talking about DEVSIS, but you reminded me during our break that I had mentioned that changes had been occurring in my own situation with IDRC, and I [. . .] said I would explain what they were, and I [haven’t] as yet done so. So here goes. And I’ll come back to DEVSIS in a moment.

The staff of IDRC was growing, and [. . .] I don’t think [I] mentioned before that we had people [who] belonged to the information science program in several if not all of [the] regional offices that were set up around the world. [These people sought out institutes who] were [capable of doing bigger things and which IDRC could make possible by providing funds. We were the first into] Singapore, and we continued to be represented there after Lang Wong had [retired]. Shahid Akhtar [. . .] a Pakistani-Canadian [came next], and he hired a Singaporean Chinese [Maria] Ng Lee Hoon, a charming lady and a very [. . .] hard worker [who] I believe is

still there [ . . . ]. She established contact with many [ . . . ] people who were [needing help for] doing information [work in Southeast Asia and], once China opened up, she was [ . . . ] able to go [there] too.

In Latin America, [our regional office was in Bogotá and a] very early appointment was a [Bolivian], Luis Romero Beltran [ . . . ], who had done [much] good work [ . . . ] enabling the indigenous peoples of Bolivia to [develop communities], for example [by] setting up radio stations that enabled them to communicate within valleys and [across] one valley to the next. Luis eventually left IDRC and became a UNESCO representative in Latin America based in Quito, Ecuador. His professional field was communications. I won't try and name everybody [who came] in and out of [the regional] office. I just wanted to make the point that we did have presence in developing countries, as well as [the team in Ottawa].

In Ottawa, the team grew. We had difficulty recruiting a librarian [in the beginning], for much the same reason as I had had difficulty recruiting a librarian in Vienna, because [in 1970-1971] there were [ . . . ] lots of jobs available for librarians and, funnily enough, I ended up for the third time in my life recruiting Arthur Vespry, who was finishing his stint in Vienna, and he came and became the first librarian of IDRC [ . . . ]. [He persuaded] us that we should also employ his wife, Marian Vespry, and I'm very glad we did because she set up the whole cataloging system we had in the beginning and [she] implemented from the librarian's point of view, the ISIS [Integrated Scientific Information System], [the software we had acquired from the International Labour Office in Geneva]. We talked about [this] over meals, but not on this tape. [ . . . ] We'll have to find out whether we have time for that [later on]. That, too, is a very interesting story.

<T: 05 min> Arthur also persuaded us that he should get into regional activities, and I should have mentioned, when I was talking about the Singapore office, that [ . . . ] Arthur was there between Lang Wong and Shahid Akhtar. He then became librarian at the Asian Institute of Technology in Bangkok, [Thailand], and retired about five years ago. I still communicate with him [and his wife] from time to time [ . . . ]. [They are now] living in Hamilton, Ontario [ . . . ].

We were [ . . . ] recruiting what we [called] Program Officers. These [would] travel [extensively in developing countries where they visited research institutes. They would ask], "Are there things you want to do that you are not able to do because of lack of resources? If so, [please] talk to me about them [ . . . ]." [If that was convincing and likely to be of benefit], they would invite the person to write up a proposal and [bring it] back to Ottawa [ . . . ]. [The Program Officer would add an evaluation and take it] through a process of consideration, which [began with] the Director of the Division and, depending on the size of the project, [it would be approved either by] the President, [or if it was] a big project, [by] the Board of Governors.

[Now that I'm in Mexico] at the CIMMYT [I see IDRC's Program Officers in a different light. When David Hopper defined the IDRC's mission, he said we are only responsive, we do not suggest. However, the Program Officers now want to incorporate] their own [ideas] and [be able to] say, "[Me], I negotiated this with CIMMYT" and get recognition [ . . . ] for what they have done. CIMMYT, of course, likes to get [new] money and so [it negotiates] with a Program

Officer [ . . . ]. [This means it has] an agreement that affects one [particular] component in CIMMYT's total program, and that agreement requires [ . . . ] separate accounting [and] separate reporting. This contrasts [ . . . ] with [ . . . ] the situation [ . . . ] when CIMMYT started [and it was receiving generous] grants from [ . . . ] organizations like Ford and Rockefeller. [It] then [had] a coherent [ . . . ] total program [ . . . ]. I'm not here to criticize the people who [allowed] me to stay here, but I do wish [ . . . ] they had a [higher] degree of resistance to [the] fragmentation of [their] program.

**RAYWARD:** [ . . . ] Come back to the Program Officers in IDRC.

**WOOLSTON:** Yes, you're quite right. [You] have to stop me in my digressions. We were adding new Program Officers, losing some, of course [ . . . ]. [I can] only talk about [the] more senior ones [in] the time and tape that we have [ . . . ] here. I think I mentioned earlier on that [Michael] Brandreth, one of the first people I had recruited and who was working primarily on those information activities that involved scientific [things], the hard sciences, had become [at one stage the Deputy Director of] my [Division]. I never believed that a person should be Deputy Director forever, [or even] for a very long time, because the functions of the Deputy Director involved a lot of administration, bureaucratic stuff.

[As a Program Officer], Mike [had done] excellent [work, but he seemed to want to continue as Deputy Director. It later transpired that he was suffering from cancer]; unfortunately, [I have to say] he died [ . . . ] a [little while ago. Mike was a] conscientious Program Office, very sensitive to the needs of the people that he was communicating with <T: 10 min> [ . . . ].

[About the same time] Mike became Deputy Director. IDRC had [recruited] a lady [ . . . ] Martha Stone [ . . . ]. I don't really know [ . . . ] the circumstances [of] her coming to Canada. She's [an] American who came to Canada, [and], through marriage I believe, she had many connections in the Caribbean [ . . . ]. She had been remarkably successful in library work in Canada, positions of importance in the Canadian Library Association and [in] the Canadian Association for Information Science. [ . . . ] She came and talked to us one day. [Martha is] a very articulate person, very good at telling a story, explaining what she had in mind. So we offered her a job at a fairly senior level, essentially to complement Mike in what you might call the softer sciences, the information [related to] social and economic issues, and [ . . . ] in relation to libraries.

[ . . . ] We were already into the DEVSIS program when she came. She got active in [project] development work, and also for a time, she [managed] the IDRC library, while we were waiting for the recruitment of another librarian. [The IDRC] library reported to her once she came in, instead of directly to me, so she was the person who selected successive librarians after the [retirement of the] second one. I'd like to mention the second one. His name was Jean de Chantal. He was a French Canadian and he had [ . . . ] worked [for] the National Research Council in CISTI and its predecessor [ . . . ] the National Science Library, but he was [ . . . ]

borrowed quite often by CIDA to [. . .] manage [library projects] in developing countries [. . .]. In fact, [the] one and only trip in my life to Mauritius was to interview Jean de Chantal for [our] job [. . .], at that time [. . .] Acting University Librarian, while CIDA was getting the Mauritian who would be the [eventual incumbent trained in a] library school in Canada. [. . .] Jack Brown, [the CISTI director], strongly recommended Jean to replace Arthur when Arthur went off to Singapore. But then Jean wasn't that far from retirement [and], when he retired, we had to have another one, and then we had to have another one [after that], and Martha was looking after all those developments.

I came to the conclusion, after Mike had been in the Deputy Director position for a while, [two] years or [perhaps] more, that it was time for a change and that Martha should have a spell as Deputy Director, and that Mike could then resume the work that, in my opinion, was most valuable [to] the program, [which] was acting as a leader of the Program Officers responsible for the projects in the area of information for the harder sciences.

Mike took this, unfortunately, as a demotion, <T: 15 min> which was very sad because I certainly didn't see it as such. We talked about it a lot. I think he also foresaw, and [this] is what actually happened, that Martha would probably succeed me rather than [himself]. He decided [. . .] he should go somewhere else. He eventually got a job in the management team [in] CISTI [. . .]. [Not long later, when Jack Brown retired, I was offered the job as Director of CISTI], but [I declined. Mike] became one of [the new Director's] right-hand men [at CISTI]. Mike and I—

**RAYWARD:** Now, I'm going to stop you there. I want you to move on. Mike [has] gone. [You've], I think [. . .] given a good sense [of] your appreciation of him. Martha is in the job and [you're] about to be promoted and I want you now to come to this organizational change and for us to come back to DEVSIS.

**WOOLSTON:** You're absolutely right. My digressions become more and more off the track.

**RAYWARD:** Well, I'm worried about the tape.

**WOOLSTON:** [I'm] worried about [running out of tape. You're quite right.] Yes [. . .]. David Hopper, [IDRC's first President left after a couple of years] to become Vice President [of] the World Bank [. . .]. He [was] succeeded by [. . .] Ivan Head, who was a lawyer by profession, [plus] an expert in international law. He had been in the office of the Prime Minister, Pierre Trudeau, and when [. . .] Trudeau was coming to [. . .] what he believed to be the end of his term, [in fact], he had a surprise re-election and carried on well into the 1980s, he was anxious to ensure that the people who had been helping him were not out in the wilderness. So Ivan [had been encouraged] to put his name in as a candidate when David Hopper left, and [he was the] person chosen by the [IDRC] Governors and endorsed by the Government as the new President

of IDRC. Ivan had not had experience [of] managing a lot of staff, and he was very tentative in the beginning in his dealings with us, [the people who had been there from the beginning]. He had a lot of strengths, but he held them in reserve for the first years he was there [. . .]. He concentrated very much on IDRC's relations with the rest of the [trade and] public sector, and making sure that our connections with the U.N. bodies were proper in the legal sense. To be called the International Development Research Centre when [it's] a Canadian organization [. . .] seems a bit of an anomaly, [and] Ivan did a lot of things to put that in proper focus, so that people knew that we didn't have pretensions to be what we were not, but to assert the value of what we were. I came to respect him a lot. But I was not happy [a decade later] when he decided that he needed a team of vice presidents, and that one, two, three, four of us who had been in long service as Directors were to be made vice presidents, <T: 20 min> and that we would be replaced in our jobs. I protested quite strongly and publicly that I didn't want this job. I even got to the point of saying to Ivan [. . .], "Well, if you must have a vice president from the information sector, why don't you have Martha as your vice president. I mean, she would be a great symbol for racial equity and gender equity." I was making all sorts of wild suggestions to try [to] change his mind. Finally he took me home one night and gave me too many beers, and I said I'd do it.

So I was made Vice President, Martha was made Director, and in my [. . .] case, as in all the others, we were told, "Okay, now you're Vice President. You're not really involved [in] the program. You can't interfere with [the people who have replaced you]. You're here to do policy." Well, I found this all rather sick. We were given big fancy offices. [. . .] There had been vice presidents in IDRC before. [David had been chastised by the Board of Governors for not having a Francophone in the senior staff, so he recruited an academic from Québec with this title. Eventually, he set up an office in Paris and helped IDRC staff to find projects in Francophone developing countries. Some years later, Ivan Head began inviting] two, three [senior scientists] in succession [from] developing [countries and giving them the title of vice president for a term during which they would give advice to staff and the Board of Governors on what we were doing and should be doing].

I remember coming back from one of my tough meetings with [Ivan], and my [very competent bilingual] secretary, [Francine], saying, "Aren't you going to tell me what's going on?" and I said, "He wants me to be a vice president."

"Oh," she said. She had [previously] been secretary to a vice president before coming to me. [She said,] "I don't like that. Vice presidents in IDRC don't have much to do. They don't last very long." And how right she was. [laughter]

And so I made it known before the end of 1984 that I would take early retirement, but [then] of course I wasn't ready to stop work, [and] Ivan [. . .] was very generous after [I'd] made that [very] clear. He introduced me to a number of organizations that were [being set] up and where I would be welcomed. I spent [. . .] time discussing with [the president of the] organization [on the Law of the Sea] that Canada had promised [to set up at an international] conference. [He wanted to develop a relevant] information [service in cooperation with the] FAO Fisheries Department [and with] ASFIS [Aquatic Sciences and Fisheries Information

Service]. I went even further with another organization that [would] be in a beautiful location [on] Vancouver [harbor]. [It is] called the Asia Pacific Foundation [of Canada] and [its president promised me] I [could] be vice president. But in the middle of all this <T: 25 min> [the International Association of Agricultural Information Specialists was having] a meeting [at the Chateau Laurier just a few steps from the IDRC in Ottawa].

[I knew] many of [the participants. The World Bank sponsored fifteen, sixteen specialized research centers in three continents through a Consultative Group for International Agricultural Research, CGIAR, and we had funded support for] many of [their SIACs], specialized information analysis centers. So I went out to lunch with [several] of them and they [were saying], “I wonder who’s going to replace Larry Chambers?”

Well, Larry Chambers [was the information manager I had] met [. . .] earlier in the year [when I visited the International Center for Agricultural Research in the Dry Areas, ICARDA near Aleppo in Syria. I had gone to Syria on behalf of Ivan Head] to sign an agreement of cooperation between IDRC and the government of Syria, [the job of a Vice President]. We did that in Damascus. I was accompanied by [IDRC’s] regional director, who was an Egyptian from Cairo, [Egypt], and he had suggested that, before leaving, we should take a trip [. . .] to Aleppo, [Syria], [and] see ICARDA. In fact, we did [it] over a weekend, kind people came to meet us, and the Director General put on a little reception. One of the program leaders took us around the fields. I met Larry Chambers, [who] seemed very happy in his job [in ICARDA. So] I was very surprised to find [just] a few months later [that] he was out of the job [and they were looking for a replacement].

Anyway, this [lunch in Ottawa] was [on] Wednesday or Thursday [. . .]. I had an airplane booked [on] Friday, lunch time, to go and spend a long weekend with my son, and I decided I [wasn’t going] to spoil my weekend by agonizing over this. I sent a telex to the Director [General] at ICARDA and asked him if he’d like me to be a candidate for the job. When I came back after the weekend there was a message back from Muhammed Nour saying, “We’d be very happy if you would be a candidate. Of course, we have a selection process to complete, but I’m sure [you’ll] be a very strong candidate. The selection committee meets on such-and-such a date and I’ll let you know soon afterwards what we decide.”

**RAYWARD:** [Now], why was this more interesting [to] you than the vice presidency?

**WOOLSTON:** Because I could do something. Because [I’d] be involved [. . .]. [I’d be] actually doing things instead of quibbling about policies. It’s the things that work that give you the direction to go.

So I had to give profuse apologies to the President of the Asian Pacific Foundation and he was very gentle and let me off lightly. And I [went to] ICARDA [for three years, 1987 to 1990].

**RAYWARD:** Now, I want to take you back to the DEVSIS discussion. We've [carried through] to this very important point where you're in fact beginning a new career once again, John, but we had begun to discuss the issues surrounding information [for] development.

**WOOLSTON:** [Yes] [. . .]. I had said before we went back to talk about the staffing in IDRC [that] I saw this [need] and was able to convince quite a few people that social and economic development was [a] subject for a mission-oriented program. [. . .] I wrote a brief paper <**T: 30 min**> [just outlining] why I thought this was a good thing. We convened a meeting in [1974 at the Chateau Laurier in] Ottawa [and invited] representation from quite a large spectrum of organizations. Our Chairman was Raymond Aubrac, who by this time had moved from Rome to [the United Nations in New York to] spend one last year before he retired . . . at that time, the retirement age [in the U.N. was sixty. The Under-Secretary-General of] the Department of Economic and Social Affairs [was a Frenchman and] an old buddy of Raymond [. . .]. [Also he] wanted out of FAO because [its] Director General was retiring, and [there] was [going to be] a [horrible], spiteful battle over who was going to be [the next Director General, and] Raymond [did not] want to be in the middle of it.

[. . .] We had [representatives] from a wide range of organizations and many of them from a high level from the United Nations Development Program, [the Organisation for Economic, Co-operative Development] OECD [in Paris, the International Labour Office], the academic community, and some people [from] developing countries, and they were eager [. . .]. They said, "If IDRC can take the lead [in] this, [boy], we're with you [. . .]." When I first joined [IDRC, David Hopper had told me that I already had two young women on my staff and they were posted at OECD. They had been hired by the Canadian International Development Agency, and they had been helping OECD in preparing a modest bibliographic service on development issues to help IDRC when it would be established by the Canadian Parliament in 1970. My first travel after my appointment was to Paris to make contact with OECD and to meet the only members of my staff other than the secretary in the Ottawa office.]

[The Ottawa] meeting [concluded], "What we should do is, in consultation with all the interested bodies, set up a steering committee and [to have] a DEVSIS study team, on the model of Harry East and his AGRIS study team, to define the nuts and bolts, at least the major segments of the DEVSIS operation." And [Monsieur.] Paul-Marc Henry [who] was president of [OECD's] Development Centre, agreed to become president of the steering committee. The steering committee asked that IDRC should assign me to be director of the DEVSIS study team. The International Labour Office offered to host the <**T: 35 min**> DEVSIS study team in its new headquarters in Geneva.

The United Nations Development Programme, UNDP, was represented [in] all of this by Louis Shapiro, who was a senior member of the staff at [. . .] UNDP. He was a man [who] had grown up in a very poor section of Montreal [where he] caught polio and lost the use of his legs. He had very powerful shoulders and arms, and he had braces that enabled him to drive a car. [Louis] took his turn in a car pool from Long Island, [New York], to downtown New York

every week [. . .]. He had one or two very close friends at UNDP who helped him [take] his braces [off and on, but otherwise he] was perfectly capable. You were not aware of that incapacity [at all]. He befriended us and, [in an unofficial way], assured me that if the steering committee accepted the study team report [. . .] endorsed it and said, “Let’s go further,” he would propose to his masters, to whom he’d already spoken, that the UNDP should set up a long-term project [to] partially or wholly finance the operation. So we thought [we’ve got] a good chance. I talked David Hopper into letting me take Kate Wild to Geneva too. She knew the people in [the] OECD [Development Centre]. She [. . .] was the number one person for bringing ISIS into IDRC [was thus] well known in ILO and [. . .] knew the people who were assigned to us as secretaries before we even got there.

Then we [have] to find some other people, [. . .] some of [whom] came for short periods of time, some of [whom] were long-term. I’m so sorry I do not have a copy of the DEVSIS study team report with me here now. Then I’d be able to name all the individuals who at one [point] or another contributed to the study and the writing up of the report. It’s [. . .] funny because, the first person I think of is one who didn’t really stay with us for very long, and this was a Tunisian lady, Gladys Adda who had a lot of experiences. A librarian, documentalist, in her own country, and who was very articulate, especially in French, and also spoke English. This was the year before the war really broke out [in Lebanon]. There was a very senior Lebanese, Mr. Bascous, who didn’t have her [kind] of experience, but had [a] grand design in his mind; [. . .] his [. . .] objective was to make sure [that] the DEVSIS operational center [would be] set up in Lebanon. These two would have violent arguments with each other in Arabic. You could hear [it] all the way down the halls of the ILO, but she won. She’d be able to tell him things he [. . .] didn’t know because <T: 40 min> he’d never been a librarian or a documentalist or an information specialist.

**RAYWARD:** What were some of the key problems [that] you had to address in that report?

**WOOLSTON:** I do also want to mention one other full-time member of the team, and that [was] George Thompson who was the librarian of ILO, an American [who] had thought a lot about these problems, [. . .] who had effectively managed from the user end the development of the ISIS software. Of course, he was using ISIS in ILO for all [. . .] his library operations. George was essentially a full-time member of the team. In various ways, he got many of his staff to help us [. . .], [so] it was a pretty hospitable environment.

I [found] a [. . .] nice [furnished] apartment on a six-month rental near ILO. There was a very pleasant walk to work. But we were very busy. What were the problems? I think [that] I was seeing AGRIS as more of a model than INIS, simply because the community was so diverse. We knew that we could use a lot of things from INIS/AGRIS. Why re-write the bibliographic description rules? I thought it would be very nice if there was compatibility. [If there is something in DEVSIS dealing with agriculture should it also be in AGRIS? Could you copy the record from one system to the other? Some] people thought that would be very nice. We all thought it would be very nice. We [all] also thought that there might be little things that

would make it difficult, but does it really matter if you can mount DEVISIS alongside AGRIS and run essentially the same search profile on the one as you run on the other?

[Let us consider], Boyd, [an information provider who attempts to establish a need profile for a client, and this applies to my scientist colleagues here in CIMMYT]. You go talk to [this person who then indicates a desire for] everything [. . .] ever likely to [be needed all in a single package with an extreme] subject scope [. . .]. [To assemble such a product, the provider would need to search sources in various] different sectors. What I [would] say to [such a] person is, “If 90 percent of your needs can be [. . .] met out of the system in your own sector, and if you [. . .] have the possibility of interrogating the system in a neighboring sector for the other ten percent, is that really so bad?” [. . .]

So, <T: 45 min> defining the scope was a [big] problem. I haven’t [. . .] thought about [. . .] the agonies of [this] for quite a few years. But [our team] did think that [a part of the solution for DEVISIS] could be approached [in a] way [similar to what I had] done [. . .] with INIS. [It involved] a classification scheme, and [. . .] the scope of [each] category [of the classification scheme], added [with] all the other scopes, would be the scope of the [entire] system. [I’d] realized that [we’d have] to have a few more negative statements in the scope descriptions [to] exclude the more detailed, purely technical considerations that [were not relevant to developing countries].

Well, as I think I told you, but perhaps not on the tape, when the DEVISIS study team reported and the steering committee said, “Well, nice work, chaps,” UNDP hit a brick wall because they went into what was really their first major financial crisis. Louis Shapiro had to tell me, “There’s no way I can put [up] a proposal for a couple of million dollars.” [. . .]

[END OF AUDIO, WOOLSTON 1.11]

**WOOLSTON:** Some regional initiatives were started which employed the recommendations of the DEVISIS study team as to the methods, perhaps not consistently [. . .] among all [. . .] these different initiatives, but [for] example [. . .] the U.N. Economic Commission [from] Africa set up a program called PADIS, the Pan African Development Information System [. . .]. [It’s had] all kinds of growths attached to it as the years went by, but it still exists [. . .]. I guess it never did succeed in [capturing] all the relevant literature affecting Africa, but it did make some progress. There was also some progress in [. . .] what we used to call ECLA, Economic Commission for Latin America [. . .]. [It has now adopted] a Spanish acronym [CEPAL] instead of [the] English acronym. And there were some national efforts along these lines. We in IDRC had [an] embryonic Canadian DEVISIS contribution [. . .] which we published for several years, but without a commitment of a big intergovernmental body, equivalent to IAEA or [. . .] FAO, we just couldn’t bring [it] to fruition.

**RAYWARD:** [It must have been] disappointing for you.

**WOOLSTON:** [Yes], it was, but I think it was disappointing for a lot of other people too. In the course of the explorations leading up to the project, and as I went around afterwards, I would visit very often the planning unit of a developing country government [ . . . ]. I didn't have to interrogate [them]. They would tell me that [they, the older] members of [the] staff [who'd] been around a bit longer could remember [ . . . ], "There was a team here [twenty] years ago that did a study of this [ . . . ]," [and you'd say], "Well, where's the report?" [and] they couldn't find it. And [then] another team would come and do a very similar study [ . . . ]. There was so much of this wasted, duplicated effort. "Oh, the one three years ago, I can't remember now [ . . . ]. [Was that the] Canadian project or was it [made by] USAID? Or maybe it was the [World] Bank." They didn't have an institutional memory of all the diverse [studies], recommendations, projects, and actions that had been taken, very often by different organizations [that had] addressed the question of the economic and social development of [the] country.

[ . . . ] That was what DEVSIS might have been able to give them. If the [World] Bank had [ . . . ] given us [the] bibliographic records from its reports on Tanzania, [if] the different aid agencies [supplied] their reports on Tanzania, [if] the Tanzanian government [had reported] its own national studies relevant to [development, then one] could press a few buttons on [the] computer and [ . . . ] see what had been done in Tanzania, whether you were an aid agency or whether you were [a] national [government].

[recording paused]

Boyd, you've asked me to talk a little bit about ISIS and how it developed over the years that I was involved. ISIS of course is not like INIS or AGRIS <**T: 05 min**>. It's not a system for organizing information; [ . . . ] it's a set of software packages [ . . . ]. Its origins are [in] the International Labour Office [ . . . ]. George Thompson, the American who was librarian of ILO, should have the credit for the conception. [There is] certainly a man, a German I think [ . . . ] named [Marc P.] Marthaler, who was largely responsible for putting the thing together. In this [context we're] talking about the early [to] middle [1960s] when ILO had its own IBM mainframe computer [ . . . ] and the library [and information] people [ . . . ] were able to get time on that big IBM mainframe computer to run their ISIS operations. The initials are said to have stood for "Integrated Set of Information Systems," but [ . . . ] again, it was really a set of software packages that would perform the functions that we [needed] when dealing with [ . . . ] bibliographic information, abstracts, library functions, [and] acquisitions.

**RAYWARD:** But retrieval is an important part of it, isn't it?

**WOOLSTON:** Oh, indeed it is. And of course, the ILO was one of the prime movers in the development of the macro-thesaurus and the indexing schemes that [had] preceded [it]. I ought to [ . . . ] remember what they called [this] set of descriptors before they called it the macro-thesaurus. [The] new name was given to it in a meeting in Paris, [probably] in 1971. [Indexing] was important, but [ . . . ] everyday library functions [were also built into ISIS, accessions], loans, [etc].

So ILO had that. It was operational when IDRC came into being in 1970, 1971. I had met George Thompson [. . .] in the year before I went to IDRC, when [. . .] both [of us] participated in [a] group hosted by the United Nations in New York, [. . .] trying to set [. . .] standards for microfiche exchanges among the [various] agencies of the U.N. system.

[Together, they] generated an enormous amount of [documents], and [they perceived] that [they] needed to send [them] to Vienna, [. . .] Geneva, [. . .] Addis Ababa, [Ethiopia], Santiago, Chile, and all the other places where there were U.N. operations. [. . .] So there was a vast amount of paper that was being shipped around the world [. . .]. [The UN] library was seeking to [. . .] cut down on the distribution costs. [. . .] When IDRC started up, one of the first people I contacted <T: 10 min> [was George for his advice on] how [to help] developing countries to do the [. . .] things that [were done from day to day] in [the libraries of our] more advanced countries. [. . .]

George explained to me that [. . .] ISIS didn't belong [only] to the [Office in Geneva], it belonged to all the member states of ILO, and they had no objection whatsoever to other people taking it and using it. [However, ILO] didn't have the resources to provide the kind of support that [a software house would provide for] the software [that it sells]. "So, yes, anybody [can] have ISIS, but we may not be able to give you the support [that] we would like to be able to give you." The few of us that were there in IDRC had looked at a number of software packages concerned with [bibliographic] applications. Obviously [. . .] the [suite of] packages available at ILO [. . .] was as good as anything [. . .] that was on the market at the time, and of course, it would come for free. It was in the public domain already. ILO and IDRC signed an agreement that allowed us to use ISIS and to distribute ISIS, I think it was anywhere, but [. . .] certainly [it] was in developing countries, so with Arthur and Marian Vespry, we started to computerize our library operations almost from the very beginning [. . .]. We didn't have a big IBM mainframe, so we [put] the [ISIS in a] service bureau [. . .]. This was very much one of Kate Wild's jobs, along with Marian Vespry [on] the library side preparing the data. Kate hired [Faye Daneliuk] who was a computer programmer [. . .] another Canadian [. . .] whose name will come up in a big way in a few moments. Faye or Kate would go down to the service bureau every couple of days and pick up the [records which] Marian would [then check. They] gradually built a database [that amounted to our library's catalogue]. We wanted to have [our] library [system] computerized, but we also wanted to have some people who knew how to use it so that we could then offer it to developing countries. And in fact, Mexico was [. . .] the first [country] that we were able to help with ISIS, [and] it was installed [by] CONACYT, the National Council for Science and Technology, which then went on to develop a whole suite of databases using mainframe ISIS. [. . .] IDRC [had no intention of acquiring] a mainframe computer, [and it] never did. Neither could we expect most of the institutions that we worked with in developing countries to have their own mainframe computers <T: 15 min>, but [. . .] often there was a mainframe computer in the Ministry of Finance or the Planning Ministry [. . .]. The operations that ISIS required did not involve lots of number-crunching or anything like that, so it didn't take [. . .] much computer time to run them [. . .]. In most cases, [if an institute] had the right political connections and made the proper explanation, [they] were [. . .] often able to get access to the big mainframe computers in the government to run the ISIS operations. But we knew that

[this work would not be available in many developing countries] simply because of the cost and the availability of the hardware.

As the 1970s progressed, the minicomputers began to come [on] the market, like [1973] or thereabouts. [. . .] We started saying, “Look, can we do on a minicomputer a suite of programs that [will] look like ISIS for anybody using them?” [Then persons who had] been trained [. . .] on mainframe ISIS would have no difficulty, it would be quite transparent [to them]. Faye Daneliuk [became] very interested in this and offered her services, so to speak, as the programmer of what I [called] MINISIS, MINISIS being ISIS on a minicomputer. It wasn’t really all that easy to persuade [. . .] the [Board of] Governors of IDRC to let me go ahead with this, but I had the good fortune [. . .] that I hadn’t made all that many mistakes up to that point, so they were still willing to trust me [and] David Hopper was [. . .] supportive.

[We were given] funding [. . .] to buy a minicomputer, and in those days they weren’t cheap [. . .]. Maybe an IBM mainframe would cost a million [dollars], but a minicomputer [would] cost a quarter of a million [. . .]. [Then add Fay’s] time for a couple of years to [. . .] develop a set of programs [which] would do the same things as ISIS did, [use] the same bibliographic descriptions, use the same indexing, [and] generate the same output [products].

So the first thing we had to do was to test a number of computers for their suitability [. . .] As a result of [evaluating] three different computers, we chose the Hewlett Packard 3000 [. . .]. Then Faye went to some meeting. It was a very good thing she did go [to this meeting]. There was a presentation there about “relational databases” [. . .]. [This] concept [had come] long after [ISIS] had been [conceived]. Faye [. . .] wanted to [. . .] look at the possibility of building MINISIS using the relational [concept], and [. . .] she [needed] an airline ticket to Israel, to [. . .] talk [with] the man who [. . .] made this presentation at the meeting, [and hear] a **<T: 20 min>** tutorial [in] relational databases.[Well], I thought I was getting farther and farther out on a limb. Once you start, it’s [always] pretty costly to go back. Faye got her ticket to Israel, and [when] she came back [. . .] she [started to work, but she did not] find it easy to make progress reports, and I was getting more and more anxious. Sometimes when I’d ask questions, the reaction was, “Well, don’t you trust me?” “Well, yes, Faye, I trust you [. . .] to do whatever you can, do the best you can, and I know you’re working very hard, but I’d like to have some [mileposts] along the road because I have to tell the Board of Governors how you’re getting on, [and] I have to tell the President how you’re getting on.”

Kate Wild and Faye Daneliuk were [. . .] good friends, and Kate was able to get her to talk to her more than I could get Faye to talk to me, and then [. . .] Kate would come and reassure me from time to time [that it] was going [all right]. And indeed, the product was all right, and we ended up with this suite of programs. We [. . .] got out of the service bureau. We started running all our own library operations on the Hewlett Packard [. . .] in house [. . .]. Then we were ready to start making it available to others. We found that there was a lot of demand for it in Canada, [in] the United States, [in] Europe, so our lawyer [. . .] set up licensing procedures [enabling us to sell] MINISIS to people in industrialized countries. We [also] licensed it [in] developing countries, but free of charge. We [charged] private-sector organizations [at] a certain rate, [. . .] a reduced rate for public-sector organizations, [. . .] reduced rate for people who

cooperated with us [. . .]. But we began to make money, and this really impressed the Board of Governors. It gave me a new lease [of my professional] life. [laughter]

Meanwhile, of course, following the minicomputers, the microcomputers started to come onto the market, what we [now] call [the] PCs [personal computers. So could we get MINISIS on a microcomputer?] My dear friend Del Bigio, who [had] worked with me [in] Vienna, had transferred to UNESCO [in Paris], and he saw this possibility too [. . .]. There was a huge amount of documentation that was being processed in UNESCO by antique methods, and he persuaded [his] authorities in UNESCO to let him write a set of programs for microcomputers, [initially] IBM machines or IBM clones, that would perform the ISIS functions there. This eventually became known as CDS [Computerized Documentation Service]/ISIS, and the rest is history because it was distributed all over the world and [. . .] became very important for [many users], especially in developing countries because [this] was the only size of computer they could [acquire, but] it was big enough for what was involved.

**RAYWARD:** [So what was the Canadian connection?] How was the Canadian connection maintained, or was it not anymore, between CDS/ISIS and MINISIS? Had the IDRC given the project of developing CDS/ISIS to UNESCO or—

**WOOLSTON:** No, they didn't depend on IDRC for getting permission to do this. I think they probably got permission from ILO [. . .].

**RAYWARD:** [To take] the original.

**WOOLSTON:** [. . .] And some of my colleagues in IDRC decided that they too <T: 25 min>wanted to develop a micro-ISIS, and they started work on that. Unfortunately, it took many years. It was a much more drawn-out affair than MINISIS. Faye did the first MINISIS in two years. She was on schedule, despite my worries along the road. But the micro-ISIS thing went on for much longer, and I really don't know what [is] the status [of] the IDRC micro-ISIS [now]. I don't think it's a very happy situation. At its peak, MINISIS was installed in [. . .] many different places. The IDRC had regional MINISIS resource centers. There was one here in Mexico City at the National University [Universidad Nacional Autónoma de México] where there was a little team of people, I guess partly funded by IDRC, who provided software support services for MINISIS users [throughout] Latin America. And there were others. I think that what has really now happened here is that the private sector really beat us with user-friendliness. CDS/ISIS is a very effective system. [It's quite a powerful system, but it doesn't have the user-friendly features that we had, for example, on DB Text that I was showing you in my office the other day, so] I think this is really probably, when you think about it, a feature of the whole business which is more properly in the private sector with competition between different software suppliers for the most effective and the most user-friendly product. Okay?

[END OF AUDIO, WOOLSTON 1.12]

[END OF INTERVIEW]

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