Computer Oral History Collection, 1969-1973, 1977

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Interviewer: Richard R. Mertz
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GROSCH:

I did have something to do with DeCarlo's relationships with MIT and places like that in two ways. First of all, it was among the many universities with which his group had relations but that was handled pretty much by a man named Lou Robinson, Dr. Lou Robinson, who is very active in the field today and very easy to locate today, still in IBM.

The other kind of relationship with MIT, of course, was through the SAGE program which was going great guns at Kingston by this time. Giant machines, an acre in extent, were being shipped out on a frequent basis to sites all over the United States and large groups of software people were being shipped with each one; trained by the Systems Development Corporation on the West Coast. But, that was not under DeCarlo. Exactly so (comment made by RM inaudible because HG talking at the same time). That kind of university relationship--that is, the relationship with the Lincoln Laboratories and so forth--came through what is now the Federal Systems Division, then the Military Products Division and not through DeCarlo.

So, I didn't have much to do with either of my old MIT associations--the MIT academic association, which I had always maintained even before I went there, or the air defense group. Both went through other people but I did hear a lot from Lou Robinson, of course, of what was going on.

Frank Grazu (?) was still president and was still running the central, what you might call, the academic computation facilities in MIT at that time and Frank and I were frequent associates. We weren't close friends or anything but we saw each other frequently at meetings. I kept up that way.

Andrew Booth had gone back to mechanical translation and had not yet left the University of London to go to the University of Saskatchewan so my connections with mechanical translation were largely through him rather than through the original interest in MIT. And I never did get very close to the Georgetown University and similar MT people. But, what work they did had IBM connotation came through DeCarlo's shop but, again, largely through Lou Robinson rather than through me.

I was sort of a special assignment guy. The SOS thing, for instance, was worth many millions of dollars to IBM in reputation and so forth and they asked me to involve myself in it not because they thought I could solve the problem or anything of the sort. They had, you know, really good technicians working on the specific problem but they thought my position as a founder in SHARE and a friend of all the guys that were raising hell and refusing to pay rent was a useful…

For instance, I mentioned as one of the great figures in the initial 701-704 are John Lowe of Douglas, Santa Monica. John was one of the founders of SHARE and got a 701 even before mine. He got number 3, I think it was, of the early 701s. And he and Chuck Baker, who is now a very well-known figure in the trade and who he trained, were up there checking out 701 problems on the machine the day that I and Don Shell and my little group arrived to check ours out. Well, John Lowe had passed over the 704. It was his view that although the off-line characteristics of the equipment were very valuable and the built-in floating point sort of thing was very valuable, he had enough to handle increasing the efficiency of the programs he already had written for the 701. He would cooperate through the SHARE committee with the redesign that finally came up to be the 709 and the 709 software and then he would get the very first 709. Well, he got the very first 709 and he wouldn't let them move it off the loading dock because--and it stood in crates in fact at Douglas, Santa Monica for several months--it was required in his contract, which he was sad enough to write by this time, that the software had to do certain things first, the SHARE operating system had to do certain things first before he had to accept the machine. And, believe me, that wasn't out of the crates either although there was a lot of salesman effort trying to persuade people it was. This was really the first great software fiasco, if you want to know.

MERTZ:

Did this have repercussions…

GROSCH:

Yes, it did. For instance, the senior programming man at the time I arrived was a man named Jack Ahlin. He was somewhere around the trade still. I think in petroleum application. I think he's no longer with IBM but in petroleum application somewhere. Well, now Jack got the heave-ho (?). He was promoted in IBM terminology to a different job and someone else took over. Now, I should be able to tell you right off the bat who that someone else was. I remember his face and all that but I must say I don't remember him anymore. Then after that…

MERTZ:

Backison (?) and the others were…

GROSCH:

These were more research types.

MERTZ:

They were under--they were not administrators?

GROSCH:

They were people who were hired by, in most cases, Cuthbert Hurd, and a few cases by Wallace Eckert and me to work in the development side of the business when you were doing unsponsored or sponsored research--AEC, university oriented, celestial mechanics sort of thing. They were all capable of doing very practical work but they weren't really required to do so. They weren't in early retirement or anything like that but they were simply regarded as ornaments on the IBM software scene and more people were being hired to do what we would now call routine system software. The trouble was that these people were frequently detached, officially or unofficially, to educate or help select, or inspire, or repair the work of these youngsters and this cut their efficiency in productivity way down without really doing very much for the young people. Naturally, you couldn't have said, "Just keep those same 10 guys grinding away" because you would never have written the 360-OS system with ten people. On the other hand, is it clear that anyone would have been foolish enough to try to do it either if they had tried to keep the group small and select. But, in fact, they didn't for one reason or another.

MERTZ:

Well, the other question was whether or not they could have kept the 10 that you referred to…

GROSCH:

It was not yet regarded as a routine job in those days. There was enough difference between the SOS system, for instance, and the ticky-tacky stuff that had been supplied for the 704 that it was still regarded as a challenge to do it. No, I don't think that was so. I think that most of the people involved would have been happy to have worked on it with their own hands but they agreed with IBM that, you know, the task was getting larger all the time so they had to have more people and so forth.

They simply introduced them at the wrong time. Or, you know, it's a bad idea to introduce a group of new people at a time when the task is peaking. You ought either to do it long in advance to be ready for the task or after the task has peaked when it's a clean-up job on which they can get a lot of practice. But, where the big task is past and

they introduced them right at the peak point where their fingers were of maximum import. Well, anyhow, those are the sort of things I did.

MERTZ:

Isn't this about the time of ALGOL (?)…some serious consideration is being given to try to make--this is '58-- to render some degree of coherence to what was rapidly becoming, in minds of many people…

GROSCH:

I happen to be cynical about this. My own view is that the guys who started out at all did it in order to--the Americans who got in on the ALGOL picture did it in order to get some trips to Europe; just as simple as that. The Backus', the John Carr's, the Al Ferluss' (?), from the Bureau of Standards, Joe Legstein went over, really weren't all that convinced that a new language was needed. What they wanted to do was to show how clever they were and get a trip to Europe. Well, when they got over to Europe, they tripped over people like Peter Nauer (?) and Esther Dikestra (?) and people of this sort who had entirely different ideas about the structure of language as much more advanced. Backus was able to speak to them as an equal but really they led John I think in the direction of elegance. He had been a self-trained, extremely bright and extremely pleasant man. Don't think in any way I'm criticizing him. But, he had been self-trained and he had been, you know, subjected to the pressures of practical computation of use for a good many years. Now, he found himself with friends who didn't have day-to-day pressures on them. IBM was willing to release him from and, in fact, had already released him from such pressures back home and his theoretical views flowered and you have the Backus Normal Form and all these other semantic contributions as memorials to this. The Nauer's and the Dikestra's and so forth never were very practical people.

They intended to be theoreticians from the beginning and such theoreticians are necessary in the advancement of an ark (?) that starts out as a practical series of tricks if you're going to provide long term structure and long term development. But, when they started touting ALGOL as a practical substitute for FORTRAN, I think they made a mistake because it didn't have either the input-output capabilities to really do practical problems with it, nor did its actual use for routine technical computations, for matrix inversion and jet engine performance calculations and stuff have much advantage over FORTRAN. Its elegance was such that they promoted it originally. You probably remember it as a human communication language. It was intended originally to be a language in which you would write algorithms and it was not really intended that, at least for a while, there would be an ALGOL compiler in it. It would just be an ALGOL language. And you might have to restate the problem and then code it in FORTRAN in order to actually run it. Well, that was typical of people who didn't really want to run it but just wanted to polish up a new tool, invent and polish a new tool. And, I was opposed to it from the very beginning and used to get all sorts of…from a bunch of academics, you know, just as I do today.

MERTZ:

But, by this time FORTRAN had already come along. One thing that is not clear to me…

GROSCH:

There were, for instance, cut down versions of FORTRAN by then. The early versions of FORTRAN were, of course, for major machines. And, by this time there were versions of FORTRAN for the 650, for instance, which could not be fully implemented due to drum difficulties and lack of storage and so forth. And, there was basic FORTRAN, FORTRANSIT--I can't even remember all the names. I have manuals for most of them.

MERTZ:

Well, one of the questions that comes to mind here is--it isn't clear to me at least--this group that was working on the 709, this SOS…

GROSCH:

Yeah, but FORTRAN was a plug-in to SOS. SOS was really like the operating system of today. It included a lot of bookkeeping tricks and a lot of messages to the operator saying, you know, put tape 16 on drive 4 sort of thing on the console typewriter sort of thing. It wasn't just an improved version of FORTRAN. Moreover, it was intended to be available on both the 709 and the, I can't remember the number of the follow-on machine to the 705. It became in the end the 7070-7080 series but that was transistorized. It was a follow-on machine in tubes beyond the 705. It was the 705 II, I believe it was called and it was intended that the SOS system also be useful on some versions of BATTER (?) in some fashion on that. That has slipped away from my mind. I never knew that because I didn't have a 5 or a 5 II. And, by the time I was helping DeCarlo look at the catastrophe, it was a large-scale catastrophe. The details were of concern to Don Ferns (?) and people like that who were trying to patch it up but all I was concerned with was why did it happen and what can we do next time to prevent it and so forth.

Now, another thing I was doing--do you want to talk some more about ALGOL or something?

MERTZ:

No, go ahead and finish.

GROSCH:

Another thing I was doing entirely different, we mentioned the MIT relationship. I would often be loaned out to another outfit. For instance, specifically military products group

and I made a fairly extensive series of visits to Kingston to see how the Kingston programming people within IBM were doing on the SAGE project. Now, there were two parts to this--one was SAGE, we would now say systems software, to help the people in SDC and other places that were doing the sight by sight routine application software on SAGE; the routine software modification I guess is the word I wanted. There still had to be systems packages that were shipped with the machine so to speak and there was a group at Kingston that wrote those. And then there was also a very active group split between Kingston and Poughkeepsie--in fact, I guess they were two competing groups, one in Kingston and one in Poughkeepsie--that were interested in diagnostic program, which I've always regarded as one of the great skills and one of the major skills say in hardware construction is to have good software diagnostic to check it out and to help finish it. You know, do the whole routine bit and then to find it's still working after it's been checked.

So, I was asked by Charles Benton, Jr., who was the general manager of the military products division, for instance, to go up to Kingston on a series of visits; talk to the people in charge of the diagnostic work and the systems software work; assess their capabilities to take on more work; comment on whether or not they should be involved in a redesign of the SAGE system, so-called SAGE II I think it was called, which was to be a transistorized version with much larger memory and much larger fore-memory and all sorts of stuff of the original SAGE computer, only a very few of which were ever built in the long run I believe. And I did this and this was, you know, like a month long assignment. And, since I only worked for DeCarlo for less than a year, why this was a fairly major part of it and I still have a copy of the report on that in which I reported that the men concerned were all capable and had worked hard and had turned out at least as good results as you'd expect but that, indeed, they had not only invented the wheel but the axle and the bolt and nut and the MARLIN spike in order to do it. But, they had not taken any advantage of other experience in IBM or in the outside world or even really up at Lincoln Labs. They insisted on starting from scratch and they must have spent many hundreds of thousands of dollars in so doing. And I'm sure it will be an observation after the fact but one worthy of record.

Well, I had this sort of roving assignment. I did a lot of work, of course, with foreigners because by this time I was very well known overseas. And, had many acquaintances from both the Watson Lab days and GE days when people just trooped through this new building of mine in Evandale six abreast. So I was able to make substantial contributions there and in the old days, these people would come to see Cuthbert Hurd. normally. Since he was shelved, they came to see DeCarlo and since DeCarlo had many other responsibilities, it quite often developed on me to handle them, pat them on the back, enjoy them.

I remember, for instance, one very pleasant class that we conducted in Poughkeepsie. All major customer visitations then and now are called classes at IBM. You get a class number and you're administrative class number 6482, you know--something like the ducks at the Tours in Paris. When you get up to a million any day now, you know. And

even if this class only consisted of three or four people who are being handled in some specialized fashion they may call it that but partly in order to get around this consent decree sort of thing. You can show them things and tell them things in a formal class structure that might not be allowed to do if it was just a customer visit. And I remember being the class sponsor for a group that consisted of four people from RAND Corporation--Willis Ware, Paul Armor, both of whom you know, and Keith Uncapher, who is now I think president of the computer division of the IEEE and a fourth young man whose name escapes me at the moment who constituted a complete class, who were being given a long, involved song and dance about future equipment and so forth in Poughkeepsie. And the normal process in these classes is to have a graduation dinner. Now I had broken new territory by having a limousine drive us down to Leone's in New York and we had graduation dinner along with the life at Leone's to the tune of many bowls of good pasta and a great deal of conviviality, including one bottle of wine to a customer which would not have been possible on IBM premises. Whether I really aided the IBM Corporation in doing this, I don't know but I certainly enjoyed it thoroughly myself.

And, for instance, along toward the end of that period, just before I switched off from DeCarlo, I discovered that Warner Von Braun, my old friend from Huntsville, was scheduled to talk to the employee's association for a substantial lecture fee on, you know, how we were going to go to the moon or something like that. And, this was entirely non-sales oriented. This had nothing to do with selling Von Braun anything. It was simply a matter of having a very distinguished figure come up to Poughkeepsie and lecture. It might just as well have been Dr. Spock. Well, when I tripped over this I suggested that this would be an opportunity to show him some of the laboratories. It turned out that they were already aware of this and he turned them down. So, I persuaded Charlie to let me handle it and I went to Mr. Watson's office and said, "Could I have the use of the company Convair?" And, then I got on to Von Braun, or to be more precise, to his military aide down in Huntsville and said, "Listen, why don't we make a family week-end out of this thing? Why doesn't Warner bring his wife and kids and bring Helma Holtzer and his wife and two or three other people whom I named and we'll fly them all up in the company plane and put them up at the guest house, which is just lovely and the fall foliage is perfect and they can enjoy a very nice week-end away from Huntsville for a change." And I said, "The only thing is I'd like to ask a favor in return. If we do all this, I'd like Warner to spend an afternoon over at the Kingston Laboratories looking at the things that the military people have been doing. I know they're dying to show them to him. They'll put on a good show for him but it will use up an afternoon." "Oh, yes," said the aide, "I'm sure he'd like to do that." And he goes back and Von Braun says, "Sure, hotsy-totsy. Beautiful company plane. I can take my wife along. It will be nice. No scandal. No problem about it. Just a courtesy." So this goes on fine until just a couple of days before the big event. We've got everything rigged up, you know, and everybody is cleaned and polished and had their teeth brushed ready to show the great Warner Von Braun all their cryogenic explorations and all the SAGE computers and all their good stuff. And, the aide calls me and says, "Well, you know, it doesn't look as though Mrs. Von Braun can come but send the plane anyhow, you know. Just the two or three men

will come up on it but it's real nice." Expecting, you know, oh, tut-tut, isn't that too bad sort of thing. Of course, in my typical fashion I told him, you know, no tour, no plane. And he said, "Why I can't tell Dr. Von Braun that." I said, "No problem. Just put him on the line and I'll tell him." "Oh, no, no, you can't do that." So, in the end everybody came except, indeed, Mrs. Von Braun and the children. They had to stay behind because the ploy had failed but everybody else brought their wives and we did have a great time and he did have a very nice tour of Kingston and expressed considerable interest. And, in fact, I believe some NASA contracts finally came from it the things that he was shown that he hadn't known about. Of course, in the end there was an enormous involvement between the Apollo program and IBM with hundreds of millions of dollars worth of specialized computers being built and installed and checked out and programmed.

Well, and that brings me to what happened to me in that area. Having had these fairly frequent contacts…

MERTZ:

OK, now this takes you into the fall of '58?

GROSCH:

This is the fall of '58, right.

MERTZ:

Which is, marks about the end of your…

GROSCH:

About the end of my association with DeCarlo. It was pretty obvious to me that I was by this time in a supernumerary capacity. It wasn't that I was enjoying myself and I was getting a fairly substantial salary--I think $22,000 a year or something like that, which was not much by IBM standards but I'd been getting 18 plus incentive compensation at GE so I wasn't exactly…And my wife was happy in New York City but there were two or there things wrong. One was I could see clearly I wasn't steering the course of IBM Corporation an iota. Charlie by this time had been switched over to be in charge of the technical side of the auxiliary operations in marketing and had product planning and so forth under him and did not any longer have advertising and university relations. They'd gone over to another man and he sort of left me behind in the deal. It wasn't clear whether I was working for DeCarlo or working for Charles C. Smith, who had taken over some of the other stuff. The specialized assignments had been sufficiently wide-ranging that, you know, I didn't really have to come in and check in with anybody. After all, I was senior to both of these guys in computer experience and so forth. And they recognized this by not trying to give me too much detailed instructions. They assigned me my own expense account and hounded me when they didn't see me doing anything but that's about all.

So, I had gotten the feeling that, first of all, DeCarlo had gotten away. Secondly, that I wasn't really doing anything that was steering the company in any particular direction. And, I was still very keen on going up in IBM.

One of the interesting things that happened to me at that time that deserves reporting in the history was that I think I was probably the first person, beyond the guy who thought of the idea and his wife and kids presumably, to hear of the beginning of the second generation. I defined generations as you know as beginning with the announcement of an IBM machine made out of different components. And, in that sense, the second generation began for the whole world when the IBM announcement of the 7090 which was in 1958 roughly.

Well, now how this came about is an interesting little story in itself. The STRETCH computer had a very devoted group of people building it. The man in charge was named Red Dunwell. I can't remember what his first name is. Everybody called him Red and he and I had made the initial visit at Oakridge on the installation of the 604 in 1949 so I knew Red from those days and since. He was a mixture of salesman and technical man. Somewhat in that sense parallel to John McPherson but, of course, a much later vintage. And, he had struggled up through the 700 series generation and been, somehow or other, put in charge of the design work at least, and I think perhaps the whole program on STRETCH because STRETCH was never intended to be mass produced by the hundreds so they didn't have to have whole factories set up to handle them and so forth. So, I guess Red probably had the package.

Anyhow, he had working for him such people as Werner Buchholz, who is a very well known figure in the trade and had been one of those that helped me on the, that worked along with me in the Kenyon (?) on the 701. He and Matt Rochester and others were designing it while I was trying to be a simulated customer and so forth. Well, Werner was one of his people and two or three other very well-known names in the field were working in there. And they naturally, as such people do, having gotten the major system layout frozen, for good or ill, they then wanted to do something more with it. And, they were promoting a thing called BABY STRETCH which essentially, in my view, consisted of taking away all the things that were good about STRETCH, leaving all the things that were bad about it and trying to market it as a competitive commercial machine. But, at least remember it would be a transistorized machine. There was a so-called STRETCH transistor. I forget the exact characteristics of this transistor but it was one of the early high-speed transistors and it was different from the different couple Philco transistors which were already going into the first of the giant transistorized machines. The Philco…

MERTZ:

Transac?

GROSCH:

I can't remember the name now but it was going to GE. It was going to Admiral Rickover, to be exact, the first two at least. And, IBM was nervous about this. Quite clearly they were right. As the UNIVAC or its predecessor names, as the Eckert-Mockley machines had been a real threat to IBM punch-card machines so the TRANSAC--I believe that's the correct name--was a real threat to their tube machines. So, they wanted to get transistorized equipment out and the Buchholz's and the Dunwell's were saying, "Well, why don't we cut down a STRETCH." And, here it is almost ready to produce, you know--why don't we cut down a STRETCH. Well, the three or four of us that were close to product planning in this new allocation under DeCarlo, even though I maybe wasn't working for him anymore. I wasn't sure whether I was or not. But, whether I was or not those of us who were close to him were resisting this vigorously. There were things like a 64-bit word, extremely elaborate and complex floating point arrangement, 84 kinds of, oh, an incredible number of logical interconnections that the AEC people said they wanted. All of which seemed to me just to be a waste of time; all of which were to be left in BABY STRETCH. Meanwhile, the giant memory and some of the ultra-high speed characteristics, like the look ahead feature and so forth, were to be taken out as too expensive. So what you had left was the part I didn't like and what you lost was the superlative speed and the part that I did like. Of course, as a result you got a $2 or $3 million machine instead of a $10 million machine. But, still it seemed to me to be a very poor idea.

Well, I got a call one Monday morning from a fellow named Graham Jones, I believe. There were two Graham somethings in the trade in those days. There was a Graham Jones and a Graham Smith. The one that I don't mean worked for the scientific side of UNIVAC, the XERA side of UNIVAC and the one I do mean had the other name. Now, if it was Graham Smith who worked for UNIVAC, I mean Graham Jones. I think that's correct. He was an English boy, trained I believe at Manchester. Very, very capable. Disappeared. I don't know what happened to him. Probably went back to England but in that case I would have thought I would have seen him in England. Anyhow, I haven't seen hide nor hair of him for years. But, he called me up one Monday morning and said, "Herb, I want you to get into the product planning guys. I can't get through to them. They won't return my calls to Charlie himself and tell them I have a wonderful idea on how we can handle this." And the idea was to map the 709--the one that had all this horrible software fiasco but which was now being resolved and its deliveries were being accepted and the machine was running--map the exact architecture of the 709 right down to the individual bits in accumulator into STRETCH transistors. Just do the whole thing over again in new components without changing the architecture or the software in any way whatsoever. We'll get this and this and this improvement in speed and it will only cost us this and this. And, of course, the reason he did this was to defend us against BABY STRETCH. It wasn't that he saw a whole new generation starting. He just wanted to keep me from building BABY STRETCH because, of course, the Poughkeepsie product planners, who had the real product planning responsibilities, were just being brushed aside by Dunwell and company who say to them, "We're so much cleverer than you guys.

Why don't you get lost, you know, and we'll tell you what the company should build." So, there was an enormous and very healthy competitive spirit abroad and this was Graham X's contribution to the art. And, that was the initial concept to the second generation; to map without changing architecture on the new componentry a lot faster, a lot cheaper per dollar. I rushed into DeCarlo with it and within a week the whole company was buzzing with it and BABY STRETCH died, whoomp, like that. The STRETCH transistors were available increasingly from both IBM production and from Texas Instruments so there was no question of the componentry working. And, they would maybe use a great many more of the old-fashioned 709 kind of producing. And tapes and stuff and STRETCH was--STRETCH had these enormous super-tapes or hyper-tapes, I guess they called them, coming down the line which weren't going to work very well as it turned out later and they were concentrating on those. And, those again which were, of course, good in their special tremendous high-speed application; those again had to be whacked off from the BABY STRETCH as being, you know, too expensive to furnish. So, this really looked great and all of us that wanted to put down BABY STRETCH jumped aboard and within just a matter of weeks practically that was announced. And it could be announced because, in terms of the consent decree, the tube machine, the 709, was a model of the transistorized machine. Since everything was going to be the same except the tickety-boo inside, it was all right to announce it.

So, I was probably the second or third person in the world to hear of the second generation although I didn't know it at the time, of course, and neither did Graham…

MERTZ:

Now, this was when, still in 1959?

GROSCH:

I can't put this ahead of or behind the Von Braun visit. The Von Braun visit I remember because of the fall foliage. It would have been October, late October of '58. And this might be a little later or it might be a little earlier but it was within a month or two of that. I would guess offhand that it was probably earlier because I believe the announcement came in late '58. We announced only a month or so afterwards. They just rushed right out, printed up the brochures and announced. It was just as simple as that. Needless to say, the brochures were pretty primitive because all they had to say was we're going to make a 709 for a slight increase in rental and the mapping into transistors will give you four times the…or something. So it really was done very quickly. I would guess this was probably like August or September of '58 but that should be in the records in the sense that IBM should have it figured to the minute. But, I'd sure like to see Graham Jones or Smith get credit for that because that was one man's idea. That was not a committee; it wasn't a long, drawn out process. All of a sudden he just said why not. Why don't we do so and so and that's great. That's great. There aren't many such opportunities in this vale of tears and he's in a sense the single-handed father of--I guess I should say something a little cruder but the single something father of the second generation.

Well, in spite of the fun that I had in such isolated assignments, I didn't see any pattern of this developing. I didn't feel that if I was working for Charlie Smith, and it wasn't clear whether I was or not, that I had much going between us. DeCarlo and I had been very close in some respects; very close personally although opposed in many of our viewpoints. Charlie was a liberal. And I was a liberal and we both had to sort of keep it hidden and we had many a martini together. In fact, I used to drink martinis to be nice to him because he was a great martini hound and I disliked them entirely. He introduced me to the saki martini I remember under the cruel story that may have replaced the gin with saki and after I'd drunk about four, I discovered they replaced the vermouth with saki. And I was hauled away, more dead than alive to suffer through the next few days. OK, and Dorothy, his wife, was a great gal, too. We used to have some fairly pleasant, although not too frequent, socializing. So, I regretted the distance that was growing between us. It was clear I wasn't going to get back in with him. He'd, as I now look on it, served his sentence. He had to pay for letting Grosch back in the company and he'd served his sentence and now he was going to go on to bigger and better things; not in consequence of it but he was allowed to leave me behind in consequence of it.

So, I looked around for something else and again I tried to get into world trade, again I pointed to all the good relationships I had and I asked them very, very seriously for a job of what we would now call director of software in parallel to director of engineering. They had at that time a roving director of engineering whose duty it was to coordinate the interactions between the American companies, laboratories and development activities and the ones that were beginning in Europe. And, in fact, this later turned out to be Byron Higgins (?), the man who built the NOR (?) and the first of the MITers, the best of the MITers to come to the Watson Lab. But, in those days it was Mork (?). Anyhow, there was such a man. It was the sort of job that a single person could get his hands around and where maturity and breadth of interest was more important than managing a large staff or anything like that. And I suggested that since clearly software and pro planning, applications, research and so forth was going to be at least equal in importance to hard rock engineering--in fact, in my view already was although no one else agreed with me yet--that they should be a parallel job in world trade, going around inspecting the various software and applications operations and integrate them in the much larger American facilities. Great idea. I think to this day it was a perfect idea; one that needed doing very badly and one that I would have just fitted into like a hand in a glove but for one reason or another, it was brushed aside.

And, finally I suggested the same sort of concept that was parallel to the director of engineering, you might call him the director of software in the military products division because of my work with this group up at SAGE and so on. I was conscious of the fact that they were sort of an unwanted appendage of the hardware engineering group which didn't really have much understanding of the problem. They were a very much smaller percentage of the hardware work than they were in the commercial side of the business because between the Lincoln Labs and the Systems Development Corporation, most of it was being done elsewhere. But, clearly as they moved into more advanced activities in space and so forth, they were going to be a great deal more of this. So I pushed for that as

a possible assignment reporting directly to Charlie Benton, whose name I mentioned. Well, Benton didn't really want to do this. I think it was partly that he found my personality a little oppressive but also, you know, it's the old question of expanding your staff. He already had more people around than he knew what to do with. He wasn't convinced that software ought to go in that direction and so forth and so forth. So, he hung back. And, it would have been a fairly sizeable step up in the organization for me. I mean I would have had a line responsibility reporting directly to a division, what would now be a division president, then a general manager so there was something to be said about being cautious about that size promotion also. So, I scouted around the Service Bureau Corporation and Scotty, O. M. Scott, who is now a member of the board of directors I believe or at least one of the very senior people in IBM, was then in charge of the service bureau. And I proposed the Huntsville kind of work for him--total systems responsibility for large customers in both military and civilian work. He liked the idea and said, "Wouldn't I feel that most of it would be military?" And I said, "Yes." And he said, "Well, you know, we have a problem in resolving responsibility here. I have a charter from my boss to do all the service work that comes through the company and Charlie Benton, who is on my level although a good deal larger, has a charter from his boss, who turns out to be the same man, to do all the military work. Now the question is who does all the military service work?" And I said, "Fine. I know the answer to that one. We'll call up Learson (?), who is now the president of IBM and was then the group executive in charge of both of these activities, and I'll ask him." So I got Ben on the horn and I posed this dilemma and he said, "I'll decide." And I said, "No policy, huh?" And he didn't like that. He and I used to grate on each other even in those days. And I said, "I'd like to have a clear statement of policy, Ben. If you're going to decide according to a policy, tell me what it's going to be. I don't expect you to keep it for the rest of your life but, you know, bound to mature and changes kind of but what would the policy be today if you were doing it." And he said, "The policy is that you bring each problem in to me and I'll decide." And I said, "Thank you very much." And then I told Scotty, "No sale, old buddy." And so I quit exploring that one.

Went back to Benton again and Benton meanwhile said, "Well, maybe we can do what you want but it's premature to do it right now. We need more space business especially before we can move in that direction. Most of our Air Force business and so on doesn't require that senior effort in systems software. So, why don't you come aboard as the man in charge of IBM's space activities under me and you'll be in parallel to the man in charge of all Air Force programs, all Navy programs, all Army programs." And there's also I believe, I forget now who it was, but I believe there's also a man in charge of all civilian government programs because, although it was not yet called the Federal Systems Division, special equipment built for the census and so forth were being built in that group also. These four men reported to a sales manager named Gus Rath (with an acute accent) so I was one step down from what I wanted to be. I wanted to be on Rath's level along with the director of engineering, instead I reported to Rath. But, these program managers were top in the outfit below the men who reported directly to Benton in terms of IBM's famous customer oriented sales organization. These were in a sense the four or five top salesmen in the division and had staffs of people working for them. And it was a

pretty fancy job and I was offered a raise. I think it was only for $25,000 but it sounded good in those days. So, I said, "Yes, I would do this providing that Charlie would keep in mind the fact that I really wanted to do this other thing and that I would make sure that I had a suitable deputy so that if he would change his mind on the software activity that I could step into it right away." And there was a big fanfare down here in Washington because at that time on Pennsylvania Avenue, IBM operated a so-called IBM--I think NASA existed by then. I think it was IBM-NASA. Yes, of course, it did because Keith Glennon (?) was in charge. Yes, this was early spring of '59, January or February of '59. And Keith Glennon was already in charge and it was NASA…so it existed. So, this was the IBM NASA Space Center or something like that and it consisted of a 7090 buzzing away vigorously down there and doing orbit calculations and so forth. And Bruce Oldfield, who had been the number 2 man to Harley Tillitt (?) at China Lake. Oldfield being spelled the same as Barney Oldfield of GE fame but no relation and Tillitt being spelled T-i-l-l-i-t-t. Tillitt was one of the founders of SHARE and one of the recipients of the first dozen 701s. He had trained Bruce Oldfield. Bruce Oldfield had left China Lake and had come to work for IBM and by this time was manager of this IBM NASA Space Center. An old friend of mine so there was no problem in my becoming his boss so they put that under me. They gave me some salesmen and they gave me a small team of engineers in Owego, New York, that was designing special control-type digital equipment for NASA and associated activities….NASA also included the old NACA kind of aeronautical research, too, but there was no special activity as I remember it at that time on the NACA side. It was all what we now call Apollo work. At that time it was Vanguard, Mercury with Gemini and Apollo still in the distance and Nova not yet invented.

Ok, that looked good. They had a big press conference down here and unveiled me to the world and everything was exciting. And I made a couple of gestures in terms of where I thought we might get some new business and then I was sent out as official representative to a meeting at Cal Tech on the realities of space exploration chaired by Lee Dubridge (?) and with a group of about six or eight formal speakers and a great deal of discussion. This was the first meeting I believe ever held in which anyone discussed whether or not we should go to the moon or whether or not we should go into space, whether there were, you might use the modern term, social benefits to…

MERTZ:

Is this 1959 now?

GROSCH:

This would now be about April, March or April of '59. Yeah. I'd just been announced as manager of the space program and this was one of my first outside ventures, aside from space organizational meetings and so forth.

In that audience also were Byron Havens (?) and Wallace Eckert and two or three other IBM scientists who were invited, who went because IBM was a major sponsor of Cal Tech activities and was asked, you know, to send as many as you want sort of thing. And, because of Eckert's interest in astronomy and so forth, why, they were all there. The possibility that NOR (?) which Havens had built, and which by this time was at the Dahlgren Proving Ground might be used, as indeed it was, for orbital, trajectory calculations and stuff was all very much to the fore.

So, they and several other attended as well as me. But, I was the official IBM delegate as manager of the space program, quite right. And I sat in the audience and the last paper in the day was given by Louie Ridenour (?), who had just been made vice president of Lockheed, and whose new assignment was to go and start Lockheed Electronics in New Jersey, which did not yet exist but was on the verge of coming out. Now, Louie had most recently been a senior executive in Lockheed, before that he had been president of International Telemeter Corporation. Telemeter was funded by Paramount Pictures…I believe it was. Anyhow, one of the famous Jewish entrepreneurs of the movie business and it had two tasks. One was to develop computer hardware, unlikely as that sounds. And the major task, which accounted for the name, was to develop a metering system for pay television. And they were going to put a little box on top of each TV set and you drop quarters in it and a mysterious digitized message went back over the electrical, or what have you, line to the TV station that authorized you to--no, sorry. That's not the way it worked. It didn't go back over the lines. The money went into the little box, as I remember it, and that activated an scrambler that unscrambled an image coming from you over the air from a special pay TV station which was broadcasting, you know, opera or a prize fight or something which you couldn't receive without this scrambling device. Since each scrambling device was to be coded in some special way, why you couldn't switch boxes, all sorts of things. Well, Louie had been involved in that and his chief scientist, in this activity, had been a fellow named Gil King, Dr. Gilbert W. King, a pioneer in the use of punch-card machines in the '40s for infrared spectroscopy applications at Arthur D. Little, an old friend of mine from those days. Gil had gotten into the mechanical translation business, had become very keen on creating a photographically manufactured glass disc memory; very, very fine grain memory with millions and millions of bits. Actually with 100,000 bits per square inch or something like that on a glass disc, which reminded me, of course, very clearly of the Eastman Kodak glass discs that were furnished Jay Forrester as inputs to the old WHIRLWIND I and which had been unsatisfactory. Gil had brought this glass disc and mechanical translation project with him to IBM and had been part of Peori's research and development presentation which I had attended on DeCarlo's behalf the year before which I had pooh-poohed in the typical grounds of what was new wasn't good and what was good wasn't new. His so-called SYNTAX computer didn't exist and I said as far as glass discs memories, you know we tried that in 1949 and the hell with that sort of thing which didn't endear me to either Peori or Gil King. But, I thought was the proper comment to make as a reviewer on behalf of the product planning organization of this presentation.

Well, I've gotten off the track but Ridenour leaving Gil King behind to go to IBM had come to Lockheed. Now before that he had been dean of the graduate school of Illinois and had edited the enormous ten foot shelf of volumes that came out of the radiation lab at the end of the war. All the radar and communications electronics that MIT had written. And, as dean of the University of Illinois Graduate School had been a contributor to the book on "Bibliography in an Age of Science" where Ralph Shaw's rapid selector was unveiled and where I saw the first use of semi-log paper to project exponential growth out into the future which led me in 1949 or '50 to plot up the computer speed in economics and produce Grosch's Law. So, you know, everything is knit together and I love to think of how these influences have interacted.

So, here's old Louie Ridenour, last speaker on this program at Cal Tech, which up to this point had been stimulating but not particularly controversial, giving a paper on how you know the world is going to hell in a hand basket; that the space program is a typical example of American wastefulness; that if the machines don't work, you have to build more and if they do work, why you build more anyhow to memorialize your success and so forth and so forth. And, he was really pretty negative about it and said among other things that we shouldn't waste our money when we had all the social problems on earth and so forth. A good speech and in the discussion period I said that the missile program was the swan song of a dying culture. But, I really meant that the missile program as described by Ridenour in his talk and the space program and so forth was the swan song of a dying culture. And that his attitude was, you know, not all that hotsy-totsy either. What led really to give this speech I haven't the faintest idea. Whether he'd been drunk when he wrote it, whether he had deeply pent-up feelings that we were going to hell in a hand cart, as many people have nowadays, I don't know but remembering that this is the spring of '59 and Sputnik had gone up only a couple of years before it, it's a little--in fact, less than two years before--it was a little surprising.

Well, what we hadn't been told by Dubridge was that there were reporters in the audience but so far they had not served us. And the next day, Saturday morning, was very dull and the Los Angeles Times came out with a headline saying, "IBM Scientist Calls Missile Program Swan Song of a Dying Culture." And I mean headlines. The AP picked it up in 150 papers all over the country. The local reporters started calling up IBM executives all over…

[End of Tape 16, Side 1]

We had not been warned by Dubridge and I was present through the entire morning so it wasn't a question of missing the opening ceremonies or anything like that. We had not been warned by Dubridge that there were reporters in the audience. Unfortunately, the next day was rather dull for news and I hit the Los Angeles Times and 150 AP papers all over the country. Headlines saying "IBM Scientist Calls Missile Program Swan Song of a Dying Culture." Well, we had tapes of the nothing made by Dubridge and we had this transcribed, and I still have copies of it, showing that in the context of what Ridenour had

said that what I said was perfectly proper, etc., etc. But, I never really got a chance to tell this story. Learson, before I even got back to New York, had picked this story off the wires, had gotten a playback on it from Charlie Benton and had sent out a couple of hundred telegrams all over the federal establishment disowning me. Saying this guy Grosch is just a jerk. He had no right to say this, etc., etc. When it turned out that what I said wasn't all that bad, it was a little late. What had happened was that Benton had been gotten out of bed at an early hour by the editor of the Owego or Endicott paper and got it…off the wire and Benton had blown up without waiting to get in touch with me or anything like that and said, "I don't know what he's doing out there." Although I was the authorized representative and blowing me up all over the place which was, of course, duly quoted in the local press although not picked up on the wire. IBM scientist disowned by IBM or scientist disowned by IBM was the local headline and so forth. And, by the time I got back to New York and cooler heads had prevailed and, you know, Dubridge was willing to testify that none of this had happened. For instance, the reporter claimed that the meeting broke up in confusion, you know, with the scientists shouting at each other and everything. But, the meeting broke up in confusion because we'd gone home. There was, indeed, a fairly warm discussion but there was no confusion about it. I remember Harold Yurie (?), for instance, got up and said that any culture that could produce the Tomb of Tamerlane (?) or something--he'd just gotten back from Samarkand--couldn't be all bad, you know. And I said in return, "Well, Harold, you know any civilization that can destroy itself in a thousand breaths, to use General Williams" analogy from Rand Corporation, can't be entirely good." And there was a typical byplay back and forth and then we went home. And since it was the end of the day, there wasn't, indeed, a certain amount of foot shuffling and hand shaking cut in the corridors and everybody went away. And, so I had a lot of testimony that it was okey-doke.

Nothing really had gone wrong but I was dead. So, that's how I got fired the second time from the IBM Corporation. Of course, they didn't fire me right away. In fact, in one of the earlier interviews somebody said that they had no plans to discipline me or anything but I had six weeks of daily interviews with Jim Learson discussing my possible career in the IBM Corporation. The best offer I got was to be promoted to superintendent of publications for the STRETCH program, which consisted of getting out into current the operating manual for the machine which was already about ready to go to the printers. At, of course, no decrease in salary providing I would move to Poughkeepsie, New York and never give another public speech as long as I lived.

So, after a while I went away and very faithfully, indeed. It was interesting that during those six weeks, practically no one even spoke to me. I was transparent in the organization. People I'd known for 20 years would walk past me in the hall, you know, and look right through me. Very interesting feeling and I think that's the equivalent of Henry Ford having your desk chopped up and piled in the corridor, you know. You got the message after a while.

MERTZ:

The same philosophies…

GROSCH:

Yeah. Yeah. That story has been told at other places and it's still a vivid one in my mind. I got much publicity in many of the papers that had played the original story, especially in the letter columns. I got over a hundred letters myself, many of which I kept, the best ones of which I kept. And many people wrote in. For instance, the San Francisco Chronicle I remember wrote an editorial, a lead editorial, saying that somebody punched, I punched my card wrong, you know. I flew off the bat and, etc., etc. And they got a whole page of letters from irate readers saying that you know this guy Grosch is right and you're the guy that punched your card wrong, buddy. But, you know that and ten cents buys you a phone call. That still didn't reconstitute my position in IBM. And the fact that the Dubridges of this world said that it was all perfectly proper and that we were supposed to be discussing that sort of thing. And, that the reportorial embroideries about meetings breaking up in confusion and stuff were not true really wasn't true. The fact was that Benton, as my next immediate superior, had cooperated with Learson in sending out these dumb telegrams and all they had to do was to call either me or Eckert Havens and Company and find out what had happened. They hadn't bothered to check meant that they were really more guilty than I was of bad management practice. So if you kept me on, you'd have to discipline them. And they sure as hell weren't going to discipline Benton and Learson for the sort of thing they wished their employees wouldn't do, even if what I did wasn't all that bad. They still don't--vice corporations in general--like their employees to talk about the morality of anything.

Incidentally, this story also, of course, mentioned in considerable detail Louie Ridenour's original speech. This put enormous pressure on Louis and Lockheed and two weeks later he was found dead of a heart attack in Washington, D. C., in a Mayflower Hotel suite. So, in a sense I have no doubt that this contributed to Louie's untimely demise. He was I think probably under just as much pressure at Lockheed as I was at IBM but he died before I had a chance to compare notes with him on it. And, we weren't, you know, brothers in crime. There was no reason for us to be in touch in any period. It was only after his death that I realized that he had a harder time out of it than I had.

MERTZ:

But your departure from IBM this time was somewhat different than the first time?

GROSCH:

In both cases, however, it was stimulated by a much higher level executive than would normally expect. In other words, it wasn't my direct superior that said, "Get lost, buddy." It was the guy--well, Learson was Benton's boss and Benton was Rath's boss and Rath went out of town the day I got back and I never saw him again for the next six weeks. He really holed up. What a coward. So I really got fired, you know, two levels up. By the

same token, when I got fired in Washington by Red Lamont there was at least one and maybe two levels of management underneath me as the local manager. And then there was some question as to whether I had some responsibilities to the local service bureau manager, too, although I didn't really think I did. So, again I was fired at an abnormal level of executive attention in each case.

In each case I was given money to go away in lieu of dirtying up the office any further. And in each case there was considerable bad feeling.

I might also say in each case I was hanging on the door post. I didn't want to get fired either time. I liked working for IBM both times and, you know, I left with great reluctance. They had to pry each finger loose, you know, and stamp on my hand to get rid of me. I didn't, you know, say, "OK, you guys, the hell with you." It wasn't that at all. But, you see the point was that all through my relationships with IBM, there was a sort of love-hate business. I thought they were great. They thought what I was doing, the subject matter area and the people I associated with and the customers that were working in that area were great but I personally just too different from their approved type to really be the optimal tool. They would accept me as long as I kept--as long as I was a reasonably good boy because they liked the results, the area that I was working in and the results, I like to think at least, that I achieved. But, they'd much rather achieved them with a smoother tool, like Cuthbert Hurd or Charles or a real lined up guy like John McPherson. And when you got out of line, why I'm sure that I was fired with relish where DeCarlo might have been fired reluctantly, so to speak.

Also, there is the question of shelving. I think that it is true that if I had said to Learson, for instance, now--and we were talking very frankly indeed at this stage of the game. This was not any general business. I'd known the guy on a first name basis for 15 years and despite the fact that he's a big brutal son of a gun, we didn't have to spar around like a couple of strangers. I'm sure if I had said to Learson at a certain stage of the game, "OK, I'll go away and be a good boy in Poughkeepsie for three or four years if you'll guarantee me a life job and so forth" that he would have jumped at it. They didn't want to fire me really in the sense of bad publicity. And the reason for the length of time was that they had to wait for the thing to die down. They really couldn't have run me off the first week. There would have been a really quite a hurrah in the business, including probably some bad publicity from…but you know after six weeks. It's a wonder it wasn't six months. In fact, probably what would have happened if I'd taken this dumb job of getting out the STRETCH publications, for instance, is that probably I'd have been given some terrible assignment after that was over, like assistant office manager in Anchorage, Alaska or something that really would have driven me out, you know.

The IBM philosophy, which I think is worth recording…

MERTZ:

(inaudible).

GROSCH:

Right. Exactly so. At full salary, you understand. The IBM philosophy, which exists pretty much to this day--although I think I see it changing after 60 years--from the earliest Watson, Sr. days, has been that if you're a good corporate citizen, a good member of the family, which means that you accept any assignment in any geographic location and smile. You've got to thank them for it. That's the one I could never stomach. You not only have to accept, you know, changing the towels in the washroom in Anchorage, you've got to thank them for the wonderful opportunity that it opens up for you. That's the one--you've got to kiss the hand. If you will do all those things, they'll guarantee you a non-decreasing income and really pretty good benefits for life. If you're that kind of a good boy, you'll get moved to some God awful places but you'll keep your salary. And that's why IBM salaries are such a secret because there are guys changing towels in washrooms at $30,000 a year. You know they say it would be hard on his family if we reduced his standard of living and all that. He can have his $30,000 a year but change the towels every day, buddy, or else. Well, I never liked that, you see, and wouldn't go along with it.

Now, let's review my personal circumstances now. I've just been fired for the second and final time I guess by the IBM Company. I have a wife, a poodle and an aged aunt living in an expensive New York apartment. I'd been fired, or at least departed in high dudgeon at least once from the General Electric Company. I'm aware of the interest and the excitement in the world of computers overseas but I had not lived over there and don't see any immediate way of making a living there. Now, the question is how do I survive in the next few weeks, months or as it finally turned out years.

Well, one thing that became immediately obvious was that I wasn't a very good commodity in the large company environment. I think the word was out in the sense of my being a difficult person to manage. I don't believe that IBM was blackballing me. There was no concerted attempt to make sure that I had to go to being a dishwasher or anything like that. The simple fact of the matter is that when I talked to Raytheon or General Dynamics, or RCA, or something like that, the answer usually from someone who knew me quite well would be, "Well, Herb, what you need is an independent situation where you can say what you think and they won't be bound by company rules and regulations." The trouble is that those independent situations in general didn't have any income attached to them. So I passed my little consultant's hat around for a while in the inimitable fashion of senior people who are discharged from important industrial jobs. And I managed to get several, very pleasant, short term consulting assignments. One with General Electric, with a client named Dr. Robert Johnson that I mentioned a while ago, who was then running the advanced stages of the ERMA project in General Electric's remaining laboratory facilities in Palo Alto which had not yet been closed and moved to Phoenix. One with IBM itself. A very interesting one in which I proposed to Tom Watson himself that I comment on the positive things that IBM might do to improve the image of

the computer in a society increasingly aware of them. I still have a copy of that report and I still think, although it's over 10 years old now, that it was well done and looked a long way into the future of social implications.

MERTZ:

…copy supplied for the project reproduced along with a letter from Watson, Jr., I believe.

GROSCH:

That's right. And that's, as far as I know, the only time it's ever been furnished anyone in toto but there's nothing private about it anymore. It was an open document even at the time. I got a nice little fee for that and it reopened the old time, reasonably friendly relationships between me and Tom Watson. But, it certainly didn't lead to my re-entering the company for a third time or anything like that. And, when I proposed that we might activate some of these suggestions--things like simulating the national economy or simulating the transportation net of New York City, or furnishing their computer to the United Nations. Why, as one would normally expect, the answer was: it's a little early for that or it involves too high a degree of corporate involvement or something of this sort. So, these were single shot operations and my income for the rest of the year dropped to a very small fraction of what it had been on a salary basis from IBM.

I did make a few novel adventures. I attempted to persuade ITT Europe, International Telephone and Telegraph Europe, which had just established a headquarters in Brussels, to pool together the computing capabilities, the computer manufacturing and user capabilities of their several national companies; notably Standard Electric, Loretz (?) and Stuttgart, Standard Telegraph and Cable in the west of England and, to a somewhat lesser extent, LMT in France and Bell Telephone, which is not a part of the Bell System but a part of ITT in Belgium. I thought that I had a useful beginning on such a relationship but the man who was in charge of it, Mark D. Ferrante (?), a former GE vice president who had been jailed in the GE anti-trust scandals, was removed from his post as group executive with ITT for Europe just about the time that I thought I had him interested in this project. And I had to go away with my tail between my legs. To this day, ITT has never really managed to put together its skills in this area and although Standard Electric, Loretz and several other of the people have made interesting small quantity computer contributions on the Western European scene. It's never really turned into a mass production line of a really saleable or marketable commodity. STANTEC, for instance, for a short time manufactured a machine known as ZEBRA which was designed by a very great Dutch logical designer named Vanderpoel, who was perhaps the cleverest figure in machine architecture in the Netherlands or in Northern Europe at that time And, it came from the Dutch PTT through the Dutch ITT facilities to the English ITT company and was made in small quantity and installed in two or three places and it never came to anything.

MERTZ:

Roughly what are the dates at this time?

GROSCH:

My visit to ITT Europe was in the spring of 1960--sorry, '61, I believe it was. Now, to put a date on ZEBRA and so forth, we'd have to go into the brochure literature to be sure. Those that were made…

MERTZ:

(inaudible)

GROSCH:

Yes. Those that were made were in use in England and in the Netherlands by the end of '61 so I presume that the actual design of ZEBRA was probably done around '59. That's guess work.

MERTZ:

You departed from IBM in…

GROSCH:

Early in '59.

MERTZ:

The April meeting out in…

GROSCH:

My dates at Tempe, in Phoenix for GE were the last half of '56 and all of '57. My dates in working for DeCarlo were most of '58 and my very short spin for the military products department ended in March or April of '59.

The famous incident, of course, I have to the day but I don't remember at the moment when we're sitting here. I have newspaper clippings and everything.

MERTZ:

Right. Then the remainder of that year you had this small consulting job?

GROSCH:

I had the consulting arrangement with GE during most of this time and toward the end of '59, you bring up now an entirely different kind of employment.

Toward the end of '59 I began consulting for CEIR, president Herbert W. Robinson. CEIR had just gotten started. It's now an important subsidiary of Control Data. But, in those days it was a free standing outfit. It had begun as a non-profit Council for Economic and Industrial Research. The name has been lost but that was the original meaning. By the time I came near them as a consultant, it had been reincorporated as a profit making organization and the meaning of the letters had been dropped so it was just CEIR Incorporated.

MERTZ:

Where was this?

GROSCH:

It was located in Arlington near the National Airport here in Washington. They had large scale IBM equipment and they were doing extensive calculations having to do with emergency planning and nuclear damage and that sort of stuff for the government. Several agencies, like the Systems Development Corporation had been asked to bid on this work. Robinson, who had really no computer experience, had picked up the rather unsatisfactory contract proposals from agencies that were better equipped to do it but who were reluctant to take it on and had run down the road with it. The process of running down the road involving hiring Jack Moshman (?), who is even today a very well known name in the area and in the field. M-o-s-h-m-a-n, general chairman this year, for instance, of the Spring Joy (?) Computer Conference. And a chap named Bill Orchard-Hayes, an Englishman, who was one of the great second generation linear programming experts following on George Dancey (?) and people of this sort.

Now, those two men plus a good deal of credit from the IBM Company in the installation and rental of his 7000 series machines put Robinson in the fairly large scale computer business. At the time I consulted for him, he had two or three hundred employees and was interested in increasing his physical coverage. He had a project in New York City with Caltex (?), which is a well known petroleum corporation, based in Western Europe, selling in Western Europe. Actually having gas stations and so on in Western Europe but which did its fundamental planning and highest level management work in New York City. And, with Caltex he had a big linear programming simulation contract that was offered by one Charles Cooper. And then also in New York City he had a cooperative arrangement to install a, I think it was, 7094 in the top of the new Union Carbide Building with Union Carbide to pay part of the rent and provide the physical facilities and the operating crew for their work and he to buy the rest of the, to have the title to the machine and to use the rest of the time on CEIR service bureau work; some of which was

to be simulation for Caltex. Well, this seemed to me to be an interesting and imaginative expansion of the idea of service that I pioneered in Huntsville and so forth so I was very much interested in this. I had been introduced to him by one of his other senior consultants, Professor Paul Brock, who was then working mostly for Hughes Aircraft--Hughes Electronics I should say--and who is now professor of mathematics at the University of Vermont. Paul was a friend of mine and was aware of my struggles for consulting fees and introduced me to CEIR at least partly to enable me to get a new client. Robinson wanted at that time to get a STRETCH computer and I was, of course, perhaps the most single most knowledgeable person, outside of the IBM Company, on what a STRETCH computer was like and could do because there had not yet been a formal, legal announcement of the machine. Remember that unlike the 7090, which was modeled in the 709 and was no working simulacrum that would satisfy the anti-trust thing at this time. So, people who would really like to have ordered one but who had not contributed to the development…the AEC were barred from knowing much about it. Although of course I brought with me from IBM not only a great deal of knowledge in my head but also operating manuals and installation instructions and so forth so I was in a good position to advise Robinson on whether or not he should get a STRETCH.

At this time I fell for the first and only time in my--I won't say only but for the first and so far only time in my life a victim of excessive greed. Robinson waved a sizeable stock option at me and I succumbed and switched over from being a part-time consultant, as I finished my GE consulting stint for Johnson, to full time employment for just a few months. And, it was frankly not as attractive as being a consultant to Robinson. The relationship was a good deal more taut than the consulting relationship had been. But, the thing was that I did have the possibility as his stock went up, as it was beginning to do very vigorously, of making a very sizeable amount of money. So, I repeat greed led me to change my status. I became his full time director of programming and planning, or some such phrase, took a small office in Los Angeles--to be exact, on the Sunset Strip--and proposed in a memorandum, in a written proposal of which I still have copies. The cooperative arrangement with about five or six members of the aerospace community out there; notably my early SHARE friends, Douglas Santa Monica and North American El Segundo, Rand Corporation and so forth that we share a STRETCH with CEIR having the facility expense and fundamental title to the machine, the others having, you know, one or two shifts each per week. And, our shift in turn to be available for sub-division and sale to still smaller clients with the understanding that the other cooperators would not compete with us in the service bureau market with their share of the equipment. <P>Well, it sounded good and I wrote it up as trickily as I could combining the better features of Robinson's Union Carbide arrangement and my own experiences at Huntsville and so forth. But, the answer was essentially no sale. Rand Corporation, for instance, Willis Ware and Paul Armor went so far as to reply officially that they would probably get one themselves and do the same thing. And they certainly weren't going to go in with CEIR. Nor was it necessarily a bad choice. It was sort of a horse and a rabbit deal. I mean Rand's experience, let alone North American's and Douglas' experience, was so much deeper and broader in the computer field than CEIR's that it was really rather presumptuous to make such a proposal. Of course, I was quoting it on the basis of my

personal experience in contact with these people and the proposal that I would be running the thing if it got started. And I got a hearing for that reason but although I shipped Robinson out on one occasion and he went around to the various places, notably North American's corporate headquarters. We never really managed to get the thing off the ground.

Then around the second or third month of my working for him as a salaried employee--and this would now be like maybe February of 1960--IBM announced the actual price, which was still somewhat uncertain at the time I was doing this, and promised capabilities of the machine. The price was almost 50 percent more than I expected and for the installation that I was interested in would have run, I think--it's a little vague in my mind now--almost $200,000 a month rental which, as I say, was about a half more than I expected. I expected around $130,000, if I remember my figures correctly. And I may be off…after these years.

And, at the same time the Thrupewood (?) promise was of considerably less than the original proposal figures than the ones that I had brought with me as being the targets under the Dunwell administration. In fact, when STRETCH was actually delivered some time later, it came out to be even less satisfactory than that. The poor performance was a seven days wonder and Tom Watson, in a sense, apologized for the machine and withdrew it from further commercial consideration rather quickly. You could see already from the terms of the disclosure, along with what I already knew, that they were in deep trouble; that the look ahead feature had not worked the way they expected it to and the ultra-high speed, super-duper memory, the freon cooled ultra memory that was supposed to be very much faster than the main core memory had been withdrawn entirely. So, it was clear that there were engineering reasons why this was happening. It wasn't just a marketing ploy of some sort.

So, I wrote Robinson a formal recommendation that we abandon the project but Robinson, of course, at this time was very much concerned with his public image. He wanted to make the outfit look glamorous and powerful and so forth so he discharged me as director of planning and signed a contract to get two STRETCH computers. Now, this was fairly spectacular. He got himself a building on Wilshire Boulevard and put CEIR on one end of the building and he began to prepare space for this fantastically expensive machine down inside. He took on Jack Strong from North American, who later worked for Fletcher Jones in Computer Sciences Corporation, to take my place as the incipient, expected operator of the equipment. He also signed up to place one in Boston but, in order to get these machines, he had to accept a fairly difficult cancellation clause in the contract from IBM, which was not anxious to make any, anyhow; having given up on their commercial viability. And, when in fact it turned out that he didn't have the market, the commercial thrust, to keep him busy and had to remain on the contracts, he had to pay a very substantial cancellation price. I think it was on the order of half a million dollars to cancel one contract and had to work off the other one in terms of free software. So, as frequently was the case in my relations with my employers, the advice I gave was correct

but it wasn't acceptable at the time and perhaps it wasn't phrased as posthumously (?) as it might have been.

I went off on a very pleasant trip to Australia and Tahiti and to preside at the Second Australian National Computer Conference and some meetings thereof and Robinson, as I say, after hiring all these machines, retired sort of to lick his wounds. Because of the terms of my arrangement with him, since I was fired, I was able to get some of my stock on the stock option on a pro-rated basis. I cashed it in immediately because I was interested in competing with him rather than cooperating with him so I felt I wasn't bound by any restrictive arrangement of holding onto it after a while. And, as a result was one of the few people to ever make any money out of a CEIR stock option because before any other stock options came due, the stock had peaked out at some enormously high figure and dropped like stone to below its original level. So I did make a little money out of it. You might say that my greed led me to a small profit but it also led me to a rather embarrassing relationship that I just as soon I had never had. The consulting arrangement was fine. While I consulted for him, for instance, I went over to Underwood and introduced him to Sandy Douglas, Dr. A. S. Douglas, now president elect of the British Computer Society, and he took on Sandy as the technical head of his British subsidiary, CEIRUK, establishing a very friendly and fruitful relationship for both of them and, you know, readily paying off his small investment in my consultant fees…So it wasn't really until I went to work for him full time that we didn't do too well.

Well, I had other things of this sort. Although the CEIR one was the only one that ran me into a full employment situation. And here we come toward the end of 1961 now with, you know, practically no money coming in and no really useful technical contributions.

MERTZ:

You had already done this study for Tom Watson, Jr.

GROSCH:

That was in early 1960. And we're now coming to late '60 and into '61 and no business coming in at all, so to speak. A little technical work here and there. A little advice on…

MERTZ:

…do some writing for any of…

GROSCH:

I was a contributing editor of Datamation (?) in those days and they used to give me, you know, $100 for a page of commentary or something like that but this pays for the weekly grog bill and that's about it. So, it was really a very low income proposition.

In fact, I was amused to find that at that time if you earned little enough and again…made out your income tax in the right way that you could end up by getting money back from the government. You have to describe yourself as a proprietorship, you know, and then you recap your former years also as proprietorship when you were a consultant making some real money and you're allowed to get back your losses if your net income is negative, you can get something back. Great theory which I exploited only one year, however, I'm glad to say.

MERTZ:

But, you managed to keep the wolves away from the door. Your wife was living in…

GROSCH:

Yes and not working. This essentially simply ate into my capital. I had fairly substantial savings and some IBM stock and so forth. And when you aren't working, and when you aren't charging around buying fancy clothes and taking trips all over the place and taking your wife along at your own expense and things of this sort, your expenses drop amazingly. Still and all, a New York apartment costs a lot of money and a steak now and then does mount up. So, counting the fingers of proprietorship rather than just as an individual, I lost a great deal of money in 1961.

By the end of this period I had pretty well convinced myself that I was unemployable on the American scene at my own assessment. That I might very well be able to go back to work as a programmer, which I assumed I would be very poor at by now, or that I could be a dishwasher or an automobile salesman, or something like that but that I wasn't likely to become a manager of an important activity in a major computer company or even, unfortunately--and I think this was too bad for both sides--in an important computer users activity. For instance, I have worked for American Express in those days. They were just beginning to get heavily into the automation of the credit card business. It was perfectly obvious to me that they hadn't the faintest idea how to handle this from the point of view of anything beyond ordinary punch-cards. I could have been enormously valuable in such a company but you couldn't penetrate through enough without the support of the outfit that was going to supply the equipment or something like that. If IBM had come to them and said, "Gee, that guy Grosch is just enormous at doing this sort of thing, you know. Why don't you hire him. He'll solve all your problems." I would have been hired at an enormous salary the next day but none of the companies were willing to do that nor were they willing to employ me themselves. So, aside from the occasional consulting contract and the occasional commentary paid for by a Wall Street firm or a computer magazine, I was essentially going down the tube.

Well, it seemed useful to review my position at this point and I realized that there was one thing that I had not been able to exploit, with the exception, and this is the reason I mentioned it a few minutes ago, was this one trip to Belgium to look at ITT. I hadn't exploited it, my rather unusual credibility in Western Europe. I had all these friends all over the United Kingdom, France, Belgium, Germany.

Ah! now I remember it. Karl Grosjean. It was not Gene but Karl Grosjean was the Belgium who had the early Watson Lab…G-r-o-s-j-e-a-n, the first name C-a-r-l, now professor at the University of Ghent.

OK. So, reviewing this I decided to take a crack at this. So, leaving my wife, poodle and aged aunt behind…

MERTZ:

…meeting in Australia?

GROSCH:

Oh, yes. I'd come back from Tahiti and Australia and gotten into a law suit with Robinson about whether he was supposed to pay my fare or not since he'd agreed I could go to Australia before firing me but fired me before I could actually go.

So, I had come back and this was only a one month trip but it had taken me, at my own expense and intended from the beginning to be at my own expense, to Japan and gave me my very first look at the early, the pre-electronic Japanese data processing era. IBM was vigorously at work. Carol Ando, who is now the marketing manager to Jujitsu(?) who is their sales manager in those days and I knew him. And I had introductions to several independent Japanese companies. And for a very short period, just a week or so, I had an intensive look at what they might do, under-rated them compared to what they have done but nevertheless had a much earlier view than almost any other senior American in the computer field had who was not, you know, actually sent there to be part of IBM Japan or something like that.

MERTZ:

You wrote some of your reactions to this in Datamation (?).

GROSCH:

That's right. And would have written more except that Bob Forest, the editor, thought it was pretty dull stuff for the average reader so we didn't pursue it. But I did store that away and later on my contacts in Japan expanded and became very valuable to me. That was my first view there.

But, where I got to the end of '61 I said to myself, "OK, I'll move over to Europe permanently. I'm not going to hang around the United States and starve to death…be a dishwasher in the United States, I'll be a dishwasher in Germany or what have you." So, leaving the family behind I shook myself off and established myself first in a hotel, and then a very small, inexpensive studio apartment in Monte Carlo. At this time there were no taxes in Monte Carlo and since I was not earning anything, this was not a very great advantage. But, assuming that I might soon earn something, it looked like a useful thing.

And I had come without any clients whatsoever. But I had, of course, taken pains to notify a few people that I was going in the hopes that I might get some business from them. While I was skiing on the Alborg (?) at Christmas--and this was not a sign of particular profligacy, there simply is no business done, industrially or intellectually, in Europe over the Christmas holidays, as you well know. So I might just as well go skiing but at least I went somewhere inexpensive like Austria. While I was skiing on the Alborg, I got a cable from Jim Miles of Control Data suggesting that I might interact on their behalf with decorum on their law suit with Sperry Rand on whether or not they had stolen the 1604A when they split off from Sperry Rand to establish Control Data. And they didn't want me to testify one way or the other since I had no knowledge of it but they wanted a relatively neutral party but one who would be at least pleasantly disposed to CDC to tell the judge what computers are about. Sort of be a friend to the court in the technical sense of the word. This, of course, I was very willing to do if they would ship me back to the States to do it and so forth. And before we finalized the arrangement, why the suit was settled.

Meanwhile, however they were fully aware of the fact that I was over there and what my contacts were like. So I got a continuing arrangement with them that lasted me for a large part of 1962 to assist them in their decision on whether or not to establish a base in Western Europe. And, I think it isn't of too much interest to this history to go into detail but over a period of some months I visited many of the computer laboratories that might be users of large scale American equipment. Some of them already had IBM equipment, the STRETCH at British Atomic Energy Commission and so forth and so forth. Some of them were just thinking about it.

MERTZ:

Did you continue to write any articles about…

GROSCH:

Well, it sort of dwindled off about this time. As long as I was just sitting in Monte Carlo waiting for the phone to ring, of course, it was a fine idea. But, when I was rushing from country to country two days in Norway, you know, this is Tuesday so it must be Luxembourg sort of thing, it got to be pretty hard to do. Moreover, the only thing that I was really up on were things that were you know in a sense control data property. Or at least revealed by relationships with my client. If I were to list various interesting

laboratories that I went to, why it would have been pretty much a give-away for anybody who wanted to follow Control Data around and tap the same sources and so forth. I wrote one article in which I mentioned this fact and tried to sort of make a broad view across the University of Milano to Harwell in England but it was a great deal of work for 75 bucks. And in the end I sort of gave up on it by mutual agreement. Also, Bob Forest had come in as editor of Datamation and my relationship with him was not as close personally as they had been with his predecessor.

It wasn't a question of awkwardness, I simply didn't know him as well and he was 5,000 miles away. So, there was some difficulty in adjusting…

MERTZ:

So you went over to Monte Carlo with nothing.

GROSCH:

With nothing. I had no prior arrangement whatsoever. Then that Control Data thing came along. That occupied me virtually full time for the first six months of the year; first six months of '62. I kept an eye open for other clients. With the exception of a couple of articles to Datamation and a couple of reviews of the broad European scene for a Wall Street firm that was interested in foreign EDP, I think my sole income for most of that year was from Control Data.

The second half of the year was a little more difficult because by this time Control Data had established itself. They didn't want to use me as a permanent executive and they brought in a chap named Strickland, who was the treasurer of the corporation in Minneapolis, to whom I developed an instant antipathy, to actually run the thing. So, gradually we drifted apart and after the Munich meeting, which was I guess in September, I got no further financial contributions from them for a couple of years.

MERTZ:

This is '61?

GROSCH:

Sixty-two. I went over in November of '61 and this is '62 if I'm right.

Then at the end of '62, a whole series of personal catastrophes began. My family began dying like flies back in the United States. First of all, my mother, then my father, then the aged poodle and finally the aged aunt. Each one of these entitled separate funerals, separate expenses and a good deal of personal anguish.

MERTZ:

And separate trips?

GROSCH:

Separate trips back and forth, always at my own expense. However, it did have the advantage of finally freeing my wife to come with me. But, the net result was that for all of '63, I got almost nowhere in the profession. I spent almost all of my time burying people, rushing back and forth, settling estates, traveling out to the West Coast to do this and do that.

MERTZ:

Did you stay, continue on in Monte Carlo?

GROSCH:

I kept my Monte Carlo apartment but I was hardly ever in it. I was really almost a storage place for my papers and books in Europe. I don't think I was there two months.

MERTZ:

Did you ship that much stuff over there?

GROSCH:

Well, it gradually accreted. The first year, '62, when I was working effectively with Control Data I made, for instance, two trips to Control Data in Minneapolis at their expense. And a couple of home-bound trips at my own expense and each time I'd take back, you know, a small trunk full of papers or books or what have you, air freight now that I had a place to put them, you know, and was sure that I wasn't going to starve to death or have to be a dishwasher. And so I was gradually transferring stuff across but it was in reasonably small quantities.

This archive of paper, for instance, I had sold almost all of my collections of early periodicals such as computer periodicals, the optical society journals, science fiction and so forth when I left IBM in '59. More because I didn't have any place to keep them in the apartment than for lack of money. Got very good money for it and established a relationship with a scientific periodical, used periodical house. And, when I went to Europe I gave him these 15 boxes of archives of my early IBM and MIT days and suggested that he might like to sell them in Japan. And it was for that reason that I boxed them and organized them as much as I did. Well, he kept them for two or three years while I was in Europe, free of charge as it turned out. Never did find a customer. I think he offered them at $3,000. We had a one-third arrangement on it. If he could sell them, he could keep a third. I think he offered them in Japan at $3,000 and no takers. I'm sure I

could have sold them myself if I had known where to take them but, of course, I didn't. Japan looked to me like a useful place since they were so anxious to catch up.

Anyhow, those were out of the way and the rest of my stuff, when I took Elizabeth back to Europe in the spring of '64, I boxed up, furniture and all, and put in a warehouse. We went over essentially with our clothes and what papers I'd already transferred and our slide collections and…highly personal items of that sort.

But, by this time I was again out of clients although I was not as despairing as I had been in November of '61 when I went the first time. I was sure that now I had gotten everybody suitably buried that I would soon get back into the consulting arrangement in Western Europe. I had attempted to establish relationships with Philips and with Olivetti. In both cases I had very high level contacts. And with ICL, where I knew Ferrante (?) quite well and Ferrante had now begun the negotiations which ultimately formed ICL. It was still ICT at the time I am talking about. He was about to join them.

MERTZ:

(inaudible)

GROSCH:

This would be late '63. And, also while I was on the West Coast waiting for my father's estate to be settled, I had attempted to get some things going with General Precision which had a warehouse full of old LPG machines that I thought I could peddle in Eastern Europe in quantities; in the sense that selling one at a time was going to be impossible. They weren't attractive anymore but I thought you might sell a hundred in Hungary and 200 in Rumania sort of thing. That fell through because LPG's general precision and the West Coast small computer trade all sort of collapsed simultaneously…in '63. But, it was an interesting idea and showed that I was still being relatively creative in the sales and marketing and administrative side of the business, even if I wasn't up on the high technology.

So, I really felt that it was going to fly all right in '64 once I got Elizabeth moved over there and so forth.

Well, by this time there was no point in going back to Monte Carlo because Monte Carlo no longer had the tax free status that it had had. I had been assured by the Austrian consulate in New York and by the American consulate, which at that time still existed in Salzburg, that if I came to Salzburg and kept my head down, I'd never get a tax bill. I could live in Austria as long as I didn't own property, drive around in a Rolls Royce, have a big bank account or work in the country that I could come to Austria and live quietly on the economy and they'd be delighted to have me and there would be no tax bill ever rendered. I might owe one but no one would ever ask me for it. So, that looked to me as being almost as good as Monte Carlo and not nearly as boring for Elizabeth when I was

out on the road. So, we decided to go to Salzburg. Picked up all my stuff in Nice and loaded it (or Monte Carlo) into a rented station wagon and took off for Salzburg. But when we got there, that fact that Elizabeth had no German and found the somewhat medieval atmosphere of the old town a little prevailing, we abandoned our plan. We decided instead to head for London just to find an English speaking for her adaptation to living in Europe and stopped en route in Lausanne, Switzerland. Actually, as it turned out two days after the IBM 360 announcement in April of 1964. Gordon Smith, now executive director of ACM in New York, was then the vice president of UNIVAC for Europe, Middle East and Africa based in Lausanne. I naturally made a social, since we were friends, and business call on him. And in the course of doing this found him faced with this enormous pile of 360 documentations in the sense that immediately producing sales arguments to counter the glamour of the IBM announcement and nobody in his own staff able to do this sooner than wait for months while this was done in Philadelphia and…He hired me on the spot as a consultant to digest this stuff and furnish him some competitive arguments and that was the beginning of my consulting relationship with UNIVAC that lasted through the next 12 months.

Place to stop.

[Start Tape 15]

GROSCH:

We were talking about my fairly long stay at General Electric in Evandale, the introduction of 700 series equipment into the mid-West and the use of that equipment in remote data reduction of larger and larger memories and so forth. All of this is fairly common in the aerospace trade. It was unusual to have it in such a remote spot where most of the activity was going on the West Coast or in the northeast but what was actually happening there was duplicated in many other similar installations. The early SHARE members all did this sort of thing. I've said in an earlier interview we were all friendly and worked very closely together at that time.

I would say that at that time you saw the absolute maximum--I should tie this down in years by saying about 1954--of customer influence on the IBM Corporation. Earlier than that IBM simply didn't need much help from customers. It was making punch-card machines that didn't change much from year to year and virtually, you know, the argument about whether to put six…in the reproducer as a standard item instead of making it an optional accessory was the sort of thing that went on behind the scenes. And, later there were so many customers and IBM became so internally so competent at the use of computers and in general needed help so little that customer influence dropped. Moreover, there was just a question of share in the market. The people who signed the telegram to Watson, Jr. asking him to release the information on the 704 represented customers who had over 10 percent of IBM's gross worldwide business. Now, of course, we couldn't speak for those customers as individuals. I couldn't speak for the whole

General Electric company which had something like 14 million points of IBM equipment installed that year. I could only speak really for my own installation and for very closely allied ones. But, even if you only took the installations of the men who signed that telegram actually managed, it was something on the order of three percent of IBM's world wide business. So, 25 guys signing one telegram represented, you know, a pretty substantial influence on IBM and IBM was now able at that time also, I mean Watson, Jr. and others was looking for guns. (?) They had made their first generation machine in the 701 and they sold it. They made business equipment in the 702. It wasn't going all that well but, you know, they had people lined up outside the door waiting for them. Now, the question of what to make next; what kind of software, we would say today, to be provided and so forth concerned them very much. And, as I say they were still malleable. You could still beat on them and get some results out of them. So, that was an interesting high point in itself.

Behind the scenes there were some other interesting things going on. For the first time, they were taking small amounts of money from civilian or quasi-civilian activities to do development work. Rand Corporation, for instance, put I believe it was around $50,000 into development of the first graphic cathode ray tube graphic output device for a 700 series machine. And I was quite incensed because they hadn't asked me instead when I found out about it because I wanted number one instead of letting Rand have number one. Now, Paul Armor (?), for instance, and…Ware (?) know that sort of story. It was done by private negotiation with Cuthbert Hurd and people of this sort. It wasn't a big thing. It wasn't advertised. Nothing wrong with it, you understand, but it simply was not a part of their standard policy up until that time IBM had developed things in the laboratory at their own expense and trotted them out and said to the customers, "You lucky customers, here you are." And you either bought or not, or rented it or not as you chose. This is, of course, before the consent decree.

Now they had, of course, taken many military contracts to build special equipment ranging from cryptological stuff to wartime munitions and this sort of thing. But, not for their standard line of equipment. And this graphic output device that I described, whose number escapes me now after all these years, was in the standard catalog of equipment and anyone could purchase it after it had been developed. And, in fact, I got the first production model after Rand corporation got its…

MERTZ:

This is 1956?

GROSCH:

I would guess this was '55 probably.

MERTZ:

(inaudible)

GROSCH:

How much interaction there was between the Kingston kind of development, which you're referring to, and this particular machine, I don't know. I never really knew much about what went on inside either one of them but this certainly was their first commercially available machine. And they didn't make very many of them. It was a double arrangement in which there was a standard television screen kind of display available on the operator's console and then down inside, a much smaller high intensity, high resolution CRT that could be photographed on either a Polaroid camera or on a computer controlled 35 MM or something like that…And we had one and used it fairly effectively but this was a time in which one bought bells and whistles without having a general accounting office kind of examination and efficiency. You got something of this sort to see what you could do with it simply because there was no prior experience available. In our case, we plotted up…performance curves and things of this sort on it but I don't really think that it made much difference in the overall effect on most of our work for the jet engine people. It made it possible for an engineer to get some cheap stuff to paste in his own notebook is what it amounted to.

MERTZ:

With the WHIRLWIND project, did you have the opportunity to see their cathode ray...

GROSCH:

Yes. They had permanent cathode ray tubes displays in '51 while I was there.

MERTZ:

Were they displayed in February of 1951? Were the first displays…

GROSCH:

Yes, indeed. Yeah. I remember some of the reports that I brought away from there showed… blueprints, what we now send Xerox of…displays and things of this sort.

MERTZ:

Is that…

GROSCH:

Yes. People like Charlie Adams would write his people to be more precise and write little programs and then the secret stuff that went on for real air defense or air traffic control, of course, was not in those reports…

I think the other thing about the Evandale business was that toward the end of my stay there I did build this fancy building which I believe I referred to in earlier remarks. It cost $650,000 and it was 27,000 square feet and I think it was probably the first building in industry that was designed from the ground up just to hold computers anywhere in the world. There had been other buildings designed to hold computers. For instance, Aiken's fancy building at Harvard had been built sometime before that but they were at universities and in military establishments and there have been, of course, a great many very elaborate installations being in existing buildings by commercial or industrial outfits. But, I think this was the first commercial industrial outfit that had built a building from excavation up just to put in computers.

Why, we had 220 tons of air conditioning, for instance, in a rather small building.

MERTZ:

This pre-dates the Watson Laboratory?

GROSCH:

That was not built just for computers you see. That was the point. Both of those were modified buildings. They were perhaps gutted and, you know, the reconstruction cost might have been greater than starting with an excavation but at least you didn't have the chance of laying out your floor plan completely free.

MERTZ:

How much space in this building of yours…

GROSCH:

Oh, it was two-thirds people. I was already spending one-half of my funds, one-half of my gross income for human beings and traditional services as against IBM rental supplies, electrical power and so forth. The important thing was that we had two things in that building that were relatively new. One was an attempt to permit flexible arrangement of equipment. Prior to that most people had drilled holes in the floor, drilled trenches in the floor with air hammers or something of this sort. Or in the case of nice modifications, they cast channels in the floor, according to a computer room layout furnished by the manufacturer, IBM or ERA, as it might have been in those days.

And, the flexible floor that we have today, of course, didn't exist. Nobody made a commercial flexible floor in those days. So what I did was to put down a thick skin of maple flooring on the steel framework--very much like, almost like a bowling alley with the planking on edge for extra strength to hold the loads. And then you could saw a hole in this with a compass saw and the air underneath constituted the false ceiling of the basement so that you had cold air available everywhere. Wherever you punched a hole, you got cold air ready to come out and cool your machine. And we had a dual system for the rest of the building to keep the people cool, which didn't get involved with the machine cooling system.

And the second thing that we did that I think was relatively a pioneering venture was to make, to pay a great deal of attention to reliable services. Everything was duplicated, including the two major electrical inlets from two different sources; two major air conditioning units working off plant steam; two pumps in the water tower and so forth. The only things that weren't completely duplicated was the major step-down transformer and we provided a pad for a second one in case there was ever a failure. And a switch gear capability to switch it if we ever decided to install it. I think to this day they have not done so. And the cooling tower itself. The physical wooden structure for cooling the water of the air conditioning system which was essentially fool-proof down to the filters, pumps and so forth which we did duplicate. So we made a great effort to be on the air in spite of thunder storms, strikes, acts of God, collapse of the universe and what have you. And went down the first week when straw clogged the Y in the system where two of these duplicates came together. But, we eliminated the Y and all went well. It was an adventure in those days to make such a design. Now you call up a contractor, of course, and say, "I need a computer building of 27,000 square feet. Bring in your designs in six months," and he does it because there is a great deal of experience in that. But, it was a great deal of fun to actually start with the back of an envelope and work through the full details on this. And I've always been very proud of the results.

Another thing it did was that it attracted a large number of people from all over the world to see the building because they were embarking on projects of the same sort. And as I spread the word through speechmaking and so forth, people came in to see what was going on.

I remember describing the building, for instance, at a talk I gave in Cambridge at the Cavendish Labs and a very erudite physics and mathematics professor saying to me afterwards that they'd never heard such a talk in saintly quarters, which is undoubtedly true. But, on the other hand it also generated a great deal of British interest in the installation practice and so forth. And I'm sure it paid off for both sides.

Now about this time I had been in frequent touch with other parts of GE, of course, about other computer adventures. I was interested primarily in applications. There's an extremely interesting and very little known work that was done at Pittsfield under the aegis of Pier Abetti, who is still active in the computer business in General Electric, now I believe in Lynchburg, Virginia, in the controls activity. And, who for an intervening

period was the number 2 man in the UNIVAC operations in Europe and Lausanne, Switzerland in 1964 era when I consulted there. Abetti had a charge from his management, including what we would now call a management information system in the large transformer operation there--the people that design custom power transformers that would fill a hole on a flatcar, you know; not the small babies but the completely custom built ones for large power installations. And he went through a system which included automatic design, automatic drafting, automatic production control with ancillary cost accounting, straight accounting, payroll and so forth. All done on the same machine and with what you might call software plug compatibility. That is, each system was designed to fit into the others although they weren't independent in the sense that you could pull out a block and shift it to another part of General Electric and have it useful. In fact, at that time there was hardly another 705 at GE and it was a very curious choice of machine to do that kind of work on it. But, that was imposed on them by management decision I believe before they got very far into the act. And, in fact, the production control work and so forth was of a fairly permanent sort that could be done very well on the data processing rather than bid (?) oriented, high speed simulation kind of machine.

Abetti's work, which I really do think, was great and deserves to be known in the same way that the Leo adventure in early inventory control on the English machines deserves to be known as a great pioneering venture in the standard business data processing. Abetti's work was kept secret simply because the purpose of doing it was to save paperwork cost over Westinghouse and other competition. And, of course, it turned out later needless to say that Westinghouse was embarked on a similar operation. And that they both saved about the same amount. The Abetti adventure was considerably more sophisticated than anything at that time that was actually carried through.

His assistant in this was a man named Stan Williams, I believe it was. I'm not certain at the moment about his first name. He's still very active in the GE straight computer kind of thing and he probably has gone to Honeywell now. I don't know that for a fact but he's probably gone to Honeywell now. He was Abetti's number 2 man and I think he is now a better known figure in the industrial data processing field than Abetti is.

Well, I was aware of this sort of thing but I was also aware in parallel of the interest in other parts of the company to build equipment. ORAC had been built and delivered in horrible form to Wright Field. A copy of Aiken's third machine--the one with a very large drum and GE componentry. The drum worked pretty well since GE was good at designing bearings. The componentry didn't because it turned out they were very poor indeed at designing germanium diodes--that is, germanium diodes specifically for digital computer application. They made them very well for many other applications. So there were some great troubles in that area of the business but, nevertheless, you could feel the tide gathering.

I think I mentioned in an earlier interview that George Metcalf conducted this industrial electronics study and that one chapter of it on electronic computers, shepherded by Claire Lasher, who later became a general manager of the GE Computer Enterprise, had drawn

my attention and that I contributed something to it, mostly claiming that it was two and one-half to three times low in its projections which, indeed, turned out 10 years later to be correct.

Well, that group was beginning to gather its forces. I had several interviews with Dr. Baker, the man who was the key person in all electronics work in General Electric at that time. And I had discovered, both by personal observation and by the usual trans-departmental company grapevine that nothing was going to happen until Doc moved.

I think I mentioned in an earlier speech --in any event, I'll repeat --that he told me face to face in his beautiful office in Syracuse at Electronics Park that it cost him $25,000 a year in his personal compensation to put the company into the portable television business -- that is, I presume black and white portable television --because he had to reduce the current profits of the electronics division by such an amount that his incentive compensation, his bonuses and so forth, were dropped by that amount. And, indeed, in the long term it would pay the company off many times over but by that time he would have retired and someone else would reap the benefits in increased incentive compensation for what Baker had sacrificed, which indicates that as careful as GE's professional management philosophy was, it had not taken account of the development of long term, high risk businesses from the point of view of the very highest level of management in the way that it should have.

Well, I'm not a management expert. I think I ought to gloss over that but, in fact, Baker told me this himself and he uses it as an example of reasons why he was reluctant to make any major investment in computers. Moreover, every time he talked to me, of course, I kept telling him it would take hundreds of millions of dollars to get in. They were trying to get in for tens of millions of dollars and preferably for just millions of dollars. So, in the end the pressures to get in became too great. It was the OK thing to do. The middle level professionals, people like myself were pressing the usage of computers within the company at a great rate. And while they didn't aim to sell that market, in fact, much to my disgust they intended to steer away from that market in their product planning for the initial entry into the field. The fact remains that it constituted a form of pressure, second order pressure, to get into the business.

My line to Baker was, "My gosh, you've got a ready market here for one to two dozen, what we would now call, 7000 series computers, transistorized IBM 700 series machines right here in the company. All you've got to do by a stroke of the pen order them to be replaced by a good GE computer and you've got enough to substantiate a whole branch of business." To which his answer was, "Our decentralization philosophy prohibits this." My personal view at the time and now is when the pure philosophy gets in the way of an entry into a business as important as the computer trade, it's a good time to modify the philosophy. And, of course, in the later years they have modified the philosophy but unfortunately too late to help them much in that initial entry.

Well, I soon discovered that I was not going to be made general manager of the enterprise by a very considerable margin. Nor was any other person who had any real experience in the computer field either as a designer or manufacturer, or salesmen, or a user but that, nevertheless, an entry was to be made. And it was to be made under the auspices of a man named H. R. Oldfield, Jr., son of a rather well known Air Force general of World War II, well experienced and well thought of in the field of military electronics on the marketing side. And, needless to say, since his last name was Oldfield he was called Barney although he was no relation to the racing driver as far as I know. Barney was clearly going to get this assignment so I pocketed my pride, which frankly wasn't all that injured by this because I was well aware of the fact that I wasn't standard General Electric management material and that I was rather contemptuous, openly contemptuous of much of their professional philosophy. I hope in a constructive way. It wasn't I think contemptuous in the sense of saying, "You shouldn't think about processes of management." I simply objected to the Procrustean theory in which you draw up a set of boxes and then cut the people to fit. And I also objected to the idea that a person who could manage the outdoor lighting department or the electric blanket department had ipso facto demonstrated his talents to market, say, electronic computers especially against IBM or, say, nuclear reactors, especially to somebody like foreign governments or the AEC. So I had rather openly expressed a disagreement with some of the purer aspects of GE management philosophy and, in addition, I had never had profit and loss responsibility before. Although, as it turned out, neither had any of the other men that were sent to do the task.

I was of the initial group the senior person at the section manager level --that is, the next level down from general management responsibility where you were responsible for the entire function, like engineering or manufacturing, which was called section management in GE at that time. I had been the section manager for two and one-half years. Oldfield had been section manager for a year and one-half of a small marketing group and none of the others had been full section managers before. So, in some senses of the word I was senior to the group but the major point was I was the only non-Syracuse, non-Schenectady electronics guy in the outfit. So when I pocketed what little pride, or swallowed what little pride I had, went to Oldfield and said I wanted to be the applications man under him or, as we would now say, the software applications man under him. He really, I suppose, couldn't refuse me too easily but he certainly regarded me as a rival to wall and put aside from his otherwise loyal crew of Syracusians and Schenectadians. I sensed this but I thought I could overcome it. In fact, I think it was a mistaken assessment of my own personality as well as of typical company politics of a situation like that. But, I don't regret going. It was a very valuable experience to see the new enterprise start. I contributed quite a bit to it in the long run and I left with considerable regrets.

Now, let me describe how they did go into it because I think not all of this story is well known. Although I'm sure that traces of it are available in the literature. It's not a hidden story.

Oldfield was essentially faced with the task of converting a section of the industrial electronics department ran by a man named Moorelock (?) of Syracuse who in turn reported to Doc Baker. He was charged with converting this section into a department, essentially without expending any long term funds --in other words, for zero millions of dollars --getting into a business where he could be competitive in some aspects with IBM. It was not intended to make process control computers, analog computers primarily. Although, due to the experience and prejudices of the people that were recruited to run the outfit, they did indeed enter those fields simply because that's why their recruits knew about. But, the express intent at the beginning was to be competitive at least in some areas with the IBM Corporation. And, they looked around and they found an opportunity in the banking field. Now how much of this was due to Oldfield or how much was done to this initial Industrial Electronics Study, I can't answer. I was not completely conversant with this. People like Metcalf would know. I presume there are many GE records that reveal this. But, in any event they tripped over the fact that the Stanford Research Institute had a major contract for some years --on the order of three years; I can't speak to the exact figure --with the Bank of America, San Francisco to create a check sorting computer, a check handling computer which, at that time, had the acronym ERMA. And, you know I'm embarrassed to admit I don't remember at the moment what ERMA stood for. I could probably dredge it up out of my subconscious but it was an acronym. It had some --E was obviously electronics.

MERTZ:

Electronics Records Management maybe.

GROSCH:

Yeah, something like that. Exactly so, exactly so. It had a meaning. It was created --I think the acronym was created probably by SRI people. Gerry Noe was the key person that I knew in those days in charge of this earlier stage of the project.

MERTZ:

This was around '56?

GROSCH:

The project began a good deal earlier than that. I'm talking about my advent in the summer of '56, yes, but the SRI project went back I'm sure three years beyond that. And, a good person to interview on some of that, if you want to go that far into the business community, would be Al Zipf who is currently a senior vice president at the Bank of America, who was the man from the very beginning who spearheaded the Bank of America entry into data processing. He was the first person that suggested solutions to what their top management recognized as almost an insuperable problem of paper handling that was coming along as the tremendous increase in the use of checks flooded

an enormous consumer oriented private check oriented bank. I can no longer quote the billions and billions of checks per day, or per week or whatever it was that they expected to have to handle but they quite rightly saw that they'd have to hire every woman under 40 in the State of California to run proof machines if they tried to do it with semi-automatic methods. They already had I forget how many thousand IBM proof machines which were essentially paper check sorters in which a girl inserted the check into the machine one at a time and entered its value on an electronic keyboard into an adding machine kinds of counters. A standard item in the IBM line although one that didn't impinge on my fancy high speed data processing…Well, Zipf was the key man in this. He had arranged for this contract to go to SRI. And the important point was that all of the SRI development --which I'll come to in a second --belonged to the Bank of America. Not SRI… developed by the Bank of America. Now, when the Bank of America then tried to find someone who would mass produce this machine, they ran into two facts.

First of all, it wasn't a mass production type of design. It was an experimental gingey that was perfectly creditable to the SRI people but certainly could not just be taken out and given to a tin wire man and stamped out in large quantities. Secondly, the standard manufacturers --the National Cash, Burroughs, IBM people who were deeply involved with the banks on a day to day basis --did not really believe in the overall soundness of this concept. They wanted to go on solid proof machines, or modified punch-card machines or whatever. They weren't looking really to the introduction of more advanced equipment. They were reserving their forces for scientific computing or for large scale accounting and so forth. While they might wish to sell a computer to the accounting part of the bank, they weren't thinking about the physical check handling thing. They regarded it as an irritant rather than a central thing.

And I guess --although this is guesswork --that the terms the B of A was asking for an exclusive contract in this were probably pretty exorbitant. Bankers being pretty tough cookies and Zipf being quite sure that he had something good.

Well, in fact with the prospect of an entry into the field on a ready-made basis and into an area where I also agreed IBM had not completely blocked competition. In fact, major competition at that time was in National Cash and Burroughs was really quite healthy. It was a good strategic, or at least tactical decision to enter at that point. But, GE had to buy in and what they did was they bought up the Bank of America's rights to all this development, essentially paid back the B of A for all its really rather considerable investment in SRI research and development. And received in return, of course, full rights to this machine, a contract to build the first 20 I guess it was for the Bank of America and then go on and build on their own account for anybody else that wanted it with prices adjusted in such a way that B of A essentially got its machines with no payback on the R&D and then they had to get their R& D investment that they'd made by purchasing the rights from the later customers. Now, again I'm not fully conversant with the financial details on this. But, it was clear that the B of A drove a hard bargain and this was discussed many times around the conference table and the general manager among

the section managers a certain amount of hand-wringing about how are we ever going to make out when we have this enormous backlog of finance to pay off.

MERTZ:

(inaudible)

GROSCH:

I don't really know that. I presume it was done by people like Oldfield and Moorelock with a good deal of professional financial assistance. I do know however, first hand that the contract, the exact terms, were not agreed on by the time GE made the entry. It was like a government contract in the sense that there had been a firm exchange of documents with the intention to go ahead and finish but the final printed contract I don't think came out until the spring of '57 by which time we were fully committed and were actually at work redesigning the machine and getting ready to manufacture.

Now the people who went out there included Oldfield as general manager, me as the software man, if you want to call it that. The engineering man was Ken Geiser who came from the General Engineering Laboratories in Schenectady and who was essentially an analog expert. And he brought with him as a major recruit, Dr. George Jacoby, who was also an analog user and philosopher but who was firmly convinced of the coming dominance of digital equipment. So Jacoby started out by being the guy that had to really build the ERMA but then it ended up by his, in turn --GE, in turn, being supplemented by Dr. Robert R. Johnson who came to GE at that point from some place like Hughes, I think it was. Still younger and a very vigorous man who is now vice president of engineering for Burroughs. Jacoby is assistant director of electronics work at the former Institute of Technology I think in the Chicago area and Geiser is still struggling along in GE, or nowadays Honeywell Information Systems in Phoenix. I think he's in charge of customer relations. He runs a SHARE operation, so to speak, at the present time in the GE users (?) group --now, presumably, Honeywell users group.

Ok, that's the engineering side. They also had working on the software side of it, much to my annoyance since I claimed that I had been offered complete responsibility in that area, Joe Weisenbaum, who is, of course, now a well known figure in the trade at MIT, Project MACK (?). Joe is the father of ELIZA and so forth. And, Weisenbaum actually did most of the application software for ERMA, much to my anger since I thought that I had the rights to do that.

Most of the initial work was done at Palo Alto at space that GE rented nearby for ease of transfer of the technology from the SRI laboratories to GE development shops. Weisenbaum was there. Johnson was there. Jacoby was there. I, of course, had gone directly to Phoenix to start that up so that it was much more valuable really to do the software there. But, I had brought with me people like Dan McCracken and so on, whom I regarded as outstanding and capable of doing this sort of thing.

The finance was run by --names are beginning to get a little dim in my mind --a finance manager, an employee at…employee relations manager, a manufacturing manager named Ray Barkley and a sales manager, or to be more precise, a marketing manager, which included market research and product planning, this man named Claire Lasher who later succeeded Oldfield as general manager after I left and that was the initial bunch of recruits. I was the first person to come to town at the time when the Phoenix advent was secret. Then it was not known that it was General Electric; merely that some large company was coming to add onto the Phoenix list.

I brought with me a third of the 704s that I had ordered in Evandale at 704 announcement day and the famous Oklahoma land rush. And, was charged by Oldfield with finding enough service bureau work for it. Inside and outside the General Electric Company, its services would essentially be available free for accounting, for ERMA software testing and for assembly, I guess I would say, and for engineering calculations. And, this was accompanied by a rather horrendous economic slump that year, 1956-57, in the Los Angeles area. And, of course, the fact that Phoenix was a fairly remote spot from which to sell computer services to other parts of the country. We didn't have, of course, the time sharing kind of remote access. We were operating bicycle mode in those days. If you wanted work done on somebody else's computer, you got on your bicycle and took it over to him.

So, this was a challenge and it was with some difficulty that I managed to carry it out. Al Benson, who had installed the second 704 for me in Lynn, Massachusetts, came with me as my operations sub-section manager. McCracken was the guy in charge of training and similar activities but temporarily assigned to things like simulating the ERMA machine on the 704 to check out the software and so forth. I don't remember too much about the other groups. I had a business data processing applications group and a scientific applications group and so forth but the names are not of too much interest in a historical account. But, they were good people and they had the advantage of having worked pretty well together in the Evandale, or Lynn installations. So we were able to set up and get running rather quickly.

Now the basic problem, of course, is that to install the machine in those days cost the company $100,000. You have to have an enormous amount of specialized space simply because you just couldn't call in a contractor and have it packaged. The idea of the flexible floor had begun to be available at that time but wasn't all checked out. The fact that you had to have a precipitron to take the desert dust out of the air was clear if you weren't to wear your tapes down very quickly. But, you know, standard installations were not available. You had to play around pretty carefully on this. But, on the other hand, it was my third…installation. Oldfield introduced me to Dr. Grady Gammage, who had been for many years the president of Arizona State College, the second of the major educational institutions in Arizona and located in Tempe, a suburb of Phoenix. Grady and I struck it off from the beginning, who is a wonderful guy, very sure of himself, very much in place in the power structure of Arizona and the Phoenix community. He was

very anxious to have a machine of this sort available to the university or college, as it was then. Although, as it turned out later, there wasn't really enough R&D work going on or enough student use of it to really justify a machine of that capability, even on a part-time basis. So, in the end we worked out an arrangement where this machine was installed at college expense in their brand new Arizona State engineering building. I furnished the machine and paid the rent on it, furnished the people to run it, put in the furniture and all that sort of stuff. But, the physical remodeling of the structure, and the precipitron, the air conditioning the special ducting, special electrical supplies, the plate glass window with the Arizona State name on it through which visitors peered at this gorgeous machine were all furnished by Arizona State at a cost of about $150,000. I was, of course, somewhat embarrassed by the fact that it didn't look as though they were going to get their money back but I think looking back on it, they got it back 100 times over in publicity and in ostensible sophistication.

Later on we attempted to do one of the pioneering ventures in college registration on the machine but that would be the registration for the fall of 1957 since we hadn't been able to do enough R&D work for them to pay them for their favors. They were not pressing us but I felt embarrassed. We volunteered to try this reservation system since they had ordered punch-card equipment and so forth to mechanize it, 12,000…

MERTZ:

Registration?

GROSCH:

Registration, yes. And I would say it was a fiasco although not a terrible fiasco due to the fact that we didn't control the whole system. All we controlled was, you know, the mechanized centri (?) part of it. But, things like the tremendous amount of keypunching required to get the data into the system and so on remained under the registrar's control, which was done very poorly. Well, typical problems of data input which persecute people even today were present in large quantities.

I remember writing a report after the fact on this to Frank Grazoo (?) was then doing the college work at MIT, not the very advanced digital computer lab WHIRLWIND sort of computation, but running the on-campus computation lab with IBM 7000 series equipment and so forth. And, incidentally, very much interested in college administrative procedures.

MERTZ:

He did in fact work on WHIRLWIND briefly.

GROSCH:

Yes, that's how I met him. That's right but by this time he had his own installation and he was very much interested in getting our program since it was presumably convertible at least to his own equipment. And I remember --I still have somewhere back in my files a carbon of the letter I wrote him in which I said that if he ever tackled this that he should be very careful to distribute the keypunching load by, for instance, keypunching applications which is, of course, accepted applications of students on the grounds that they're better motivated to fill out an application correctly than they are to fill out a registration form correctly. I said something like 30 percent of all our mail registered said something silly when they came to the box marked "sex," or something like that, you know. And to get them to the point where they're anxious to fill it out correctly would expedite the removal of humorous items and so forth. So even in those days the problems of total systems analysis…computerization were of great interest.

OK. I won't go into the long relationship that I had with Gammage and the university. Suffice it to say that many of our people, including McCracken, Benson, Charles Meadow who had worked for me here at the Bureau of Standards a bit more recently…

MERTZ:

M-e-a…

GROSCH:

M-e-a-d-o-w and several other of the good people I had there volunteered to teach courses. In most cases, not particularly computer courses; often just, you know, college math courses and so forth. Something to reduce the class size, the class load of the college and to become integrated with the community in which we were physically situated. And then, of course, we did teach some specialized courses. I gave for one semester only what I think was a pioneering course. I called it "Computers for the Housewife," although it had a fancier title. It was called "Computational…and Simulation," but the specific requirement for entering was to have no professional interest in computers. You weren't to be a computer scientist on the make, even a freshman. In fact, I did get a few housewives. I remember getting a few English majors, an architecture major for instance. And my general line was a discourse on interaction of computers in society off the top of my head and very poorly prepared I'm sure but it was, nevertheless, a pioneering venture; the sort which, of course, stopped when I left.

MERTZ:

How long were you there?

GROSCH:

About a year and one-half. I came on a sneak into town without attribution basis in August. Then I went off on honeymoon to Europe --my expenses, I'm happy to say, paid by the General Electric Company…had a lot of fun on GE at one time or another.

MERTZ:

This is the summer of '56?

GROSCH:

This is the summer of '56. I came back in early October to find Charlie Asmus (?), now the Executive Secretary of AFITS (?), and before that my administrative assistant in Evandale, in place in donated quarters from the college with my secretary from Evandale, and Benson, and McCracken, and three or four others rallied around trying to get their feet on the ground and get their cartons of books unpacked, and so forth and so forth. It took us about six months, as I remember it, from that date. Now I'm talking about October so it would have been into something like April of the following year before we were ready to actually receive the computer. But, with the amount of experience Asmus (?) had in building the building in Evandale and the amount of very painful…experience of Benson had in remodeling the building in Lynn…

MERTZ:

He spells his name A-s…

GROSCH:

A-s-m-u-s and Charlie is a nickname. His initials are H. G.; his first name being Homer. Hence, his desire for something else. Charlie and I were very close for many years and all of these practical things that I boast about really were, you know, he did almost all of the work. I just sat back and patted him on the back at appropriate moments. Usually the broadest kind of planning came from me but after that, why, other people did a lot of the work.

Jack Hughes, who was my operations man in Evandale, decided not to stay with GE after I went to Phoenix and has since become chief programmer for Proctor and Gamble, old corporate Proctor and Gamble activity in Cincinnati and has had a hitch, for instance, in their Brussels operation so that he has had foreign experience and is very happily ensconced for the rest of his life in the Cincinnati area. Most of the rest of them wanted to come with me but it wasn't practical to bring everyone, of course, because I couldn't decimate the ongoing work with the jet-age (?) of people in even Lynn of Evandale. But the little cadre that I did bring was in place in October when I got back from honeymoon and we immediately began the detail planning and installation of the 704 interacting with the university. We even tried to do some short term lecturing in non-course kind of interaction with them that fall, that fall semester because the semester started late in

Arizona because of summer heat. So we did our best even at the beginning to integrate with them.

Gammage is dead now. His main memorial is a very beautiful auditorium on the now Arizona State University campus designed by Frank Lloyd Wright, who had his winter quarters up on the mountains about 20 miles away and who was very close to Gammage. So the Gammage Memorial Auditorium is a memorial to a very great guy; a man we enjoyed a great deal.

Well, I was sort of a simulated dean in the sense that, you know, I didn't do any deaning but when he invited the deans to a luncheon to meet a visiting college president or a visiting rich man, or a distinguished alumnus, why, I got invited on a parallel basis. I think it would be fair to say that I was of dean quality, shall we say.

MERTZ:

Auxiliary dean.

GROSCH:

Without salary; auxiliary dean, exactly. Yes, adjunct dean. A novel title and the other thing that we had to do, of course, was to get out on the bricks and find a source of business to keep the 704 busy while people like McCracken were trying to help the Palo Alto-and do the software for ERMA and, to a certain extent, help the Phoenix engineering people also make simulations and detailed layout calculations and things like that. The rest of us were beating the bushes trying to find some substantial work.

One thing that I did get was a small contract with Fort Huachuca down south of Tucson and I acquired with this half a dozen men headed by Frederick B. Thompson, who is now full professor at Cal Tech and who entered GE at that point to work for me. Fred was a very distinguished figure in military simulation and had done the super STRAW air warfare simulations at Rand Corporation. Had left Rand to make his fortune and was working for Alex Mood in Mood's small software house at that time. With this contract at Huachuca, they wanted to come work for me and approached me. I didn't solicit them. In fact, I didn't know they existed until they came over and introduced themselves. They wanted to work for us instead because they felt with the GE substance would advance their opportunities. And, in fact, in the end I got a small contract at Huachuca did not take away Mood's but took away his people so that he had to re-staff and got a small contract at Huachuca on the order of $50,000 to explore electronic warfare techniques and so forth. I was not as nervous about that kind of activity then as I am now. To think I would be a little reluctant to do that sort of work now but it was of a fairly innocent sort. We didn't realize that, you know, the Vietnam thing was coming along in those days.

[End of Tape 15, Side 1]

I said that I wasn't as reluctant to do that type of work then as I would be now. The Korean War was over and the shadow of Vietnam hadn't really fallen on us yet and besides it wasn't all that militarized anyhow. But, that was at that time the Army's electronics proving ground testing communications devices and so forth. And there was, of course, highly military content in what they wanted done. As it turned out, the group spent most of their time doing, what we would now call, systems software for the installation at Fort Huachuca. Ended up by putting in on their own and it was relatively innocuous work but the initial service contract that I got didn't say that. It's just the way it turned out.

Meanwhile, I was snooping around trying to find something else of a more substantial nature. And I think that one of the pioneering ventures that I had been pushing for some time, inside and outside GE, was the idea of complete installation responsibility. Because you'll remember that when I came to Evandale it was under the auspices of a couple of departments --the steam turbine people as well as the aircraft gas turbine people. And the idea was that I was supposed to supply all of the scientific computing services required by the steam turbine people so that they wouldn't have to get their own machine. In the end, of course, they did get their own equipment as they…filled up but it was a substantial advantage to them to have a piece of a very large and powerful machine and a piece of what, I think I can safely, was a very large and powerful software group at a time when these were hard to acquire and expensive, yet dependable. So I had been making speeches for some time about why didn't somebody start the business of going and taking over the data processing or computation work of an outfit, furnishing the equipment, the personnel, the detail planning, the programming, the check-out and if desired the operation or make a turnkey sort of a thing out of it, turn it over to the final organization if necessary and recruit for them rather than for yourself when you're building the staff up. But, I really preferred the first idea. Partly because it was an ongoing thing and you could see the parallelism to IBM's very successful rental policy where year after year they continued to get cash flows as a result of the rental versus sale thing.

So I pushed this in several places and toward the end of my stay in Phoenix bid against 13 competitors for an operations contract of this sort at Huntsville, Alabama --then called the Army Ballistic Missile Agency, ABMA, later, of course, to be the NASA Marshall Center. I was informed of the existence of this by my long acquaintance with Warner Von Braun and a German scientist working for him which I had acquired through the American Rocket Society, my presidency in '51 and my activity before that. So I was well wired into the group and I soon understood as they talked to me about the contract that they desired for that, I soon understood that the key to the thing was that they really wanted to free Civil Service personnel for work in other areas where they did not want to use contractors and were willing to use contractors in a well-defined and actually rather well operated area. They were not in an emergency situation. You didn't have to say, "We will salvage all your troubles," because they weren't really in trouble. What they wanted to do was to bring in some contractors to free personnel to work in analog computation and in straightforward control design work and so forth. So I made a carefully written, but very brief proposal emphasizing this factor, emphasizing it cautiously because there

are often government regulations saying that you're not supposed to sell bodies or something like that. But, I nevertheless made it clear that this was my intention. Although we were the second highest bidder, only exceeded in cost by IBM, we were nevertheless awarded the contract. Well, this required me to put 40 people on-site immediately and build up to 80 rather quickly. And, in fact, at one time, five or six years later, reached about $8 million a year long after I had departed. So it was a very substantial investment on General Electric's part but, of course, with absolutely no risk. The risk was zero to four decimal places. There was a suitable, although rather small amount allowable for overhead expenses back in Phoenix. We bid for the thing in order to eliminate the normal overhead percentages, we bid for the thing by explicitly costing out things like postage and so forth and then just adding the small items for back home overhead. So the overhead rate looked low except that all sorts of things that are normally chucked into it were explicitly costed out. It wasn't a bad technique. I'm not much of a business man but I think that was rather well done. And, in fact, we did get the contract and year after year for about I think at least five years it was renewed. Finally it was taken away from GE by Computer Sciences Corporation which still has it today. But, over those years GE took out I think $30 million in total fee with a profit on the order of five or six percent of that. Absolutely no risk and almost no capital investment required so it looked to me like a pretty good business. And, it got me off the hook of having brought all these people into the company, or moved them in from other parts of the company, and then having the risk of having them fired on the grounds of no business, you know, and the usual GE pressure for immediate profitability.

So I was happy with this and by this time I had completely lost faith in the ability of the first generation of GE management to design a decent computer, market it, manufacture it or service it.

MERTZ:

This was administered through Phoenix when actually it took place in Huntsville?

GROSCH:

That's correct. Actually, the man that I chose to run the Huntsville operation was Helmut Sassenfeld, who is still active in the trade. He had been a Watson Laboratory fellow. Watson Lab in the early days had fellowships for several foreigners, including a very good Belgium (?) chap and Helmut. He had gone back to Germany…

MERTZ:

Do you recall the Belgium's name?

GROSCH:

Yes. John --I'm thinking of a…but that isn't right. He's a professor at the University of Gent (?) today with strong interests in theoretical physics and we could find him in the Watson Lab publications or in my notes very easily. I'm sure it will come to me without too much effort. It's a model name. By model name I mean like Greenbaum in the United States. It's Grund…or something like that. First name certainly Gene. And he was the first of them, as I remember it. Sassenfeld came along about 1951 or '52 after I had left the Watson Lab but while the fellowship system was still going, had returned to the University of Stuttgart for his Ph.D. and then had to return again to the United States to work for Von Braun and company. Now, the important point was that he was not a paper clip scientist. He was not one of the people from…that had this enormous personal loyalty to Von Braun so that you could hope that he would act on behalf of General Electric and not just on behalf of Von Braun and Co. But, he was well integrated with them. Of course, he was German and spoke the language but aside from that, he was integrated with them professionally having been pretty much the man in charge. And, I repeat the place was not in trouble. It was a fine, ongoing installation that I was very proud to take over. All it really needed, you know, was to change the name on the door to say "GE's Laboratory Operated for ABMA" instead of ABMA's Laboratory and they immediately freed 30 or 40 Civil Servants for other work at a price I'm sure of paying somewhat extra for the service. I'm sure that it cost them more to use GE than it would have Civil Service.

MERTZ:

And you had the personnel and you knew them already at GE?

GROSCH:

Well, you see I took over some of the civil servants, too. Now, I should explain that not only was it important to get some of the civil servants themselves free --for instance, too senior men under Von Braun, who were concerned with this, were Helmut Hoelzer, who is still in charge of all that work down there in Huntsville to this day, and Oswald…analog and controls man. Their loads were substantially lessened and they were able to go right to work on other tasks, especially this chap whose last name I've forgotten, Oswald something. And, in addition to that, even when we took over some of the civil servants and persuaded them to work for GE, we freed the slots into which other civil servants could be hired for work that they didn't want contractors to do.

MERTZ:

(comment inaudible)

GROSCH:

This is the sort of situation that I've had here at the Bureau of Standards. Yes, quite a few of them.

MERTZ:

They could also make more money.

GROSCH:

That's right. Some who refused to do so later left the Civil Service to start software companies and, in fact, I was with them earlier this week, Charles Bradshaw, who is still working out of the Huntsville area now on behalf of Computer Computing Company. He stayed in Civil Service because he felt he could do a better job on that side of the fence…and left at a much later date to go into a purely software house. But, not only Sassenfeld but half a dozen other people came over.

Now, another name that's of interest that isn't exactly a historic name but one that's well-known in the trade and you may have encountered in other areas --when we got to Phoenix, Tempe to be precise, and started to install this big 704, we had to have, of course, a great deal of help from the buildings and grounds engineering kind of people who were building all of this, who were responsible for building of these fancy buildings on the new campus. And the man who worked most frequently with us was named Eugene Brock. When I left Charlie Asmus, who continued to be the major interface between Phoenix and Huntsville in the early days of the thing since I had departed, hired Gene to come over from the university, college as it was then, and work for General Electric as a sort of administrative assistant to him now that he had higher level responsibilities. Later when things got tough in Huntsville as they inevitably do in a remote operation, Gene went to Huntsville. Ended up by joining NASA and is now perhaps the most important of all the NASA installation managers. He's a GS-16 at the Manned Spacecraft Center in Houston and is the man in top charge of all that enormous complex of computers down there.

So, just as I got Charlie Asmus out of the accounting business and he ended up executive secretary of AFITS (?) so he got Gene Brock out of the buildings and grounds engineering of Tempe and Brock ended up the chief NASA operator for the largest installation. So, you see in those early days there was an opportunity to extract capable people from earlier disciplines and without formal training and without Ph.D.'s in computer science and what have you and make some very major contributors to the trade. And, this is probably the thing that I did best. Although, in most cases it was inadvertent, you know. I didn't sit down every day and say, "What beautiful young people can I acquire today for future use?" Maybe say, "How in the hell am I going to…keypunch still going," you know but the net results were nevertheless very happy.

MERTZ:

This all transpired then in the period of …

GROSCH:

This would be late '57, that's right. And at the end of '57, I handed in my resignation to Oldfield in great disgust. I think I could say that I was really fired in the sense that Oldfield and I agreed, you know, that he wished I'd go away so I would go sort of thing. But, it wasn't quite as vigorous as some of my IBM expulsions where you know they chopped up my desk and burned it in the hall to indicate their desire for my departure.

In any event I left with lots of bad feelings on both sides. I thought Oldfield was a crook and an incompetent and I still think so. But, it's not the sort of thing where you can hope to conquer a situation. You work for a boss, you've got to really pretty well have his interests at heart. He says do something, you can squiggle around and say. "To hell with it," you know, and fight him for a while but if you really want to go at right angles all the time, the best thing to do is to get out. So there was an element of resignation about it although I sure didn't really want to go. I loved living in Phoenix. I loved the desert. My wife, Elizabeth, loved it very much. We had many good friends. Just because we'd come so early, we got into a higher level of social stratum than our income and our GE position really warranted. And, Oldfield had some family problems that made it difficult for him to pick up all his social chits so, in many cases, we got you know social benefits that really would normally have accrued to the general manager. It was very nice indeed it was and I just hated to give it up. But, you see, I kept trying to steer him. It was my view that the section manager's council, working with the general manager, would really, you know, pretty well determine what to do next. And, indeed, it did because Oldfield himself did not have a battle plan laid out 10 years in advance. He was not an expert in computers and never became one. It was essentially an ad hoc or extemporized strategy. In fact, it isn't clear in the beginning that there was a strategy. It was just a series of major tactics so to speak. But I soon discovered that, you know, the vote was always six to one against me no matter what I suggested. If I said, "Black was white," it was six to one against me and if I said, "Black was black," it was six to one against me. In fact, if I said it on consecutive days, it was against me. This was partly due to my rather abrasive personality. I would start out a discussion, you know, by saying, "Now listen you dopes" sort of thing which isn't precisely the way to persuade people in a company very much professional management company oriented environment.

I remember, for instance, a great scene. One of the greatest scenes I can remember in that whole argument. The man who was really causing all the trouble behind the scenes, the guy who wouldn't give us any money, was a chap named Harold Strickland, who is now president of --is there a General Signal Corporation? I think so. A railroad signals kind of a thing. A very pleasant man personally. I shouldn't say anything wrong about him personally. In fact, we still exchange Christmas cards after all these years which is one thing I never did with Oldfield. I wouldn't have given him a stamp, let alone a card and still wouldn't. But, Strickland was a very pleasant guy. He didn't know beans about modern electronics technology in spite of being one of the three key division general managers in electronics after Baker's departure. You know controls electronics or something like that, yes, so even there he was pretty stodgy. And, in fact, he was the man

who forced Lou Rader to resign in disgust as general manager of the controls, advanced controls or applied controls --I forget the title --outfit in Virginia because he couldn't get Strickland to invest substantial increases in a very profitable and very well understood part of the company. And part of the company that has stayed in the computer business to this day and was not sold by…

Rader resigned at the same time I resigned and was driven out directly by Strickland where Strickland's reluctance to invest any venture capital money in Oldfield was, of course, a second order reason for my departure.

MERTZ:

This Strickland is not to be confused I gather with the finance person who was assigned…

GROSCH:

None whatsoever. There's two Eckerts and two Stricklands in my history. Yeah, yeah. In fact, the other Strickland, Ed Strickland of control data didn't come on the scene even in computer hardware for five years to come. He started Cedar (?) Engineering about five years after this happened.

OK. Strickland came to Phoenix to give us some important word or other. Now, as division general manager and Oldfield's superior, we laid out the red carpet on occasions for these visits, which were fairly frequent. And I was in Huntsville negotiating the detailed installation of the people and equipment we had received the contract when I got a telephone call from my secretary saying, "Come home, come home. You know Strickland has appeared unexpectedly and there's a big meeting tomorrow morning." So I flew overnight by a plane that made about 18 stops from Memphis, including places like Douglas, Arizona, you know. Hitch hopping propeller craft. Beastly air sick partly due to the tensions involved and partly because I was extremely tired from what I had been doing in Huntsville. Staggered off the plane green as grass and was collected by my --I was scraped off the ramp --secretary and…Oldfield's office. And as I entered here is Harold Strickland explaining the binary number system or something of similar importance to the assembled section managers and Oldfield. All of whom are looking a little glassy eyed and by this time I had gotten over being air sick but I still was pretty irritable. So I break into this to say that such and such is not right. And Strickland turns on me and he says, "Hurd, you just got here." And I say, "Hell, I've been here all along. You're the guy that just got here." And CRUNCH. Well, this doesn't endear you to senior managers and I'm sure that if I had not offered my resignation at the end of the Huntsville thing that it would have been demanded of me rather shortly.

I think the basic argument really was the familiar argument of…entry into the computer field for all American companies. It was my thought that the early experience of both IBM and what is now UNIVAC indicated that you got your knowledge at the big end of

the business. That you built a big substantial computer, that you faced up to the enormous difficulties of doing this and this included, of course, already it was obvious, the enormous problem of software and applications studies which IBM had tackled head-on and which the others had reluctantly been forced to go into. Control data, for instance, you remember originally didn't do any software. They just made their machines and shipped them out. You had to figure out what to do with them. Well, they were ultimately, every one of the manufacturers found out that they did have to do this sort of thing. You can only develop this kind of expertise really at the big end of the spectrum. I haven't changed my view of this an iota in the intervening 15 years. GE wanted to sneak in at the banking branch of the business, which isn't even on the main spectrum. Moreover, paradoxically or not, the additional ventures that they entered, because of the talent or lack of talents of the initial contributors, tended to be things like small general purpose solid state analog computer components which didn't sell at all. They didn't sell a single unit of that after announcement. Specialized stimulators and control devices for other parts of the company and so forth; things that they were familiar with but they felt they could do well but for which there was no genuine market and a complete avoidance in getting into the 709-4 (?) kind of business which I kept trying to push them toward. And I kept saying "Don't you consider it sort of a peculiar thing that all of these nice businesses that I'm trying to get into, I have to have an IBM machine." I said, "I have to have a 704 in Tempe. I have to have 709's and later on 7090's and 94's in Huntsville and when I think about alternatives, I think about getting UNIVAC equipment or ERA equipment. Isn't there some message in this?" And we would fight like cats and dogs and they would go on with the banking business.

And the worst part of it was that they weren't even making a follow-on of the banking business. The second thing that they took as a major contract to redesign and manufacture the 304 for National Cash Register. The 304 was a machine that had been designed by Computer Research Corporation, CRC, Floyd Steele and Company, in the very early '50s. They had not been able to get it on the market. CRC had been bought up by National Cash and is now the Hawthorne activity of the National Cash Register Company -- Hawthorne, California activity of National Cash to this day. At that time, the old line but much more professional--I shouldn't say that. The old line much better organized engineering department of National Cash redesigned the machine a second time. Still didn't feel that it was good enough to put into production so they hired GE to redesign it a second time, design it a third time and then they were going to let us manufacture it in small quantity production at our initial production facility and they were just going to market. Of course, this was an obvious loser. It was five years behind the trade by this time, or would be five years behind by the time the process was over. And, in order to buy in, why, we'd taken exceptionally tough terms. In fact, there were only a couple of dozen machines ever built. National Cash wasn't any better at selling them than we were at designing them or building them. And this sort of thing just made me practically upchuck in revulsion. But, the basic reason --and you have to give poor Oldfield credit for some of this because even if he agreed with me, though I don't really believe he did, where was he to get the money to make these major ventures. I mean it would have cost him $40 or $50 million to design and commence manufacture of the 7000 series machine,

if indeed the company had the capability of doing it at all. And, where IBM could do this with a twist of the wrist, why to get that kind of money out of GE was like flying across the room by flapping your ears. No matter what the wind…was or how fast you flapped, you aren't going to get off the ground. And with Strickland saying no to everything, including small expenditures, why you can imagine that he looked like an almost insuperable barrier.

Baker's retirement, which had been urged on him by the top levels of management, permitted him to apply the professional GE management philosophy to the last big primitive area of the General Electric Company and, in fact, they split it into three divisions; one of which was run by Harold Strickland --industrial electronics, military electronics and the third one I don't remember anymore. So Baker was in a sense the precursor of what was later called the group executive but they didn't have group executives in those days…professional philosophy.

So the structure as I left them at the end of 1957 was that there was an industrial electronics division, which reported to a senior vice president. I guess it was called a group vice president, as a matter of fact, still further up the line. And under this division were three or four departments, including the process control kind of activities in Virginia and so forth, and this new, at that time, computer department. Later on the computer activities were elevated to division status. The overall information activities under Hersh Cross (?) and were elevated to group executive status. And the manufacturing activity in Phoenix, for instance, became a department.

Hersh Cross, who took over the group at that time, the man who took Strickland's job but at a higher level than Strickland had, is the man who bought the BULL (?) acquisition into GE and set the stage for the enormous losses that followed.

MERTZ:

This is Hersh Cross?

GROSCH:

Hersh Cross. Hershner is the first name. H-e-r-s-h-n-e-r, I believe. That's an unusual name.

MERTZ:

I'm sorry. You were saying he brought…

GROSCH:

He brought BULL and Olivetti into GE. He was the one that negotiated the deBull (?) contract. By that time, my old friend, Jim LaPierre, who had been the division general

manager in Evandale and who was so pleased with all our computer ventures in the early days, had become executive vice president of the company over Cross and three or four other group executives. And when as an independent consultant in Europe protested to LaPierre, who had remained accessible to me in spite of my departure from the company, complained to LaPierre that this was an empty suitcase was the phrase I used. There was nothing in BULL that GE needed. He said, "I can't do anything about this, Herb, you have to talk to Hersh Cross." And I said, "But, you're his boss." And he said, "Well, we hire executives at GE, each have their assignments and I do not give detailed orders to Hersh Cross in spite of the fact that I have a higher title. I'm settling the…damage suits resulting from the antitrust actions. All the vice presidents got put in jail and Hersh is deciding whether or not to buy bull or whether or not to withstand the computer business and you have to talk to him." And I said, "He won't answer the phone." And LaPierre chuckled. "He won't answer my calls either." End of my attempt to keep GE from buying BULL.

This, of course, is at the latest stage of the game and I'm skipping over time but this is 1963 I guess I'm talking about when the final negotiations on BULL were…

Now, to go back to the end of '57. When I announced my intentions of leaving Evandale which were, of course, partly tied up with my first wife's death and the fact that I felt rather alone down there without her. When I announced my intentions of leaving Evandale, my then IBM salesman who was a very nice, young fellow named Robert Maxwell, who had replaced Liston Tatum (?) who in turn had replaced the circus…Stan Farwell, who was my first 701 salesman. Maxwell came to me and said, "The IBM Company would like to have you come back to work for them, Herb." Well, considering that I'd been fired with great gusto by Red Lamont in 1951, I considered this an enormous, if not a compliment, at least an enormous change. One which I regarded as well justified since I was one of their cleverest customers and getting them an enormous amount of business and publicity in the intervening years. Nevertheless, knowing the rigidities of large corporations I was amazed to have this offer made. Well, looking back on it, it was almost certainly a ploy on the part of some sophisticated guys at upper middle management in IBM to keep me from going to the new competition who was starting in Phoenix. Because when I did return to IBM some years later I discovered that they were really quite worried about GE as competition; really quite worried. I was able to reassure them by saying, you know, forget it. Those guys couldn't punch their way out of a paper bag, let alone your bag but they were worried. And, I'm sure that long before this ever started, when they knew nothing about GE or who was going to be in it, or how much money was going to be invested, they were probably even more worried. So, quite likely they were simply trying to get a knowledgeable person who was going to join this group off on the side somewhere where he wouldn't hurt. But, of course, no one can ever prove this…

MERTZ:

(inaudible)

GROSCH:

Exactly so. Anyhow, I refused. I said, "Thank you very much, Bob. I'm deeply flattered and I'd love to come back to IBM, which I still regard as my spiritual mother, you know, and all that bit but I made my commitment to Phoenix and I want to see GE get into this business. And it would do IBM a lot of good to have a decent competitor, you know, etc., etc., etc. So in a word, no."

MERTZ:

…IBM didn't want to share.

GROSCH:

I think that's exactly right. I don't think they did either. I've always had a more idealistic view of IBM than IBM has had of me, I'm sure. It's only in the last two or three years that I've begun to falter in my confidence in their social value.

Well, anyhow, here we are toward the end of 1957 and I'm sick and tired of GE's incompetence, in my view you understand. This is a personal feeling. Their incompetent entry into the business. It's clear that ERMA is not being handled right although it's coming down the line. The first machines are running but it's clear that they aren't pursuing the banking business effectively so they're not even going to become the world's greatest banking machine manufacturers. And, in fact, in the end they did kick that business away and it reverted to Burroughs, National Cash and IBM. GE has no position in it. GE, when it sold to Honeywell, had no position left in it at all except the remaining machines, which is a great tragedy in itself. They did have a big lead for a short period of time. So, even at that end of it they weren't doing, they certainly weren't going to build any big machines and they had practically slapped me in the face instead of thanking me for my, for what I thought was a pioneering venture at Huntsville. Shortly after I got the Huntsville contract, they had a big shindig at the Camelback Inn attended by Strickland, LaPierre, people of the very highest order in the company, at which Oldfield got up and stated publicly that they'd permitted Grosch to do this just to keep the thing afloat but, you know, it was no kind of business for GE to be in.

So, I called up my contacts in IBM but I made the mistake of calling the wrong level. Instead of getting in touch with Bob Maxwell again and saying, "Look, I'd like to come back now. Is the offer still open." I called Tom Watson's office and asked for an appointment with him and asked him if the offer was still open. Big mistake. Big mistake. I doubt very much if his permission had been obtained to make this informal offer to me two years before. It may have been. It's a very highly centralized company and a great deal of detailed management. And, after all I had been fired so it's possible that he had been asked. But, in any event he'd forgotten and here I appear on the scene, you know, essentially saying, "You have an obligation." I didn't intend to say that. I thought, you

know, the question was do you want me to come back now. You said you did a couple of years ago. But, he interpreted this as, I'm afraid, essentially saying you said I could come, now I want to come. You've got to take me. And I should have seen the message because when I listed the things that I thought I might do with the World Trade Corporation conspicuously out in front, they immediately shuffled me around and put me in this job way down on the bottom of the list, which was as administrative assistant to Charlie DeCarlo (?) who was then in charge of sales, services and all the marketing activities in IBM at the time which were not specific sales then, you see, actual salesmen (?). Or highly technical in the sense of product planning. This included the university and college relationships, all the software work, SHARE organization and its counter-parts, advertising and sales promotion. All the stuff that is around the marketing activity except the product planning kind of technical stuff and the actual sales work itself.

Well, it was a flattering assignment. It paid very well indeed. It was a small raise over what I was getting at GE and it was in a nice New York office and all that. But, of course, looking back on it now I see very clearly that DeCarlo (?) was the guy that had tried to engineer my being brought back to GE two years before and in punishment for this, he was being assigned the job of finding something to do with me now when I had finally come and they no longer wanted me. Whether they had assessed my value as being lower than before or more likely, simply assessed the GE threat as being lower than it was before, I can't tell. Nor did any of this occur to me at the time. I came back with great expectations. Here I am back at my alma mater, you know. It's true that I'm not getting the job that I'd like to have … international activity. I'm not going to have a chance to do this, that and the other thing but at least I'm back on the old home grounds and I'll see all my old buddies again. And it turned out all my old buddies are lined up down the hall with knives ranging from pen-knife size to double-handed swords waiting for me. Sob. Anywho (sic), it was a great experience.

MERTZ:

When was this now?

GROSCH:

I went back to work theoretically January the 1st, 1958. There was actually some overlap in order to get me full benefits on MOO they hired me in Phoenix. And I worked in Phoenix one day and then was transferred as a former, not former but as a working employee who was then transferred to New York City with great benefits. IBM has always been great at moving people but I must say in return for that they move them in style. So I was moved back to New York. My house was supported on the real estate market for a year when rather bad times in Phoenix made it impossible for me to get the appraised value, IBM paid the difference. All sorts of good things like that. I've been moved may very well be the acronym for IBM but the fact remains that they try to make it as pleasant as possible.

Well, I went back and I worked for a while in the typical high level administrative tasks of the IBM central activities.

MERTZ:

Where were you?

GROSCH:

This started out at 425 Park Avenue, the National Biscuit Company building which was because galactic headquarters was overflowing and had overflowed many years before. But, shortly thereafter they moved all that gang out to white Plains and I reluctantly had to go along. I probably wouldn't have gone back to them if I'd known I was going to have to work in such a dull area. I then had to reverse commute for a few months because it wasn't all that difficult, you could drive because, of course, there was ample parking available in White Plains if you were going against traffic on the parkway. So, it was a 45 minute drive each way.

MERTZ:

You were living in Manhattan?

GROSCH:

I was living in Manhattan and had walked to work for the first few months that I…

MERTZ:

(inaudible)

GROSCH:

I lived at First Avenue and 52nd Street and I could walk from my apartment front door, down the elevator, across town, up the elevator and be at my desk in 13 minutes if I walked briskly, which was a great way to travel in New York even in those days; superlative way nowadays. True, you need an umbrella and rubbers in wet weather but that was, you know --I'd lived in New York before and I was aware of its advantages and disadvantages. I had no children so…lovely view. In fact, she stayed in that apartment for a total of about six years during most of the time that I worked in Europe as well as during my IBM hitch.

Well, I began to see, after about six months in this job, especially after we moved out to White Plains, that I wasn't exactly vital to the ongoing existence of the IBM Corporation.

MERTZ:

What were your specific duties?

GROSCH:

Oh, I did a lot of touchy things. For instance, by this time the consent decree was out and one of the items in the consent decree that caused a good deal of scrutiny by outsiders and insiders alike was that they agreed not to --I must choose my terminology a bit more carefully --try to sell machines that they didn't have a working model of, if you'll pardon my syntax. Now, the working model might consist of one of each. It didn't necessarily have to be a full scale machine with 40 tape drives, etc., etc. But, there's a phrase in the consent decree, that escapes me at the moment, that refers to a conceptual model of the sort that we're talking about. They had to be embodied in real hardware. It couldn't be a bunch of sketches on a blackboard with a series of promises in a brochure.

Well, now for instance STRETCH was on the design at this time and one of the things that I was most excited about when I went back was that I got an immediate view of what was then called the 7000 machine. It's final number was 7030 but in those days it was called just 7000. And there were no other 7000 machines then, they were just beginning to deliver the 709 which was a first generation machine; the third of the first generation machines in the scientific line. In those days, you went through partial generations as it turned out of every couple of years. I guess the customers were so excited and so demanding of new equipment that you couldn't make it last six years though you can now. And, they didn't have the smooth process of generating improvements that IBM and others have at the present time.

Well, anywho, whether it was called the 7000 or the 7030 and I had many pre-announcement documents on it, which are not too frequent outside IBM even today. I did get a chance to see the order code for the first time. I did get a chance to talk to people like some of the senior software people who were working on it and told me how difficult the order code was to master. Remember, this was assembly language days. This is before you had COBOL or FORTRAN much used.

MERTZ:

Who were those people…

GROSCH:

The man who told me how hard it was and whom I had an enormous respect for as a programmer so that I took this as a very serious thing was an old acquaintance named Bill something. I can't remember his last name at the moment. His brother had worked on a huge analog simulator next door to me in Evandale. He was a GE Evandale employee and I can pick him up one way or the other from my notes and so forth but I can't remember his last name was. Very well known in the trade at the time. He's sort of slipped away

now. I'm sure he's still working in IBM somewhere at a very fine salary and doing very responsible and important things but he doesn't come to meetings and, you know, very…

MERTZ:

He was in the office on Park Avenue?

GROSCH:

He was sitting in Park Avenue with a small group of two or three people trying to simulate a customer on the STRETCH in the same way that I had tried to be a simulated customer on the 701 seven years before. Right. And, almost got it, it almost came back to me. It's a sort of Germanic name like Klein or something like that. Very well known figure --it'll come to me in a minute.

Anyhow, I was very much interested in this line. I said delicate stuff --I'd gotten off the track. What I meant to say was because this machine did not exist in whatever form it had to be in before you could announce it, in spite of the fact that the AEC which was putting money directly into it was allowed to look at it, nobody else was supposed to know about it. The consent decree was used as a shield also because there were a lot of people trying to order it, or look at it, or hear about it that IBM didn't really want to have it. So, they could fend them off with this.

The fact was that they nevertheless were afraid that somebody would blow the whistle on them. So, for instance, when the British Atomic Energy Authority, which ended up by getting one of the STRETCH's, when they came to town, why someone had to show them around, take them out to Poughkeepsie, show them the machine, discuss the order structure with them, tell them about what the probable finances and so forth would be and the delivery dates. And, this was all highly illegal so I was asked to do it. The general idea being that if necessary they probably would have said, you know, "This guy Grosch did it on his own and we just fired him yesterday." Oh, perhaps I'm unduly suspicious. At any rate, I did this sort of thing.

And, for instance, I did some reports for DeCarlo(?) on the 709 software catastrophe. They had an earlier version of the 360-OS software scandal in 1958 when the 709 was delivered. The 709 was a machine which was an improved version of the 704. Still made out of electron tubes, not made out of transistors yet but in which that maximum influence of the customers that I referred to really faltered. The customers were allowed to specify the improvements of the nine over the four. And, they were allowed to almost completely specify the software that was to be delivered with it. This was called SOS, the Share Operating System; the first use of the term OS in the world to my knowledge. And the SOS system was specified by SHARE committee and IBM agreed whatever it was, you know, of course, they interacted with them. It wasn't a flat, one-way process. There was…fact and there were IBM people on the committee as users. But, there was an understood agreement that whatever this committee finally came up with, IBM would

implement. But, IBM put 100 people to work on this and in a typical fashion, which has been duplicated one hundred times since but which they sort of pioneered at that point, they took ten capable people who were perfectly able to do the job in a year, put them to work selecting and training 90 other people and put 100 guys to work on the project that the original ten could have done very nicely. And, in the process, of course, so fouled it up that it didn't get done at all. Neither the ten nor the ninety succeeded in doing it. They did things like trying to debug enormous blocks of the thing en masse instead of in modular fashion. They failed completely at documenting. They did all the typical things that we hear about in later years. In fact, they pioneered all these failures on that system.

And, when I arrived on the scene with, of course, a great deal of knowledge of this, as one of the people that had four's and was supposed to get nine's, I found myself interacting on DeCarlo's behalf with the people who were trying to investigate and repair this trouble; some of whom were outsiders, good friends of mine and many of whom were internal.

MERTZ:

This is somewhat later than the early…of FORTRAN?...'58.

GROSCH:

Yes, this is true but FORTRAN was not a universally agreed on thing at this time. People like Backus and John Greenstaff, the fathers of FORTRAN, were all in this group along with this Bill…

MERTZ:

…709 group?

GROSCH:

All in this group at 425 Park Avenue at least. Their responsibilities were varied. Backus was really sort of thinking deep thoughts by then and was, in fact, about to become one of the fathers of ALGOL.

MERTZ:

I was going to ask you about ALGOL.

GROSCH:

Greenstaff was sort of keeping FORTRAN going and improving it and having major responsibilities for it and had a fairly substantial young group of people working with him. And, the remains of the old SSEC programming staff from the '40s that had been in

my classes at Columbia and that I interacted with on the SSEC --Ruth Myers, Hollin, Hollin something Stetson (?) and two or three others --were among the ten that were chosen to train the 90 that wrote this horrible SOS fiasco.

Now, they brought a very, very bright man in from IBM on the West Coast --I believe his name was John Kurth. I'm a little uncertain about this now. His characteristic was that he had the world's shortest, bright red crew haircut --bright, freckle-faced and one-eighth inch low crewcut of brilliant red hair. And his task was to document what had been done and to package it up and get it going. And, he had to work with the SHARE people to do this.

MERTZ:

Was this after…

GROSCH:

No, Cuthbert was still in IBM at this time but he had been shelved probably as a result of the 650 marketing problems. Now, I heard this from the outside. I was not in IBM when this went on. At this time, Cuthbert had a group of 50 or so people and they were investigating chemical engineering problems, specifically process control in the chemical industry, process control of chemical reactors and that sort of thing doing, I believe, rather good work. But, it was clearly a shelf job and it's very difficult to climb down off a shelf at IBM. After you've been shelved, it's very difficult to take another turn. It can be done and Charlie DeCarlo did it but it's very, very hard to do it. Charlie had not yet been shelved, I should say, at this time. He was still on his first ascent but later on he was shelved. He became director of corporate engineering for several years, recovered his status and then departed to be president of Sarah Lawrence, which is his current assignment. And, which he got, of course, partly because of Tom Watson, Jr. is on the board of trustees of Sarah Lawrence. I mean these things are done, as you well know. But, Cuthbert was still around at that time but the oldest part of science activity…

MERTZ:

He's not in the world headquarters?

GROSCH:

I don't remember where he was physically. I'd be inclined to guess that he was in Yorktown Heights which I believe had begun to have physical existence at that time. I'm not too sure whether there was an actual building there or not. At least he was in the group, if I may be pardoned at the elaborate sentence structure, that would have been at Yorktown Heights if there had been a Yorktown Heights. He was not in Poughkeepsie or Endicott.

And, Manny Peorie (?), of course, had come aboard by then and was getting IBM very deeply into basic science in really genuine research so it was a time of ferment and a time of considerable excitement.

For instance, Manny had annual, or semiannual reviews of his very fancy R&D programs. And I would represent DeCarlo at those meetings and get up and throw rocks at the projects that I didn't like which, again, is not the standard practice in IBM or any other larger organization.

MERTZ:

Right. I think this concludes this side of the tape.

[Start Tape 17]

MERTZ:

This is the commencement of tape 3, side 1.

GROSCH:

The 360 announcement was, of course, very interesting for an old hand in the field. It not only marked a complete departure from IBM's previous architecture--and, remember, as a person who had been present at the birth of the second generation, I was immensely interested at being present only a day or two later, although not in such an important role, at the birth of the third.

While the second generation had been an exact mapping of first generation architecture on the new componentry, here in this announcement you had not only completely new componentry and had a great many new, fancy peripheral devices but the whole system architecture was completely overturned. Whole new varieties of software were required and were promised and described in outline form. The material that Gordon Smith had been given by his salesmen who had, of course, in turn borrowed it, or copied it, or stolen it from IBM customers, was enormously thick. I still have the set of material that I finally ended up working with. I think that the set that I ended up with was less than a foot thick but certainly the raw material that I began with was a good deal more than that. And I think I must have read, or at least scanned, almost every word in that in the next six weeks or so. I had to digest the whole concept of the bite (?). I had to decide whether it was truly a bite oriented machine and it's cleaned in all the stuff or whether it was really a hexadecimal machine, or a 32 bit machine or what have you. I had to look at the enormous number of disparate data rates from the various types of spherical (?) gear and I had to try and make some political judgments about whether these disparities were due to the fact that one was made in Germany, one was made in Poughkeepsie or whether it

was due to some scientific underlying fact having to do with the nature of magnetic recording or something. In some, although very casually and in very shallow fashion, I had to draw on a considerable reservoir of my total knowledge of the business. And applying Grosch's Law and similar pricing techniques, I also had to look at the prices to see if they looked competitive and if they lay on a smooth curve to the various size machines and so forth.

Well, I did this with great enjoyment and great diligence. And while I was doing so, my wife, Elizabeth, living in a medium price hotel in downtown Lausanne, was falling madly in love with Switzerland so that at the time of the end of the initial chore, for which I was paid ample expenses and as I remember $1000 a week consulting fee, not only were Gordon and I in pretty good tune but my wife and Lausanne were in extremely good tune. So, in spite of the fact that Lausanne, alas, did have an income tax and a fairly substantial one, we decided to remain in Lausanne and see if we could feed off the UNIVAC team for a while. And, indeed, we did.

Gordon had a series of assignments for me. One of which was to review the various, the extremely disparate publications programs at the various national companies in Europe, ranging from, you know, a throw-away sheet from the Spanish agent to a very beautiful book called "De Loc Carda" (?), the Punch Card that they'd been printing for twenty something years in Germany and which was now, of course, very heavily larded with computer information. This required at least as much, or probably a little more, than I had of foreign languages. I did have some pretty good French by this time but my German was still pretty poor. It also required me to visit UNIVAC installations and in many parts of Europe. And particularly to be acquainted with the rather vigorous increase in UNIVAC activities in Norway. They had gotten the 1107 into the National Computing Center, which was associated with but not part of the Atomic Energy Institute just outside Oslo. The Atomic Energy Institute had a mercury, or something like that, an English computer of some sort in there. Maybe it was a Deuce, I'm not sure what it was.

MERTZ:

Is this '64?

GROSCH:

This would be the early fall of '64 by now. I think it was the early summer of '64 that I did the assessment of the 360 and we're now in the fall of '64 and I'm doing miscellaneous tasks for UNIVAC.

MERTZ:

Now residing in Lausanne?

GROSCH:

Now residing in Lausanne in a very handsome, little chalet looking out on the Lake Geneva. I'm living on the economy as the condescending Americans say; that is, I'm spending $100 and something a month rent where Gordon was spending $1000 and something rent. In each case we had furnished quarters. He had an elaborate house and I had one floor of a very charming, little chalet but, believe me, the economy was better. It was, indeed, a lovely city. The nicest, I suppose, of anyplace I've ever lived in my life.

One of the reasons that it was pleasant, however, was a non-scientific one. It was not only that one could climb, and ski, and see beautiful scenery and be surrounded by the sophistication of Europe. But, in addition to that, I wasn't involved. When I'd read the Paris Herald Tribune about some stupid thing that we were doing in foreign affairs, or in the space program which I was coming to have a pretty urgent contempt for by this time since the full extravagances of Gemini and Apollo were under way. I could always say, "Oh, those stupid Americans," you know, and act as if I was a Swiss…I remained an American citizen and all that but I wasn't paying any income tax. It wasn't my dough that they were frittering away and it wasn't my weapons that they were killing people with.

And on the other hand, when the Swiss did something stupid, which was quite frequently, and this was reported in the Gazette De Lausanne or in one of the local papers, I could always shrug my shoulders and say, "Ah, those Swiss." I was really free floating.

MERTZ:

You did have to pay taxes to the canton (?)?

GROSCH:

Yes. The cantonal (?) taxes were fairly considerable. They were still less than the American ones but they were fairly considerable.

However, since I was being employed very carefully by UNIVAC so as not to use up one of their work permit slots, the canton really didn't know how much I was earning. And, as a result, billed me on the basis of, I don't know, five times my annual rent or something which, of course, they did know. And since my annual rent was very low, the actual tax assessment was very low also. So while it wasn't as good as nothing at all in Monte Carlo, it was a lot better than New York City, plus New York State, plus United States federal. And I was not earning so much that I had to pay anything to the federal government. I think in those days the limit was $25,000 a year and you had to pay federal taxes above that but I didn't earn $25,000 a year so the problem didn't arise.

MERTZ:

The canton authorities didn't enforce that disclose your…

GROSCH:

No, they have a funny system in Switzerland. If you claim not to have any income, and I certainly claimed not to have any Swiss income in the sense that I was being paid by American UNIVAC and so forth and so forth, and did not have a work permit although I had a resident's permit, of course. I claimed to be doing my consulting work elsewhere in Europe which was fair enough since I did do a great deal of traveling. Since this was so, their assumption was that I would not tell them the truth anyhow so why ask. So, instead they send you a tax bill essentially. And that particular canton, the Canton of simply billed me on the basis of five times my known rent with my landlady, which was on the order of $150 a month including the heated garage and all sorts of amenities. So, you know five times that didn't really break me; that would be $9000 a year. And the tax was at a lower rate than the American tax anyhow so what with some exemptions and so forth, I…small amount of money.

However, the idyll did, to a certain extent, come to an end in that respect. Because in early '65, they tightened up the work permit laws again. And the result was that at that time I was going to have to, even if I were paid indirectly by UNIVAC and even if I did all my work elsewhere, if I had any relationships with the Swiss corporation or if I worked, if I had a resident's permit even if I did most of my work in Austria, Norway or what have you, the fact remains that they'd have to get a work permit for me. And it might not have changed my tax situation but the work permits were a tight, tight, tight.

MERTZ:

The work permit might require disclosure.

GROSCH:

Yes. Well, that's right.

The end result was that I got all of my pay from UNIVAC Lausanne then there would have been tax deductions just as there are in the United States based on actual salary rather than…

MERTZ:

Would that have been required though if you had not been associated with…

GROSCH:

No, the work permit would have been required but if UNIVAC had paid me out of the American coffers, for instance, they would probably have continued to bill me for the same taxes they had before. But, the point was that the work permit was more precious than the tax money. Gordon would not have hesitated at all to decrease my consulting fee

enough to cover added taxes but he was most reluctant to waste a work permit slot. They were extremely precious.

MERTZ:

Well, you had no contact with UNIVAC Lausanne and your work was truly all outside…

GROSCH:

I think the answer is if you really stay underground, you're all right. But, you see the trouble was that I did have a relationship with UNIVAC and there were plenty of Swiss people who knew it. And I don't know whether they had informer rules or not but half of the accounting staff of UNIVAC was Swiss. And I don't know whether they had an informer or rules of that sort or not. The Swiss are notoriously nosey about other people's business and I'm inclined to believe that most of them would have blown the whistle on me not to get an informer's fee but just, you know, to show that they knew sort of thing. The people in Switzerland are always coming up to you on the street and tapping you on the shoulder and telling you your shirttail is pulled out, you know, or your zipper is down or something. The polite thing to do is to turn your eyes away but not in Switzerland. Boy, they want you to know that they are alert; that they saw that your zipper was pulled down.

So, neither Gordon nor I felt that there was any possibility of concealing the fact--and I wanted there to be a continuing relationship--so we thought that we would formalize it and actually for one month, I actually worked as a full time paid, salaried employee at UNIVAC EMEA I think they called it--Europe, Middle East and Africa--reporting directly to Gordon and this man, Pierre Avetti (?), who I mentioned in the early reel who was then Gordon's deputy in the next office.

We hadn't formalized the contract between us, however. Important executives, especially if there is any foreign element involved almost always have some kind of a work contract in Europe and his lawyers were working up a proposal to present to me which I, in turn, present to my Swiss lawyers to see if it's on the up and up. When they changed this work permit rule on us, they'd begun to do this when we heard it was coming. When it came, it was a little different than we expected so we had to go back to the drawing board to start doing this contract thing over again. The intention was that I should be the senior guy for large machines in Northern Europe because the intention of splitting up the operation into regional areas was already and has since been done, was already clearly under way and my language deficiencies didn't matter in Northern Europe. In Scandinavia and Holland, they don't expect you to speak the native language and they all speak English. In the United Kingdom, of course, they speak English period. So, there would really be no major area in Northern Europe where my language deficiency would matter.

MERTZ:

Did that include Germany?

GROSCH:

No, it did not. Germany was a special area. UNIVAC was very strong in Germany. The manager in those days was Otto Stitz (?), who has since come over to Mohawk Data Systems. And Otto and I got along fine but he had a big staff of reasonably expert people; all of whom were Germans already. And he was happy to have them call me up on the telephone once in a while but he didn't want to pay me anything or have me on his payroll. We didn't at that time have the man or the location selected for Northern Europe as a whole. Charles Elliott, who was in charge of UNIVAC UK at that time and was in line for the job but UNIVAC UK was a rather small dog wagging a rather small or rather a small tail wagging a rather large dog. In fact, Elliott did not later get the job. He's still in the UK and I saw him just the other day but someone else got the job.

But, by this time the phone had rung and this literally was a long distance phone call. And General Electric had asked me to come back and this, of course, made me chuckle a little bit because IBM had asked me to come back from GE and now GE was asking me to come back but from Europe. And I was of two minds about this. I loved the European experience. It was a magnificent--even when I wasn't making much money, I was sufficiently relaxed and sufficiently happy that I'd go off and go mountain climbing instead of sitting brooding about how my friends weren't being kind to me or business was getting away from me, or Datamation was publishing highly inferior articles now that I wasn't working for them sort of thing, you know. I'd go out and go climbing instead. I was in great shape. My wind was great. My stomach was flat. My legs were like iron and the skiing season came around, I could count on week-end after week-end nearby and week after week, after early ski weeks and late ski weeks at places like Zermott (?) and Verdea (?) so I really didn't want to go back.

On the other hand, it was pretty obvious that even if I put up a lot of my own money and even if UNIVAC put up a lot of money, it took a lot of traveling back and forth to the United States to really stay up with the American computers. You could stay up with the Western European computer scene, which was anywhere, according to which parts of it you were working in, one year to three years behind the American level. But I kind of regretted calling back. To a certain extent, my stock in trade was interpreting the American scene to the Europeans. Well if they knew as much, or more about it than I did, this wasn't a very valuable trade. Of course, I expected to do much more detailed applications work as a full-time employee than I had done as a consultant for UNIVAC. Still and all, I had a feeling that I was kind of losing my grip technically. I was still a well known figure in the United States but sort of a historical one. Grosch's Law was a good article of commerce, you know, and people all knew me at the meetings and all that. But, I didn't exactly get a feeling that they were just sitting at the feet of the master by a long shot either.

So, the phone I repeat rang. This would be something like March of '65 and it turned out to be Santa Barbara, California. A chap by the name of Dr. John Fisher, who a couple of years later became chief scientist of the Air Force here in Washington. Fisher was in temporary charge of a project at Tempo, which is a General Electric think tank in Santa Barbara, California. This project was an extremely interesting and challenging one in computational linguistics and in data structures involving the use of primitive GE computer equipment but extremely sexy list processing software to use natural English and semantically oriented (not using very good words here) word structures and linkages semantically acceptable to the person putting the data into the system. In other words, it accepted the challenge that everybody has a different world view and only work for the guy that was putting the data in and who would presumably ask for it back someday. And, the fact that his contraire had an entirely different world view was brushed aside on the grounds that his contraire should get his own…system.

So, this was a very challenging thing and the reason that I was asked to run it was that the inventor of this system was a chap named Frederick B. Thompson, whom you remember I had hired from Fort Huachuca to work for me in GE in Phoenix. He had stayed on after I had left and had become quite a power in General Electric software, always working on the fringes of the military and the intelligence community, and had developed, had thought up and developed this natural language--DEACON stood for direct English access and control--and data structure project which was partly funded by the intelligence community and partly by the General Electric Company. And then it had a bust-up with GE, had not left but in the course of the bust-up had sent off these resumes in a few places and had immediately received an offer of a full professorship at Cal Tech. Well, full professorships at Cal Tech are pretty hot stuff and remember he had worked at the Rand Corporation in the early days so he was fully aware of the advantages of such an area and his wife was keen on living there, although it wasn't quite as nice as Santa Barbara. And, as a result he was gung-ho to go to Cal Tech and he unfortunately had most of the knowledge about DEACON in his head, not very well documented and he was not feeling all that friendly toward General Electric, having almost severed his connection with them before he put out the resumes. So, they had to find somebody who could not only pump this information out of Thompson but with whom Thompson would continue to have relatively friendly relationships afterwards. And…hope to get it all pumped out of his in the initial contact process. And, after going down through a list of possible people, most of whom Thompson regarded as a rival, somebody tripped over my name. In fact, I think it was suggested by the librarian at Tempo who was a fair friend of the management and of Thompson's and who had worked for me in Evandale.

So, comes a long distance phone call to Lausanne, or to be more precise Belmont (?)…Lausanne, saying, "Come, come to the Wildwood." I flew Scandinavian Airlines over the pole and in a couple of days interviewed for the job and after some heart searching, accepted it. My wife urging me on the while saying how nice Santa Barbara always had sounded and so forth and so forth. When I came back to pack my goodies and leave for Santa Barbara, she informed me that she planned to stay in Switzerland, you know. "It's great over here. Send me Care packages." So, I not only left for Santa Barbara

but I had to look for another wife, too, which isn't of interest to an oral history but it accounts for the fact that I now have a third wife, whom I acquired in Santa Barbara.

I got back to Santa Barbara and I found the--that is, when I got to Santa Barbara on my hiring trip, I found the project most rewarding, intellectually extremely stimulating and populated by some very nice people. It was only a group of 12 or 15 people. Thompson, of course, came around for a couple of months. Fisher then relinquished his management of the thing and passed it over to me but I wasn't able to do what Thompson had done. Now, whether this was because the project was beginning to increase in difficulty--I'm inclined to think that as you lick the early semantic and linguistic and structural difficulties of a project of that sort, that further advances become increasingly difficult; that human languages intrinsically resistant and complex data structures are intrinsically hard to establish without error and unambiguously.

But, whether it was a natural increase in resistance of a difficult project or whether it was simply that, you know, Thompson was inventive and creative and it was his baby and I was a late-comer and a little rusty, to say the least, I don't really know how to balance these two or to assess the situation but I certainly did not provide the creative spark that Thompson provided.

Now, I was a reasonably good manager and I got some money from the GE research labs and a much bigger chunk of money from the research arm of the Pentagon through the old NAIR (?) Development Center and with the concurrence of Dr. Rube Davis, my present superior, who was then in the Pentagon. So I did the management task very nicely and I got all the people enthused and running around happily patting each other on the back and I did all the things that a good GE manager was supposed to do but I wasn't really advancing the project the way it needed to be advanced. It really needed a really hotshot, young, brilliant computational…and we weren't able to find any who would admit that the DEACON had any viability. Those that had any interest in this area at all had their own pet projects; many of which were competitive with Thompson. And, those who didn't because they didn't think it could be done which is a perfectly logical, sound position to take. To this day, I'm not sure it can be done but I'm sure that we made some interesting advances in trying to do it. We got to the point where we could ask the systems for a keyboard, of course. How many red ships are there in Boston harbor? And, since we had used the term "red" in setting up the data bank to mean both Communist affiliation and the color of the hull, it would give you back two lists. One marked flag and one marked hull color. That's not bad. Sure, it was a stunt and there a lot of much simpler questions we could ask that the machine would just say huh to but at least it was an indication that we accepted the ambiguity and redundancy and richness of natural language rather than attempting to work around them. And then we'd accepted the fact that red means one thing to one guy and another to another and not attempting to…

So, I enjoyed that thoroughly but, as I say, after a year or so it became obvious that they needed both more money and better computer equipment and a creative spark.

Meanwhile…

MERTZ:

Excuse me…at that point consider any alternative approaches to the problem, such as decreasing classification areas..how many category ships of category red, red connotes and any other specification.

GROSCH:

No, I think--yeah. I think my influence was brought to bear at this stage of the game.

It was my belief that we had done as much as we could do--mind you, perhaps I was just kicking against the bricks. Perhaps I was just struggling against recognition of the fact that I wasn't the man Thompson was but I don't think that was so. I think what I said was probably correct and, that is, that you've done as much as you can do just thinking about the theoretical nature of the English language in a hypothetical data base about ships floating around on a paper ocean. We weren't going to do anything for ship movements anyhow. They'd gotten a little bit of money years before from ONR and the ship data base remained from that.

So I said what we need now is to test this off as a parallel operation for some small, carefully protected part of the intelligence community. We tried to get an arrangement going whereby we put half a dozen people in DIA, over in Arlington, and actually work on a small classified, but not highly classified, highly sensitive data base trying to ask real questions about it. Actually input it and fiddle with it while the real, honest to God human analyst continued to operate it with 3 x 5 file cards and notebooks and so forth in parallel. But, it should be real and lively and we should be competitive after a year or two with 3x 5 file cards if not with the whole apparatus of DIA and CIA and what have you.

MERTZ:

This was '65?

GROSCH:

This would be the winter of '65, yes, going on to the spring of '66.

We'd gotten enough money. We were not short of money. The other thing was that to answer a reasonably sophisticated question that was within the limits of the system but near its upper limits, one in which a lot of linkages were required. For instance, one in which we would ask the distance between a certain man and a certain city. Well, now the man would then be linked to the fact that he was an officer on a certain aircraft carrier and the aircraft carrier would be tracked along in a time dependent data bank and found

to be in Boston Harbor and then the latitude and longitude of Boston Harbor would turn out to be available in the data bank. And, so would the latitude and longitude of New York and then a little set inserted. Fixed data would calculate the difference of the latitudes and longitudes and the number of nautical miles between them and print out the answer.

Well, this was great stuff. To do this with a human being and a slide rule would have taken maybe 15 or 20 seconds with the data base we have. The machine took 10 minutes and in 10 minutes, it usually had some trouble. I mean you'd get a disk message or something like that. Not every 10 minutes but frequently you would so quite frequently you'd just get plain old hang-ups. It wouldn't even repeat every time in 10 minutes. Well, that same thing could have been done on a highly sophisticated machine, like a GE 645, for instance, the time carrying computer that they were trying to develop at the Bell Labs at the time, could have been done in probably just a few seconds. And the time sharing capability which I had pooh-poohed in so many other places would have been of extreme value in that case. If you should sit there at the console trying to think what to do next, you know, somebody else might just as well be using the machine. But, when you did get to it, you'd need a great, great data bank and you needed a good chunk of working for and you need very high speed computations.

So I tried very hard to persuade all the rest of the program managers in Tempo to put in their chips and to replace all our separate machines. We had, believe it or not, a 704. One of the last 704s in the world; tubes and all heating up one of the rooms in the building. We had a 1401. We had a time sharing link to two systems in Los Angeles. We had a UNIVAC 9200 I think linked on a broad band to an 1108 in the Matrix Corporation in Los Angeles and we had my 225 with a couple of disks stores on them and we were in the process of getting another 225 for a different operation. And, my view was let all the program managers put these chips together in a pot and we could get one good, powerful machine, like a GE 635. Get a very competent installation manager who could run it. There would be no problem about making a switch-over and each of us would get ten times as much computing power as we had before. And, none of the other program managers would do it. And I was rather abrasive about this and the general manager of TEMPO was a little upset at my vigor and so forth. And in the end what do you know? I got fired again.

This guy was Tom Paine, who a few months later became head of NASA. And I wasn't exactly fired in the sense of being led to the door and thrown out. It was simply indicated, you know, that sooner or later when the money ran out that they'd be happy if I'd go away.

Well, about this time I had been approached by the people who were searching for a director for the computer center here at the Bureau of Standards. I think it's not denigrating a job particularly to say that they had really beaten the bushes for a director. The first director had lasted only about six months and had departed covered with wounds and they'd been looking almost for a year for a successor. That would not be the

case nowadays because it's a very good job in the context of Civil Service and a nice location and all that, a very good salary indeed. And, times are tough nowadays when a lot of senior people are looking for good jobs. But, we're talking now about 1967 and in 1967 good jobs were whistling for people in every alley of the computer trade. So, they hadn't really been able to find anybody and when I was found by the search committee which was headed, believe it or not, by Cuthbert Hurd. The world do turn I tell you. Now chairman of the board of Computer Usage Corporation in Palo Alto, California and chairman of the subcommittee of the advisory panel of the Computer Center at the National Bureau of Standards and I was turned up as a candidate by Cuthbert Hurd. And everybody jumped in and said, "You must take the job, Herb. It's the greatest thing in the world for you and it."

Now, I wasn't all that anxious to do it and I must say I scooted around a little bit trying to find alternatives. But, Paine was sort of hinting that the sooner I left, the better, you know. And I had been turned down cold by the General Electric Research Labs on the renewal of the $200,000 a year subvention that they'd been putting in the DEACON, a new administration there under Dr. Bueche.

MERTZ:

(asked about spelling)

GROSCH:

B-u-e-c-h-e, I believe. Director of Research and vice president of GE. Art Bueche had come in and had said, you know, if we do this sort of work, we'll do it at the laboratory. We're not going to pay Tempo to do it. Of course, they didn't do such work but that's beside the point. So I knew that the subvention that I had been counting on them to put in was not going to happen. And DIA was dragging its feet on letting our team in to have some real practice and I had failed dismally at getting a better machine so I really couldn't stay even if Paine hadn't been trying to get rid of me. I really couldn't stay at Santa Barbara.

And, much as I liked the location, and I was now married to a Santa Barbara girl and I had acquired a couple of Santa Barbara step-sons, I wasn't anxious to subject them to the vicissitudes of Washington. Still and all, I did take the job and, much to my amazement, lasted in it three years in spite of repeated assassination attempts.

I might add, however, in concluding all these curiously over-vigorous relationships with my employers that when the word got out in the industry and the business equipment manufacturers association had a representative on the advisory committee and knew that I was being approached, when the word got out in the industry that I was going to be offered the job, both IBM and GE blackballed me vigorously and threatened to burn down the Bureau of Standards if I was appointed. So the old rancor still existed, believe me.

Now, what happened in that case was that the Dean of Representatives, Charlie Phillips, who was most embarrassed by the whole thing because he had said, "Oh, what a great choice," and he was told. But, after he told his clients, it turned out it wasn't all that great a choice from their point of view. He had to come to Dr. Astin, the then director of the Bureau of Standards and tell him that on the contrary that the industry was quite upset about this. Astin, although he had actually offered me the job by then, then called me and sort of said, "We're going to have a little problem here and maybe we ought not to do it after all." I suggested to him, "Why don't you and Phillips check the rest of the industry to see if everybody feels that way and, meanwhile, I'll see if I can do something with IBM and GE." So I called Tom Watson's personal secretary in Armonk and told him the story. And I called Stanford Smith, who was then the group executive in GE in charge of way up above the GE computer operation and told his secretary--couldn't get him because he was in Florida--the story. Both secretaries happened to be old personal friends of mine and they told their bosses when they got to them and a couple of days later, both of the blackballers called me up and said that, you know, the whole thing was a big misunderstanding. And, what they meant was that the job wasn't nearly worthy of that famous Herb Grosch and all. And they ought to keep something, wait until something better came up. Great it was. Great, great, I tell you.

The GE blackballer was Bob Curry, who went back to the Southern Railways not long after but was then deeply involved in standards for GE Phoenix. And the IBM blackballer was Bill Andrus, who is now associate director for standards to Dr. Ruth Davis, my successor at the time.

MERTZ:

Andrus?

GROSCH:

Andrus, A-n-d-r-u-s. Then director of standards for the whole IBM Corporation, all kinds of standards; internal and external as well as just ADP standards.

Now I won't burden the history with the interesting things that happened during that three year period. Suffice it to say that the standards activity was not dull. It's very vigorous. It's full of politics.

I managed to dodge the various blackballs and assassination attempts for three years but finally succumbed. And am now in the extremely pleasant position of senior research fellow; the job occupied by Sam Alexander at the time of his death. I have a nice office where we're making this recording at the present time. I've just gotten back from my third foreign trip of the year. I feel relatively free to pursue my own interests. Although, of course, I have to make sure that they parallel those of the Department of Commerce and the Bureau of Standards' Computer Center in particular.

But, I must say it has been a relatively thorny path that I've pursued. And I'm not sure that all the scratches that the briars have left on me really have added much to my…beauty.

While all this was going on year after year after year, I maintained an awful lot of professional relationships. These were attenuated during my European stay and I think that was one of the many reasons why I felt that I ought to come back.

I had been, for instance, the ACM representative on what was then called the Joint Computer Committee, the group that put on the spring and fall--or as they were then called the East and West Joint Computer Conferences in the early days appointed by some of my academic enemies but personal friends who, at various times, were president of the ACM and so forth--the Dick Hammons and the John Carrs and so forth.

And I'd always been active in the Rocket Society and its successor organization, the AIAA. I'd been senior member from the beginning and the IRE later to be merged into the IEEE. I'd been practically a charter member of their electronic computer committee dating back to '48 or '49 and was only kicked off of it after a couple of years when they'd discovered I didn't belong to the Paris Society, which I then joined and was restored to favor.

This was at the time in which, for instance, Bob Sorrell (?) compiled the first bibliography in electronic computers that I ever saw. That was published in 1949 and we put it on the peek-a-boo code system on punch-cards. Since lost unfortunately. It was only a deck of cards an inch thick. At the Watson Lab and before I left the Watson Lab for IBM Washington.

So, I'd had all these long term professional connections and when the British Computer Society started, I became an early member of that and was made a fellow in the Institute of Fellow grade recently. So I had all those things going and when I came to the Bureau of Standards and, so to speak regained full stature in the machinery of the business, not only in technology but in the actual administration of the business. Why, this began to flourish and I found myself a member-at-large at the ACM Council, a fellow of this and a member of that and so forth. I was appointed to be the American representative on the Computer expert's group, the CECD, the European--I guess I should be more precise and say the Western Economic Union.

In consequence of the meetings I attended in Israel, I was made a charter member of, and first chairman of the Intergovernmental Council on ADP, which consisted of senior figures in the central governments of various large computer user companies. I've been succeeded this year by Atkinson, who is the United Kingdom opposite number.

Most of these men were bureaucrats rather than technocrats but when we organized the group I not only happened to be the American president but I knew more of the bureaucrats around the table than any of the other bureaucrats so that I got elected

chairman sort of by mistake. I really shouldn't as a standards and technical man had been the head of the thing but I helped to get it started and with the Israeli secretariat have kept it going for three years as a club of senior government people working with large quantities of computers.

All of these things have come I think because I did come back to the country and because I did accept the Bureau of Standards job. So, I think all in all, it's been an extremely good recent career. I've been well treated in this dismissal from the directorship and I think that the basic problem that you encounter in assessing the distant past, in terms of the current past, is that you know the skill is so much greater that it's almost, it's hard to see how such an enormous thing could have grown from such early seeds. And I spend a lot of my time thinking about this. These tape recordings have been a happy way of recalling how small the seed and how far back in time it was.

MERTZ:

Right. Well, thank you very much.