

An Interview with
BARBARA H. HORNBACH

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Conducted by Thomas J. Misa

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Barbara H. Hornbach Interview

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Abstract

Barbara Hornbach attended Vassar College where she worked with pioneering computer scientist Winifred Asprey and led the local student chapter of the Association for Computing Machinery. After her graduation in 1969, she began a career in software development and management with Bell Laboratories in Naperville, Illinois. The interview describes her technical work at Bell (on 4ESS and 5ESS) as well as participation in affirmative action committees and workshops within Bell. During 1980-84, Hornbach chaired a standardization sub-committee within CCITT dealing with human-machine interface standards for telephone switching systems.

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Misa: My name is Tom Misa. It's the 10th of December 2015. I'm with Barbara Hornbach at her home in Geneva, Illinois, and we're doing an interview for the Sloan Foundation trying to understand the experiences of women working in the computing industry in the 1960s, 1970s, 1980s, and 1990s. Barbara, I wonder if you might take us back and think about your childhood and junior high and high school years, were there any hobbies, or interests, or activities that particularly attracted your attention that might have inclined you toward the later pursuit of a technical profession?

Hornbach: During those years, the junior high, high school years, not so much. I was good in math, my dad worked for IBM so I was exposed to at least his line of business. I was good at math and enjoyed math, but I had no real hobbies associated with computing. I graduated from high school in 1965, so really didn't do anything with computing.

Misa: Did you remember any notable math classes or math teachers in high school?

Hornbach: Oh yes, in fact I had the privilege of actually meeting at my 50th high school reunion, just earlier this year, the one teacher that made a difference in my life was my geometry teacher. And he was still around, and he came to our 50th high school reunion. He also happened to be the varsity tennis coach, so he was pretty popular. He was a relatively new teacher back in those days when I was back in high school, and he was phenomenal. He was very inspirational. Don't ask me how anymore, why I think that, but he just was. I mean, he was the one teacher I remember, Mr. Jack Wayne was his name,

and he was good. So I had the privilege to be able to thank him for his inspiration at that 50th high school reunion.

Misa: You mentioned that your dad worked for IBM?

Hornbach: Yes.

Misa: What kind of a position did he have?

Hornbach: My dad worked for IBM and my dad had an associate's degree. He started out at IBM, I think, as an equipment maintenance engineer, kind of a low rank IBMer, and worked his way up the technical ladder to senior systems engineer. That was what his top title was when he finally retired. But he was a very loyal IBMer and I admire my dad so I guess that was part of my inspiration.

Misa: In addition to your dad, were there any other people in your family or community in your network while you were growing up — could also be role models or women particularly, but also men that were pursuing engineering, or technical, or science oriented [careers]?

Hornbach: No, not really. My dad had an associate's degree. My mom in her fifties finally got an associate's degree in nursing. So me and my three brothers were all brought

up that we would be going to college. And so the expectation was — and we all did — we all went to college. My three brothers became engineers.

Misa: Okay, so there was something there.

[Laughter.]

Hornbach: There was something there, right.

Misa: And where was high school?

Hornbach: High school was Homewood Flossmoor High School in Flossmoor, Illinois.

Misa: When you were going into junior or senior year, what options did you consider for doing college work?

Hornbach: Let's see. My parents not only had the expectation that we would all get college degrees, we all had the expectation that once we got a college degree we were on our own. We had to make our own way once we had college degrees. So I knew I had to go into some field that I could get a job after I graduated from college. My mom wanted me to be a teacher and my dad was pretty, I would say, noncommittal. I mean he didn't push me one direction or another. I didn't really need to be pushed because I knew I didn't want to teach. The alternative would be something in a field that I could get some sort of job and what did I know? I knew that my dad worked for IBM, that would be a

possible job, possible company that I could work for. In fact, I actually had a summer internship with IBM between my junior and senior year, and I had another internship after my senior year in college. Actually, the internship I had between my junior and senior year was not with IBM but it was at the — I'm getting ahead of the game here — at the Conrad Hilton Hotel in Chicago. I had an internship in their computing department and I worked with a lot of IBMers there so they were inspirational to me. In fact one of them was a woman who was inspirational to me between my junior and senior year in college.

Misa: Was there anything like computing at your high school?

Hornbach: No.

Misa: And where did you go to college?

Hornbach: I went to Vassar College. In fact, I applied to four schools and I actually got accepted at four: Vassar, Northwestern, Knox, and University of Illinois James Scholar Program. But having lived in Poughkeepsie because my dad worked at IBM so we lived in Poughkeepsie for about seven years.

Misa: Oh, okay, so IBM bulks large in those times.

Hornbach: Oh yes. So I learned how to ice skate on Vassar Lake, you know, I got into Vassar so I went to Vassar. Vassar didn't have a computing department, at that point [it] had no department. We can talk about that subsequently, or we can talk about that now if you want me to.

Misa: Actually your background in math sounds like that's an important part of your intellectual interest in careers, so why don't we go ahead.

Hornbach: Alright. So I graduated from high school and went to Vassar. At Vassar I took pretty much — well Vassar's a liberal arts school so I took a liberal arts program — but I majored in math and minored in economics. I had a professor and advisor who was very inspirational to me, sort of a mentor to me, that was Dr. Winifred Asprey. And Winifred Asprey had developed a relationship with IBM, so Vassar got its first IBM 360 computer while I was there.

Misa: Really! Okay, that was a big deal.

Hornbach: That was a big deal. Miss Asprey started the Vassar chapter of the Association for Computing Machinery when I was there. I think I was the president of the Vassar Chapter of the ACM. Toward my junior/senior year, Miss Asprey introduced some computer science related courses. We didn't have a computer science department back then; it does now, but it didn't back then but there were some computer science courses that were being introduced. So to try to earn a little bit of money I worked in the

computer center at Vassar after the 360 was installed. Before the 360 was installed, I must have taken a programming course somewhere along the way because they would take our card decks and take them to IBM and run them overnight, and bring them back.

Misa: Okay. Remote batch or something.

Hornbach: Yes, right. I can't quite remember exactly the sequence. Maybe they did that even when we got the 360. But in any case, that was my real introduction to computing at Vassar with the 360, the chapter of the ACM, and then working at the computer center and taking a few computer courses.

Misa: Your computer courses were mainly programming languages?

Hornbach: Yes, mostly programming.

Misa: What languages?

Hornbach: FORTRAN, back then FORTRAN. Then like I said, between my junior and senior year in college, I worked at the Conrad Hilton. And maybe between my sophomore and junior year in college I worked at I think it's United Van Lines up here in the suburbs. I lived in Chicago Heights so I commuted up to one of these communities, which is just north on the 294 Expressway. And there I was also writing programs.

Misa: This is United Van Lines?

Hornbach: Yes, I think it was United Van Lines, one of the van lines, one of the moving companies.

Misa: That's all about scheduling.

Hornbach: Whatever it was, was that RPG programming? Because I did RPG programming for one of those companies. So I did that one summer, then another summer I worked at the Conrad Hilton. After I graduated I actually had an internship at the University of Illinois at Urbana-Champaign in Information Science, which I did not capitalize on. I let that go, and for really not a good reason. Basically it was fear, okay? I had the internship, which was great to have gotten.

Misa: At Urbana?

Hornbach: At Urbana. I had a roommate that was also going to go down, we had gotten an apartment, we were going to room together, and she backed out of her curriculum at the eleventh hour. So, I actually drove down with my two carloads worth of stuff to move into this apartment, with my parents, and the place was a rat trap or something or other and it was just so scary. So looking back on it, it was probably not the thing to do. But anyway, I didn't take it. So here I am, I had no job. This was early September and I just

declined my internship. I had no job and of course, all the companies, most of the companies had already filled their [positions].

Misa: Sure, it was a hiring cycle for recent grads.

Hornbach: Right. So there was next to no jobs in the job market for somebody like me.

However, there were two job offers that I did get in that time frame. One was IBM Kingston, New York, and the other one was Bell Labs in Naperville.

Misa: Either of those would've been interesting, possibly different tracks. Were those set up through Vassar?

Hornbach: I don't remember how I got those anymore, to be honest. But I did end up with two job offers and I chose — again for reasons that I'm not real proud of — but I chose Bell Labs. I actually wanted to go to IBM Kingston, and back then it was like they offered me \$10,000 a year in 1969, fall of 1969 to go to IBM Kingston. Of course, Kingston was just down the road from Poughkeepsie, and I had an offer to room with one of my Vassar classmates so that was where I wanted to go. But my mother was a pretty powerful influence in my life and so it was her influence, mostly, that I ended up — and my dad probably would've loved it if I had gone to IBM — but . . .

Misa: IBM family and all.

Hornbach: . . . he kept out of it and I ended up coming to Bell Labs in Naperville.

Misa: When you did interviews, my understanding that Bell Labs did interviews nationally so the interviews may have been in New Jersey? Was that the situation?

Hornbach: Here's the situation. Alright, so I chose Bell Labs Naperville, and I was hired as a Senior Technical [Aide], STA. I think they had TAs, but I had a degree in math so I came in as an STA, and they had Associate Members of Technical Staff, and then Members of Technical Staff.

Misa: Right, four layers that made a big difference to how people's careers evolved.

Hornbach: Right. So anyway, [I] come in as an STA, right? It took me only a few days to realize I was, in my opinion, a second class citizen to the MTS, who also had degrees, but their degrees were mostly in engineering, okay? Mostly in engineering, not even too many computer sciences degrees in 1969.

Misa: That was a very new field.

Hornbach: Very new field, so most of the men who came in as MTS — men, and they were mostly men — came in with degrees in engineering, came in as MTS, there was one person who had a degree in physics [who] also came in as an MTS. The math majors came in STAs, two levels lower. As an STA, I think you could get promoted to AMTS.

And also the culture at Bell Labs was you need to get a master's degree or a Ph.D., mostly master's. So most of the people who came in as MTS went to a one year on campus — it was a really wonderful program, OYOC, One Year on Campus — they got sent away to schools like Berkeley and whatever, and got their master's degrees in computer science, or engineering, or something. Or the case that they didn't come in with an engineering degree, they came in with a non-engineering degree that still came in as an MTS, they went to a local university part-time, Local University Part Time, LUPT. People were given time off over a two-year period to get their master's degrees.

Misa: Was there also tuition support for that?

Hornbach: All paid. Yes, OYOC and LUPT were all paid.

Misa: Very generous. Upgrading the workforce and connecting to the academic world.

Hornbach: Oh yes, Bell Labs only hired the top 10 percent of any graduating class. As a math major, I was given the option of tuition reimbursement to go get my master's degree, so I went to the University of Chicago where a number of other people went to get their master's degrees also. I went to the University of Chicago in the Information Science department and got a master's degree, but it took me about three years. I got a master's degree in 1972.

Misa: Information Science, not Computer Science.

Hornbach: Yes. It was Information Science, more theoretical at University of Chicago. So as I said, it took me only days to realize where I stood relative to other people who came in with bachelor's degrees. I was not a happy camper but I was there, alright? So as I progressed through my degree, I was promotable and I said I do not want to be an AMTS. I don't want to even be promoted to AMTS because AMTS seemed to be like the career path for TA, STA, AMTS, and then you took [pause]

Misa: Some kind of a plateau there?

Hornbach: Yes, in my opinion. Whether it was true or not I'm not sure but that's how I felt. Plus I felt I should've been hired as an MTS to begin with. I think it was in 1984 when I got promoted to MTS. No, no, no, 1974. I got my degree in 1972 and I think I got promoted in 1974. So during that time, this is what I remember from back in those days, and this is sort of the negative part and everything else is pretty positive with Bell Labs. Just getting the master's degree was positive, right? From a school like the University of Chicago.

Misa: Sure.

Hornbach: That's pretty positive. But during that time there were about six of us — back to the women/men thing — there were six of us who in those years — 1969, 1970, 1971 — in that timeframe there were six people, six of us who came in with math degrees,

three women and three men. Somehow or another — this is my recollection and this is pretty true — is that the three men all got promoted to MTS much faster than the three women. How, I don't exactly know.

Misa: Not to the Associate MTS, but to the full MTS.

Hornbach: The full MTS, yes.

Misa: That's the level that matters.

Hornbach: The level that matters, right because beyond that at the time, you went into the management ranks as supervisor. Subsequently, they developed another technical career path to Distinguished Member of Technical Staff, DMTS. There wasn't a DMTS back in those days that I recall. I always remember the three men got promoted. The three women finally did get promoted, but after the men. We all came in roughly about the same time. And then the three men all basically left the company along the way. Of the three women, I was one of them and I got promoted up to a department head, MTS, Supervisor, Department Head, and the other two became Distinguished Members of Technical Staff over time.

Misa: So it was a pretty distinguished group that came in.

Hornbach: Yes.

Misa: You did something for the company.

Hornbach: Yes, yes. And we all retired from Bell Labs, the three women all retired from Bell Labs, whereas the three men all left and went someplace else. Anyway, that's kind of my early story. But then from that point on, it was just one growth opportunity up to the next growth opportunity. It was so much technical training, managerial training, providing opportunities, it was a great career.

Misa: Can you say something about the early projects you worked on?

Hornbach: It was all software development, and from a broad perspective you had call processing software, because what were we working on? We were working on telephone switching systems. That wasn't the first electronic, but the first electronic toll switching systems that I worked on were 4ESS.

Misa: 4ESS.

Hornbach: Number four Electronic Switching System. And that was the first long distance toll switching system. There were other electronic switching systems that were for local phone service. So the 4ESS project was a brand new project, [I] got in on the ground floor, and you had call processing and administrative software and then you had maintenance software. So I came in and I worked on the traffic and plant measurements

system, that was the first. And I was responsible for designing and developing it. I had a colleague that I worked with who was primarily plant, and I was primarily traffic, but we worked together and we developed the system.

Misa: That was software development?

Hornbach: It was all software development.

Misa: Right. I understand the point that is not always recognized, but that ESS, those were stored program computers. That was Bell's way of in essence keeping clear of the consent decree that they had signed earlier that they would be doing computers for their own phone system, computers for the military, but that they wouldn't be doing computers for the commercial market. So they had to bound that, in a way.

Hornbach: And you know that I didn't know that.

Misa: It's fascinating because you think that Bell had this tremendous reservoir, this is where information theory comes from. [Laughs.] UNIX and C and everything else.

Hornbach: We had our own languages and everything else.

Misa: Exactly. Did you have any interaction with any of the notable developments with C or UNIX?

Hornbach: I personally didn't, no. Later on in my career when I was a department head, I was always interested in encouraging my people to try new things, try new methods of developing software so we had an opportunity to work with the researchers on one of their projects and bring their research into our development, but that's years [and] years later. I hadn't worked with researchers until that point, which was a lot of years.

Misa: With the software development, was that more of the architectural level?

Hornbach: Well no, I designed the system. I designed the system and then implemented it and tested it. So I guess from an architectural perspective, I designed the architecture of the traffic measurements and plant measurements system. I am so far away from it, I have a hard time remembering; it turns out I probably am not technical, when I think about it. But I took this path for the reasons I told you; I don't know if I would have done the same thing now. But anyway, I had to figure out how to fit *my* system into the operating system, how we were getting our inputs from the various sources of input, the numbers that call, all the things you do in traffic measurements and all the calls. I can't remember anymore. You get data from the call registers and things I haven't thought about in years. So yes, I designed the system. And then it's so interesting because when I finally became an MTS I finally got the opportunity to spend about a month at Bell of Pennsylvania. MTS were given opportunities to do things that as an STA you weren't. And one of the things was — I can't remember what the name of the program is — you would spend four to six weeks at Bell System Operating Company and just go around to all the

different divisions of the operating company and learn — because those were our customers — so learn what our customers were needing in their switching systems and how the operating company worked, and then how what we did at Bell Labs fit into the operating company operation.

Misa: But you'd be there resident without necessarily an assignment but you were learning . . .

Hornbach: We didn't do it, but we were learning.

Misa: . . . essentially from the inside.

Hornbach: Yes. It was another one of the great programs that Bell Labs offered its engineers. And so finally I got promoted to MTS, and I finally got to go on the Operating Company Assignment Program, OCAP. I got to go on OCAP, which was at Bell of Pennsylvania, spent a month there, and it was like phenomenal. So one day, I'm in their measurement department and I'm seeing how they're getting data from their current switching systems, because ours hadn't been produced yet, okay? I think the first 4ESS came out in 1976, something like that, and this is before that. So I am seeing how they are collecting measuring data from their electromechanical systems and using it, and I'm thinking why is this? So my design isn't going to work this way. So I went back and I redesigned the system. I redesigned my measurement system so it'd be more user friendly to the operating company.

Misa: It's interesting that Bell Labs had this essentially acute awareness of getting its technical people, its research staff, into essentially its customers' facilities to gain insight. In that instance you said it made a big difference.

Hornbach: Made a big difference because I came back and redesigned the system. [I] made it more efficient, made it much more easy to use, made the outputs more user friendly. So that was an amazing experience for me and resulted in improving our systems. So I finished that, it must've been turned over for deployment of 4ESS. And then I had an opportunity to do something else. And so I said I wasn't sure what I wanted to do — I knew a lot of things I *didn't* want to do — so I ended up then doing maintenance call processing. I went from pure administrative software to the maintenance call processing side of the house.

Misa: Can you describe that?

Hornbach: To be honest about it, I can't really. Maybe I can in a little bit. But we were introducing a new signaling system, the CCITT signaling system — I'm not sure what it was called — anyway, it was in trunk maintenance, and there were new phones. We added new trunks to the system, and this is where I'm falling down on what I'm trying to describe. But the information about the call went over a signaling system, the voice transmission went over the trunk. Whereas prior to the introduction of this common channel signaling system, which is like all the information about the calls going over the

trunks went by a signaling system, prior to that the information about the call went over the same source as the trunk itself. So we introduced a new common channel signaling system to the 4ESS, and we had test calls. [We] basically did test calls and things like that. My responsibility was the trunk maintenance for this new kind of trunk. So I got out of the pure administrative software side and I got into a little bit of call processing and trunk maintenance. It provided me an opportunity to broaden my knowledge base about switching systems. And I did that, I think, until I finally got promoted to supervisor, which I think was in 1976.

Misa: 1976. I think Mary Feay told me that you were involved with some CCITT standards setting. Was that during that period?

Hornbach: So then as a supervisor — [laughing] yes, Mary and I were.

Misa: I'd like to put that on the table, I'd like to come back to those.

Hornbach: Yes. When I got promoted to supervisor I got promoted as a supervisor into — because we were then converting the 4ESS into an international switching system — so I got promoted into the international switching department for 4ESS as a supervisor. And I can't remember what I was supervising, to be honest about it at this point. But in any case, it was a new department, a new use of our system so I got in on the ground floor of that.

Misa: This was 1976 forward?

Hornbach: No, no, this was probably 1978, somewhere around in there.

Misa: That's fine.

Hornbach: They wanted some people to join the CCITT [standards setting] in various areas, so anyway, I jumped at the chance to join an international committee and go overseas to meetings. So given the opportunity, I jumped at the chance and I spent two years as a member of the Man Machine Language Subcommittee, sub working party. And I must've done well enough that they asked me to chair it so I chaired it from 1980-84.

Misa: It's that four-year cycle, then.

Hornbach: Yes. So I was a member from probably 1978-80, and then chaired it from 1980-84.

Misa: And what issues did you work on?

Hornbach: It was human machine interface standards for switching systems. It was pretty rudimentary, it wasn't screens today, it was basically what you typed in, and messages that you typed in went back out, switching systems. It was called the man machine

language. I learned a lot from being on this committee, learned how to run a committee where you don't have control over anybody but you have to get something done in a four-year study period.

Misa: That's right. It can be a noisy, messy process.

Hornbach: It was probably one of the most high powered or high level growth opportunities I've ever had because we had people representing telephone administrations in countries around the world. We had people representing switching equipment suppliers like Ericsson and all these different companies across the world. And everybody brought position papers, so you had everyone's view. You know you come up every meeting, you would have all these position papers or these proposals coming in, and then had to organize which ones you're going to cover in that particular meeting. The meetings were typically one or two weeks. In Geneva I think we had two two-week meetings a year, but then the different administrations would host a one-week meeting. So British Telecom would host a meeting, and we hosted a meeting, and so around the world we would go to these one-week meetings where we would work to prepare for the meetings in Geneva.

Misa: It must have consumed a substantial amount of your time.

Hornbach: Yes, because I had to make sure that we had our position papers ready. Of course you wanted to make sure your position papers looked like what you were implementing in your system. In parallel, whatever it came out, you wanted to make sure

what my people were implementing for our man machine language was consistent with what was being developed in the CCITT, because you wanted to be able to say you were consistent with the international standards. It was a great experience. This is an aside but I still interact with one of the few — and not few, there were quite a number of women on my committee — in fact I saw more women from other countries than I would ever have expected. Lot of women from China, one of my good friends still today is a woman from Sweden at Ericsson. Maybe not a lot [of women] but more than you might have expected because when I joined the Labs as an STA in 1969, you had to walk aisles to find another woman; I was one of a very few women. One of my mentors at the lab was an AMTS, a woman mentor was an AMTS. So I learned from her. But you had to walk aisles and might be 30 people on an aisle, okay? You had to walk aisle after aisle after aisle to find another woman.

Misa: So you're not talking about one in 15 or one in 30 even, it's something much less than that.

Hornbach: No, no, much, much less. And we can come back to how my experience relates to that *Datamation* story, that magazine story that we talked about. But anyway, back to CCITT, being able to work with a whole group of disparate people who each had their own interests, and get something so that at the end of that four-year period we actually had a project to present. That was really quite a challenge.

Misa: In diplomacy.

Hornbach: Diplomacy. I had another mentor who taught me a lot about how to run those meetings and the value of coffee breaks because you'd get to what would seemingly be an impasse in the formal meeting, you take a coffee break, and the people would . . .

Misa: People could have some informal conversation, do some adjustment. [Laughs.]

Hornbach: And they'd come back, and then they could move forward. It was phenomenal. It was one of the best growth opportunities I had at Bell Labs.

Misa: Now, just to be clear, Bell Labs was paying your salary this entire time. That was your assignment from Bell Labs was to participate and be a leader in the standards setting.

Hornbach: Yes.

Misa: Could you give a rough estimate of the time commitment, especially during those four years? Half time, quarter time?

Hornbach: Oh, no. Let's say it was about six weeks out of the year, from a meeting perspective. Two two-week meetings in Geneva and maybe two one-week meetings hosted by a country.

Misa: But as chair, surely you'd have additional coordination.

Hornbach: Then I did all the other work outside, which I can't even put a number on. It actually would just be a wild guess. It just fit into what I was doing at work; I don't know, maybe half a day. It's a pure guess because I can't even remember back then, but maybe half a day a week or something like that, that I ended up spending on that. Half a day a week, let's say. Whatever that adds up to.

Misa: You told the story that there was this new department that you slipped into . . .

Hornbach: Got promoted into, yes.

Misa: . . . that was well timed. Were there other people at Bell Labs that also participated in standards setting as a part of their job?

Hornbach: Yes, you probably got that from Mary, right? I can't remember what sub working party she was involved in.

Misa: She was involved with standardizing the languages that the electronic switching systems were being written in; that was my understanding from talking with her yesterday.

Hornbach: Yes, and then my ex-husband was on another CCITT committee. Was Mary on SDL?

Misa: I don't remember the acronyms.

Hornbach: There were about four of us that I recall from our international division that were working in different subcommittees, two men and two women, during those years.

Misa: I suspect it was the international division where this international standards setting was located.

Hornbach: Yes.

Misa: Other parts of Bell Labs would not be so directly impacted.

Hornbach: Correct.

Misa: So did your work with standards setting continue after 1984, as well?

Hornbach: No, what happened [pause]

Misa: 1984 was a momentous year, of course. Lots of changes going at Bell.

Hornbach: Not sure what you're referring to.

Misa: Well, the breakup and divestiture, and all that.

Hornbach: In 1984 I got promoted to department head, and they wanted me to stay on. CCITT wanted me and I wanted to stay on because it was, like I said, probably one of the greatest experiences, one of the hardest things I did, but then you learn from doing hard things.

Misa: Yes.

Hornbach: But by the time 1984 came along, we were successful and by now we had produced a recommendation. That's what we needed to have done and I wanted to stay. They wanted me to stay on and I wanted to stay on, however, I got promoted to department head in 1984. I was probably rightfully coached — where's your career? Is your career in the CCITT or is your career at Bell Labs? So I made that the tough decision to drop out of the CCITT, but in parallel, then, I got accepted into the Executive MBA program at the University of Chicago.

Misa: So that's a shift in your [focus].

Hornbach: In how I spend my time. So new department head and spending every other Friday and every Saturday down at the University of Chicago in their MBA program, executive MBA program, so I really had no time for the CCITT anyway.

Misa: Was it common for people moving into managerial positions at Bell Labs to do MBAs?

Hornbach: No. There were others of us, but it was not common.

Misa: Did Bell Labs give you the same kind of relatively generous support as for the master's degree?

Hornbach: Oh yes, they paid for the whole thing [and] they gave me the time. That was also really tough for me, but another one of those tough but great learning experiences. And I've used that and what I was doing. During those years I was a development department head, of developers.

Misa: And roughly how many people?

Hornbach: Probably 100-120. So probably six or so supervisors reporting to me, and each supervisor had I don't know how many people. I was on a huge learning curve just to be a department head as well as to getting my MBA. Those were hard, tough years but

growth years. And that's when I had the opportunity to work with research people and to find new ways of developing software for the system.

Misa: If it wasn't common for people to do the MBA, what inspired you to take up that challenge?

Hornbach: I've always been about growth and learning, and somehow or other I knew it was an available opportunity. I must have been well-rated otherwise they wouldn't have supported me in the application process. I just wanted to continue to develop and grow, and so I applied and I got accepted, and the company supported me.

Misa: Now, you said that it was about 1984 that the standards setting was coming to a close. So was it 1984 when you were promoted to department head and simultaneously started your MBA?

Hornbach: Yes. It was the end of the study period and that's when I got promoted and I started my MBA program.

Misa: So kind of a big bang, there. [Laughs.]

Hornbach: Yes, I never really have thought about it, I just know it was very tough, very tough, and for me it was very tough because at the same time I had a son in second and third grade. So it was tough years. Great growth years. Then fast forward to 1993 and my

former husband had been working — his area was systems that supported switching systems. So he was developing systems that — he was an innovator — but one of the things his system did was to provide a system whereby customers could change the software in the switching system. So his support system provided that capability whereby you could change the software in the switching system, and install and test it; that was one of the things his system did. Can't remember what some of the other things were. We had started selling the systems to Japan. He had a group of people, part in the U.S. and part in Japan, so he spent half of his time in Japan for about a year. He was commuting, okay? By this time our son was a sophomore in high school. I was given the opportunity to become AT&T's representative to Marubeni, which is a Japanese trading company, and I jumped at that chance. Our son, who at the time said, 'Okay, I'll give you a year of my life.' So he spent his junior year at the American School of Japan.

Misa: In Japan.

Hornbach: Yes, his junior year in high school. I'll give you a year of my life, but then I want to graduate from Bennett, which is the high school he went to here. So I said fine, and I went to my management and said I can only commit to a year. Normally these assignments were two-year assignments or five-year assignments. I said I can only commit to a year and my manager at the time said go for it, I'll support it, a year from now let's find out what happens. So we moved as a family to Japan in 1993-94.

Misa: Were you in Tokyo then?

Hornbach: Yes, Tokyo. And then after a year, my son naturally — I think to this day he regrets his decision, but it was his decision to come back to the U.S. and graduate from high school here in the U.S. I think he regrets that decision because in Japan he was excelling; I mean he was just excelling, he just fit right in. It's a very engaging community, that ex-pat community, and the school was wonderful, and he was taking hard classes. That's where he started his Japanese and he took his first economics class, and changed his whole life. But anyway, we spent the year in Japan and at the end of that year he wanted to come back. I said I committed to coming back with you, so I came back. My husband at the time stayed another six months but I came back and [my son] graduated from high school here. But that was another huge growth opportunity.

Misa: What kind of work did that entail?

Hornbach: What I did mainly was be the interface between my management here at Bell Labs and my management in the telecom part of Marubeni. Marubeni was a trading company and their objective was to basically finance, from what I remember, be the middleman. You know, connect Bell Labs to their customers, and their customers could be in China, Singapore, Philippines, or whatever. I don't remember anymore how that works. But essentially my role was to be the communicator; not get involved in the business deal *per se*, but represent Bell Laboratories in meetings with their customers. So I sat in two different departments at Marubeni, but the department that I recall was the department that was responsible for selling switching systems to other customers. So they

must have done the financing for, if Bell Labs sold a switching system to China — wonder how that worked; right now I can't remember how it worked.

Misa: Your job was probably to represent the technical side rather than the contractual financial side?

Hornbach: Right, that wasn't my role. My role was more technical, but I don't remember even doing that much technical. Really, I was almost a figurehead there. You know, introducing my U.S. management when they came over, to my Japanese management, and being the interface, working with my colleagues. I actually have files that I could go back and look at and resurrect a better answer to this question. But I would sit there and I would work with my Japanese colleagues, because I was in Marubeni, everything was in Japanese. I mean talk about understanding what a minority feels like; I was a minority. First time in my life I was a minority in a different culture. We would have tremors of earthquakes. So you'd have tremors and one time [there] was a loudspeaker, and of course I didn't understand what was going on, but they were getting under their desks, so I got under my desk.

[Laughter.]

Misa: Time to follow suit, yes. Can you say anything about the corporate culture that you experienced in Japan, because some women find it challenging?

Hornbach: My successor didn't last. I was the second person who was in this exchange program. The woman ahead of me had a hard time because she was actually part Japanese. I don't know if my management was her management, but the expectations on her were a lot higher on her than they were on me because people expected her to speak Japanese and know Japanese culture, which she didn't. She spent a whole year and had a much more difficult time. I did fine because I didn't have those expectations and I was studying Japanese. I'd have a Japanese tutor come in twice a week; in fact I had a Japanese tutor three times a week, one of the times was on the weekend. I was studying Japanese.

Misa: So it was clear that you were a) making the effort; and b) not linguistically fluent or culturally fluent.

Hornbach: Right. And I had a mentor there who worked to get me culturally fluent. Well, not culturally fluent, but to introduce me to the culture, and that man is still a friend of mine. He was great because he had ex-pat assignments in France and New York during the course of his career prior to me, so he understood; plus he spoke English.

Misa: He was a Japanese man?

Hornbach: Yes, he was Japanese. So he was my mentor, and he spoke English, so anything I needed to talk about I could speak to him about. In the course of the year I discovered that people in my group spoke English, and some of them spoke really good

English but they were hesitant to speak it. They would ask me to review their letters that they were writing for other customers, or business letters that they were writing, and they'd be perfect English grammar. I said, 'Oh my gosh!' So then I started in the course of the year to having lunch with some of these people and we would speak English. I would be working with them, helping their English. So that was kind of part of my role. The culture, it's so interesting because my Japanese management, there were a few things I just remember them telling me about. They told me about U.S. business culture is very different from Japanese business culture. U.S. business managers are arrogant — let's see, arrogance was the big thing —U.S. business managers did not know how to deal with Japanese in the Japanese business culture, because in the Japanese business culture you start with your social stuff. You know, all the meetings start in a very social way to try to understand each other, to try to get a social thing going, and then you get down to business. Whereas in the U.S. business culture you just shortchange the social interactions and the business card exchanges, and that kind of thing, and you get right into business.

Misa: Which would be considered a major cultural —

Hornbach: *Faux pas*. So part of it was that, part of it was our arrogance, part of it was our inability to negotiate, not knowing how to negotiate properly, or not knowing how to negotiate in a way that the Japanese negotiate so that you come to win-win. Their view was that in the U.S. we come in with a number. That's the number, we don't really want to negotiate, but the Japanese come in with a number, expecting to negotiate. Those two

approaches cause trouble in doing business with each other. So those are two examples. And then they talked about in the U.S., you don't have the same need to get along as we in Japan do, because in Japan we have 80 percent of the people living on 20 percent of the land so we have to be able to get along with each other. That's part of our culture.

Misa: There's not some [distant] place you can go to, it's densely settled so the culture adjusts in some fashion.

Hornbach: Right. Whereas in the U.S., you started with all this land, and people could move west and find more land, so people didn't have to get along to the same degree, but the Japanese people need to get along. So those are some of the things that come to mind immediately, in terms of what I learned there. And, you know like I said, I haven't been back to Japan in quite a few years, but if I go back I know that those same people will be there for me to interact with immediately. So that was another huge growth opportunity. Like I said, Bell Labs gave me a whole lot of opportunities for growth.

Misa: So it was 1994 that you returned?

Hornbach: 1994 I came back, yes.

Misa: And what responsibilities did you pick up?

Hornbach: That was a bit difficult, but see the other thing Bell Labs provided was cultural training. So we had cultural training before we went to Japan, Japanese cultural training, which was invaluable. And then basically the main point there was if there's something you don't understand about the culture, study it, try to understand why that particular thing is the way it is. Which was invaluable because there were things in Japan that it's like what the heck? Why are they doing it this way? Why are they so rigid in certain things? For example — and I think this one I never really did understand — but at intersections, there's like no cars anywhere to be seen, but a Japanese will wait at that intersection until the light turns and gives them permission to walk. Here in the U.S. you just look around and then you just walk across, right? Why are they doing that? I don't know that I ever really did understand that but I came to do exactly what they did, stand on the corner. [Laughs.] And gosh, the subways, they just pack them in, so that you're just like skin to skin. So part of the thing that we learned in the cultural training was that for Japanese, your personal space stops at your skin, whereas in our case, Western case, personal space is like an arm's length away. You come closer than an arm's length you're invading my space. For Japanese, it's skin to skin. So to them, being pushed into a subway car and being crammed in skin to skin, body to body, is not an issue. So I learned a lot. I don't know if I answered your question or not.

Misa: It's interesting that you got quite a lot of cultural training and support when you went out to Japan.

Hornbach: Oh yes, and then I came back.

Misa: You probably also needed some kind of re-integration back into the U.S.

Hornbach: Yes, yes, yes, and Bell Labs offered that, also. So I went to the re-integration seminar. A couple days' worth and that was very interesting. I already knew this because one of my friends had spent two years in England and came back from England. [She was] not a Bell Labs person but another company, and had an opportunity to go overseas and she went overseas and came back, and they did nothing. The company she came back to did not capitalize on her international experience. So I was not surprised when I came back and went to the cultural training, came to understand that other people came back from all over the place, not just Japan, but this particular seminar session had people coming back from Canada, coming back from England, coming back from different places. And they — to the person — said the company is not capitalizing on their international experience. So the same thing happened to me, the company didn't capitalize on my international experience, either. So I ended up having to *find* my job; there wasn't one that was readily available. There was one that was readily available but not somebody coming and saying, 'Okay, here's a job for you.' I had to come back here and look around. And I did. I found a department job in a maintenance department, maintenance software department. So I came right back to leading the maintenance software department, which was okay. I mean, it wasn't great. Then, a new opportunity showed up and I took that opportunity. It was to develop support systems for switching systems. This particular system, and the leadership of this support system development organization — there was a bunch of support systems for switching systems — and one

of them was way behind. It was missing its schedule. Most of the support systems were being developed in Columbus, Ohio, and New Jersey. But this one particular system was way behind. Some organizations were being downsized at Indian Hill so there were developers available for reassignment. I don't know how, if I got asked or however it was, I ended up being a department head for this system, which was exciting for me because it was a whole new way of developing software, working with researchers. We brought in new hire Ph.D.'s right out of school, who were familiar with this new way of developing software, and that's what we used to implement this system. Actually, we not only made the schedule, but we beat the schedule, and we ended up developing and delivering the system to not only one company, but several different companies.

Misa: Did you have a particular name for the software?

Hornbach: I probably have it written somewhere, but right now I can't remember what it was.

Misa: There have been several fads, or concepts, or ideas that have come through. It sounds like this was helpful.

Hornbach: Oh yes, it was. That was yet another growth experience because it was the first time I had remote management. I was in Indian Hill with my team, and management was part I think in Ohio and part of it in New Jersey. But in any case, that was new because that was more difficult for me, working with remote management.

Misa: So how did remote management work? Were you traveling to Columbus and to New Jersey?

Hornbach: Not a lot. A lot of it was just telecom, you know, telecommunication meetings. I discovered you really need to get the management out with the people. I mean, we were working our tails off because we picked up a system that was behind schedule and we were all learning this new object oriented design, and it was new to at least our system of development. We had to learn the software development system and then we had to apply it to our application, which was for me, cool, but there was a lot of burn out. So anyway, I discovered I really needed to get management out to Indian Hill, to meet the people, to understand what we were doing and understand the pressures we were facing, and to reward the people that were working so hard to get this job done.

Misa: So did people from Ohio and New Jersey then actually come and make visits to the Indian Hill facility?

Hornbach: Management would come and visit, yes. We were very process oriented, too. I wasn't on the very forefront of process development but I became a strong proponent and advocate of ensuring you had strong development processes back in its switching system development days, and carry that all the way through, even to my TSA career. I worked for TSA when I left Bell Labs.

Misa: What would you say are the most important parts of the process management characteristics?

Hornbach: For me, data collection and being data oriented, understanding what your processes are, collecting data on your processes, looking for process improvement opportunities, implementing them, assessing them, and continuous process improvement, and in the structure, the structure of the process, and discipline. And that carries through not only in software development, but it carries through; like I said when I retired from Bell Labs in 2001, I started working for the Transportation Security Administration. I retired from Bell Labs in 2001 and then my last two years at Bell Labs I was the department head for customer technical support, so I was responsible for supporting the 5ESS switching system. I think 5ESS was definitely local, must have been local, but anyway, [it] was the next generation switch after 4ESS. My job as customer technical support was to provide the support for all the switches in North America, so that was yet another whole growth experience because then I had to go out and meet with all the Bell System operating companies, and so forth. Bell Labs provided me so much development and ongoing opportunities for ongoing growth and development, because they supported me for a six-week program at Penn State, an executive training program at Penn State.

Misa: This is beyond your MBA?

Hornbach: Yes. And then they supported I think it was a week or two at the Center for Creative Leadership in I think it's Greensboro, North Carolina, [at] North Carolina Center for Creative Leadership. And that was somewhere in the 1990s.

Misa: Seems like a deep investment in people and skills.

Hornbach: Oh my gosh. Back then. I don't think it's happening anymore.

Misa: Yes, I think it's hard for many companies to have that kind of long term sense of investment with the current business environment, and concerns about cost cutting, etcetera; Bell Labs was unique.

Hornbach: It's phenomenal, when I think about all the, as you say, investment.

Misa: Barbara, I wonder if we could do a bit of reflection. You were coming into the computing world in the 1960s. I have some recruitment advertisements from *Datamation*. This is from 1967. These are all different, and they end up having slightly different messages, I think, toward men and women. I've got five of them from 1967, and if you would give me your thoughts or responses to each one of these. The first one is from Bellcom, it turns out, for computer specialist. Anything notable that you see there?

Hornbach: What are you wanting me to be implying about? The men and women thing, or just in general?

Misa: You'll see there are five of them; they seem to have quite different ideas about where women fit, or if women fit in computing. There's quite a diversity in 1967. Do you make anything, for example, about the symbols up by "computer specialist?"

Hornbach: Oh yes. I looked right past those, to be honest about it. So I'm not sure; no, I guess this one doesn't strike me. The thing about the man, the "manned mission," but that's not what you're looking for. So you know what? I read conduct of manned missions, or the office of manned space flight, that's what I zero in on. What are other people zeroing in on for this one?

Misa: Well the symbols there, somebody chose them. There's the moon, there's the traditional male symbol and the traditional female symbol. I don't know how to decode that but somebody put those there intentionally. Let's look at Lockheed, the second one.

Hornbach: "Where a man can go," that's obvious.

Misa: It seems that there's just a different awareness that companies may or may not be hiring women. Lockheed in 1967 is focused on where can man go?

Hornbach: Yes, "Where can man go?" So that is clearly exclusionary. But it does say it's an Equal Opportunity Employer.

Misa: That's right, so at least they're trying to be legal. Here's RCA.

Hornbach: "You're our kind of man," that's certainly obvious.

Misa: I like the suggestion, you have broad interest in science fiction. [Laughs.]

Hornbach: I read past that, too.

Misa: The fourth one is the TRW Mission to Mars. This one to me was interesting because there's a picture of seemingly real people.

Hornbach: Why do you say "seemingly real people?"

Misa: Well, with the last one there's this — [person] looks like a German; "If you're the kind of systems programmer who has a mind that's deep enough for Kant." This is RCA, but that's not the real Kant. These are people working for TRW, and there's a man and woman working together.

Hornbach: We need men and women with experience, so this one — as far as I've read — would be something that's appropriate. I mean you'd think about there's a place for me in there.

Misa: Right, and there's even names. It's very personal in that regard. And there's Tom Dickerson and Linda Howard, real people that are working on this Mission to Mars. And the final one there, Cornell Aeronautical Lab.

Hornbach: Men with a yen, again, I mean you pick that up right away. Yes, I mean that's the "men with the yen" kind of thing.

Misa: And these aren't the worst of *Datamation*, by the way. The worst are almost R-rated, they're just ridiculous. But these are companies trying to put their best foot forward and they seem to appeal to men and women in quite different ways. I think in 1977 you don't get men for a yen, it's more balanced; the EEO stuff is very much stronger. In 1967, there might be laws on the books but it's around 1970 that's connected both to changes in federal legislation and regulation, but also to the women's movement. Was that an important influence?

Hornbach: Yes, definitely, because I was still an STA, I guess. What I recall was that in 1971 we had the first affirmative action committee at Indian Hill. I think it was 1971, and since I was one of the few women around I was put on the affirmative action committee, and ultimately I think I ended up chairing it at some point. But that first affirmative action committee that was another growth experience for me. When I first started on that affirmative action committee I was really pretty shy. I just had a really hard time even talking about myself on the affirmative action committee, and then ended up chairing it, ultimately, so that was a big growth step right then and there. But you'd sit there and talk

to these executives and ultimately our committee would bring issues to the executive mentors. You know we had executive mentors for the affirmative action committee for Indian Hill — and we covered not only women's issues, we covered black issues, and minority issues — but it seemed to me they became more interested when they had daughters. If I'm looking at it from a woman's perspective it's like when you knew these executives had daughters who were coming into the workforce then they seemed to be much more interested in what we had to say. They get it.

Misa: They get the affirmative action issues. Okay, argument for daughters.

Hornbach: Yes. But we, through the early 1970s, we became a much more influential force at Indian Hill. I don't know about New Jersey, but at Indian Hill we had a really strong and I think progressive affirmative action group. It was made up of all of us, I mean blacks, women, Asian Americans. We banded together. By this time, sometime in the 1970s, every department had to have an affirmative action meeting so we would become facilitators in these affirmative action meetings, representing the issues that women and minorities face in the workplace.

Misa: What would be some of those issues?

Hornbach: Mostly lack of opportunity and lack of promotion. In the early days — now this is my view — I think I saw it where I thought mainly blacks, because there still weren't that many women around, but a number of blacks were hired who just really I

don't think really worked out that well. And they ultimately ended up being washed out, somehow or other they didn't last because I think they weren't actually really qualified. I think that was a lesson to me because if you hire people that aren't really qualified to fill some quota, you aren't doing anybody a service. You aren't doing the person a service [and] you're not doing the company a service. But once we got past that period, then the people that were hired, the real issues became in the 1970s, through maybe mid- to late-1970s, promotion. So you'd go into meetings and if you had two equal people, a black and a white, or a woman and a white male, equally qualified, who should get promoted? Okay, and it's like it never works out that way; it's a bogus argument. Those of us who were facilitators got really good at countering.

Misa: What kinds of points would you raise against the weigh scale?

Hornbach: It's never that way, you know you never have two people equally qualified. You have to look at all of the factors associated with it. It doesn't ever come down to two people being equally qualified. So I'm not answering your question because I'm having a hard time thinking about how we countered that one except that my own sense is that it never really is that case. It's a hypothetical case.

Misa: Argument against affirmative action, it's not a real world decision to be made.

Hornbach: Right. We got the data. We requested and got the salary data, the promotion data, we could see the discrepancies in the data. So what else was I going to say about

that? We got to the point where we'd say there are some people you're never going to convince that there's an issue. And there are some people that know it's an issue and they're on your side in terms of inequalities in the ways men and women are treated, or blacks and whites are treated differently, but there are some people that are on the fence and that's the people that we were trying to get at. The people that were on the fence weren't really sure, but [we] won them over to our side. There was a case of one of my really good friends back then, who was an African American male. He was a colleague and we were office mates for a while. He would always joke with me saying I was too sensitive. He was African American but he was joking with me saying I was too sensitive, okay? That's the other thing that Labs had was they created these Men and Women in the Work Environment workshops. They had workshops and all supervisors and above would go. So one was Men and Women in the Work Environment, another one was — what was that one called? — but it was associated with blacks and black awareness, Urban Minorities Workshop. That was a mind changer for me, going to the Urban Minorities Workshop. [I] never experienced anything like it, and came away to this day a different person. But anyway, he would say I was too sensitive. And he went home and talked to his wife one evening, and he came back and apologized, and it changed our whole relationship.

Misa: Oh really?

Hornbach: Yes. And we became friends.

Misa: Your male coworker.

Hornbach: Not became, I mean we were friends, but we had this issue and we resolved that issue and moved beyond that.

Misa: In this process of affirmative action were there turning points where you can look back and say oh, that was something really significant that happened? Promotion or policy change?

Hornbach: No, I can't honestly pinpoint something, but what I can say is that over time I think the women's issues were — and this is without data, I can't talk about data here — it felt to me like the women's issues were being taken care of perhaps in a better fashion than the black issues were, but I don't know for a fact. At some point in the 1980s, I think the women's issues moved away from getting promoted and getting recognized and promoted to a more diverse set of issues. So we didn't have the power that we had before because some people wanted child care and some people wanted [something else], so that the needs of women became much more diversified. In the early days we all wanted promotions.

Misa: So very concrete. You had data. It was a point that you could argue.

Hornbach: Yes, salaries, promotions, that kind of thing. To me, by the 1980s it was more different, women had different needs, the collection of women that we had. Because by

that time we had many more women and women were starting to move up the ranks. By the 1980s I was a department head. So it seemed like I said, the issues we were facing were much more diverse.

Misa: Did people track the number of women supervisors or especially the number of women department heads, moving into the more managerial positions?

Hornbach: Yes, that data was there. Yes, my gosh.

Misa: People saw that as an index of how promotions were being handled.

Hornbach: Yes I think so. So I think when we were focused on promotions, that's measureable. You can look and see. That's measureable but when you don't have such a focus then it's harder to achieve.

Misa: In the 1980s you said there was a broader range of issues, so child care or request for support, flexible time.

Hornbach: All that stuff. Women that we got in, in the 1970s—including myself, I had my kid in 1976—I didn't have the same child care issues because I had great child care but you had more people that [were] having kids, I guess. And so it was more diverse, you couldn't get necessarily a concrete [issue] to focus on.

Misa: I wonder if you could reflect from your personal experiences, you ended up living through this period of great interest on the part of women to go into different lines of computing work. Were there things that you noticed or might have observed looking back on computing that made that field attractive?

Hornbach: Computing?

Misa: Computing, but think broadly about that — computing involved programming, engineering, and managing.

Hornbach: Okay, all that stuff.

Misa: For whatever reasons, women found computing to be much more attractive than physics or engineering, that's the key question. Any thoughts on that?

Hornbach: I don't know that I can address that. There was a great support structure. To be honest, I don't know why computing versus engineering or whatever.

Misa: You personally had an exciting, energizing, engaging career.

Hornbach: Right. And I gave talks at the Society of Women Engineers meetings. So I put myself in that category of computer scientists, engineers, to me it was one big group of people. When we first started talking about it, you were saying what the statistics were

for computer scientists versus engineers. I would give talks, because I knew the 15 percent data for engineers, because we were trying to get women into engineering school, or I was trying to get women. I would be talking to groups of women and giving career coach talks. And I would talk about the need to increase the number of women in engineering, so in my head I lumped it together.

Misa: And those talks would be at local colleges or universities?

Hornbach: Yes, must have been. I think I went down to the University of Illinois at one point on recruiting trips, things like that.

Misa: As a supervisor you were hiring people and naturally you'd be talking to people, that's also a chance for recruiting and for getting the word out about the working environment at Bell Labs.

Hornbach: Right. So to me, I didn't separate it out — computer science versus the collection of engineering. I just lumped it together.

Misa: Another hard question, and again just asking for your thoughts or reflections. Something occurs in computing in the mid-1980s where this upward trend stops and it becomes a downward trend. Is there any observation or any clue that you might've had from SWE, or Bell Labs, or something else that might help us think through that.

Hornbach: Let me think about it a bit. The thing that comes to mind — and I think it's continuing to this day, many years later — feminism. I read all the Gloria Steinem books, I read that and assimilated that. I wasn't a hardcore feminist but I was for women being able to choose what they wanted to do. If they wanted to work, if they wanted to work and have families, I was supportive of and continue to be supportive of women achieving their full potential. But that's hard, it's hard to do it all, and do it all well. And I think today — and I don't know when this started — but you read cases where executives dropped out of the workforce to work with their children, to stay home and work with their children. Or dropped out of the workforce to become entrepreneurs to build their own companies, private companies. I don't exactly know when that trend started, maybe in the 1980s, where people are finally saying hey, this is hard to raise your families [and] be successful in your career if you're really career-oriented, if you're more than just going to go in and do a job every day. That's one thing, and even that's potentially hard. But if you're going to be successful in a career and move up along a career track, that is hard. If you're starting around the mid-1960s, and you're working your way through the 1970s and you're building your families and stuff, maybe by the 1980s the realization that it's really difficult to do and women are starting to make other choices. Maybe. I don't know, I'm guessing at that.

The other thing, and this has nothing to do with computing *per se*, it just may be more general. Somewhere along the way, maybe it was the 1980s and then into the 1990s, I think younger women didn't have and maybe still don't have an appreciation for what those of us who lived through the 1960s and 1970s did to open the workforce up to

advancement for women. I think we had — and there are still issues today — the same kinds of things I talked about back in the 1960s and back in the 1970s about women being talked over in meetings, or women issuing an idea and nobody hears it but a man says it and then it becomes a recognized idea because a man said it. Those things are still existing today.

Misa: Yes.

Hornbach: So I think by the 1980s, even at Bell Labs, affirmative action dropped off. I mean we were really I think powerful in the 1970s, our resource group where we would go to all these department meetings and represent our issues. I think we were a powerful force.

Misa: So male managers were forced in some way to get it in the 1970s.

Hornbach: You had to have your annual affirmative action meeting. And then the resource people would come in and represent themselves and represent their issues, and those meetings could get really heated. But like I said, if you could just get somebody on the fence to drop into your side and understand you, you felt like you had achieved something and it was worth doing. But I think that focus stopped toward the late 1970s, and into the 1980s it died out, it dropped off. I don't recall in the 1980s being that significant of a force. That might also have something to do with it, I don't know what all was going on in the government at that point. I don't know beyond the walls of Bell

Labs, I don't know what was going on that might've allowed that to drop off, but in my own mind, it became less effective.

Misa: But the women's issues and the affirmative action were very focused, you said, in the 1970s.

Hornbach: In the 1970s.

Misa: They become much broader and more diffuse, and therefore, unfortunately, less powerful and less pressing, from your perspective.

Hornbach: From the 1980s, and the meetings became less confrontational and more check the box type of thing; you know, I had my meeting.

Misa: Yes, okay, routinized.

Hornbach: That's hard to remember.

Misa: Interesting observation. Barbara, this has just been so fascinating. Any other topics we should include in our conversation?

Hornbach: Not at this point. We covered the things that came to mind as you were talking prior to starting the recording. I wanted to talk about my perspective on the

affirmative action committees and that evolution, and we covered that. So if you don't have any more questions, I don't have anything more to say.

Misa: Well great, thank you so much.