

An Interview with
HELEN ANN BAUER

OH 484

Conducted by Thomas J. Misa

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Abstract

Helen Bauer studied computer science and mathematics at Purdue University, graduating in 1972 and then starting work as a Member of Technical Staff at Bell Laboratories in Naperville, Illinois. The interview describes Bell's affirmative action committees and workshops and its corporate culture. Bauer relates her experiences moving into managerial positions beginning in 1977, finding role models in co-workers, organizing support groups for women in management, and relating anecdotes about challenges.

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Misa: My name is Tom Misa. It's the 8th of December 2015, and I'm here today with Helen Bauer. We're doing an interview as part of a Sloan Foundation project, trying to understand perspectives and experiences of women who worked in the computing industry. Helen, could you say a bit about any activities or hobbies or interests that you had growing up, either in grade school or in high school, that might have inclined you toward the later pursuit of a technically oriented line of work?

Bauer: Okay. Looking back on it, I was always very much a nerd, in elementary school from the beginning. I was quiet, typical girl personality behavior, but I always excelled in academics. Straight A student, that kind of stuff. My father was an engineer and my mother was an accountant, and she started her own accounting business out of the home after I was born. So she always worked but she always worked at home. I was very technically oriented from their role models. Got into junior high and started taking mathematics classes and loved them, just found them fun and relatively easy. I had taken pre-algebra in eighth grade and in ninth grade I took algebra, and loved it, thought it was a lot of fun. One day, my algebra teacher, who I still remember vividly, Mr. Fleming —

Misa: This is in high school?

Bauer: This is in high school, ninth grade. He approached me and said I was his top student and had I ever considered the five-year math program? I didn't even know there was a five-year math program.

Misa: This is in high school.

Bauer: This is in high school.

Misa: Okay, tell us about that.

Bauer: This particular high school had a program where instead of the traditional algebra as a freshman, geometry as a sophomore, something, something — trig was one of them — you would take two of those your sophomore year, and as a senior you would take a full year of calculus. Well I thought that sounded great because that [math] was my favorite class. So I went home and I talked to my parents about it, and of course they were both inclined that way. My mother had been challenging in the accounting world for years so she was all for it. My father was all for it, so they said sign up.

Misa: Great. And what high school was this?

Bauer: Madison Heights High School in Anderson, Indiana. So I went back to Mr. Fleming and I said, 'I'd love to sign up.' He said, 'I'm sorry, but I've been thinking about it and I shouldn't have talked to you.' And I said, 'Why not?' He said, 'Because you're a girl.'

Misa: Oh no.

Bauer: That would've been in 1965.

Misa: 1965, okay.

Bauer: So the women's movement hadn't hit. It was perfectly acceptable to say you're a girl.

Misa: Wow.

Bauer: And he said, 'And you won't do anything with it so I can't recommend you.' I was just floored and very, very disappointed but I didn't even think about challenging it.

Misa: Today, with a bit of hindsight, but okay.

Bauer: I just went home and cried. And my parents got mad, and they went to school and protested, and so I was in the five-year math program.

Misa: Oh good for them. It's not a question about whether you could do the work. It was just a question of social conventions.

Bauer: Right. So I got into the five-year math program. Surprise, surprise, there were 18 of us and 16 boys.

Misa: 16 boys but two girls.

Bauer: Two girls, Pat and I. Pat quit after a year so I went through the five-year math program as the only girl in the class. So I learned very early on, you're the only girl? So what. I wasn't popular, I didn't date, my two best friends were both guys, and we were in the debate club together, and in a version of the high school bowl, which was the college bowl on a high school level. We were the team and we actually competed on a program in Indianapolis that was filmed. I've lost track of those two guys, except for one of them. Gary Hoover, who went on to major in economics at the University of Chicago and then went to Texas and founded the store that eventually became one of the chain bookstores and became a multi, multi, multi-millionaire.

Misa: Really? How interesting. Gary Hoover?

Bauer: Hoover. Look him up, he's got a website, he's now an entrepreneur and teaches courses on entrepreneurship. He was one of my best friends in high school, two boys and one girl. It didn't bother me that I wasn't in the in crowd, but the boys would ask me for help with their homework. So I graduated from high school, I was going to go to college, that was just never a question. I had to pick a major. I had no idea, but I still loved math.

Misa: What options did you consider for college?

Bauer: I didn't really consider options, at least not by the time I was a senior and thinking seriously about it. Younger, I had considered being an anthropologist — not that I knew what an anthropologist was — but I had a relative that was an anthropologist and that just sounded interesting, so I remember thinking about that, and had a strange coming around. But I don't really remember other things. It was just I was going to go to college and I had no idea what I wanted to do. In fact, I remember when I would tell people, they would ask the typical high school senior the question well what are you going to major in? And I said mathematics, and they said oh, you're going to be a teacher.

Misa: Because that was the common thing for math majors to do.

Bauer: That was the, socially at that time, still acceptable for me to do. I said no, I didn't want to teach. I had no idea what I was going to do with math but I was sure there would be something.

Misa: You had this mother as an accountant, you could say okay, there's at least one thing to do, and others as well, of course.

Bauer: Right, I now know that but I didn't [at the time]. Computers were starting to be known so I said maybe I'll go into computers. I had no idea what they were; I had no idea what it was. Okay. Hand held calculators were starting to come out. I learned to use a

slide rule in high school. Talk about antique things, I had my father's slide rule and I learned to use it.

Misa: Were there any computers, *per se*, that you had contact with in high school?

Bauer: Not in high school, not in school, but it turned out that my father had left engineering through the years, and had ended up working for a small manufacturing company as the head of data processing.

Misa: Oh, so he was really working in computing.

Bauer: He was actually working on computing. He wasn't doing programming, he was more a manager but he had gotten into it very early. So he arranged for me, through his company when I was in high school, to take a keypunch course.

Misa: Oh, data processing on a modest level.

Bauer: And so I took a keypunch course in high school as part of the regular curriculum. I had taken a year of typing so keypunching was fine, and gave me a little taste of what it might be. So I didn't really think much about what college I was going to go to. I look now at my friends who are taking their kids around to 15 different schools.

Misa: Oh, it's very competitive, yes, it is a little crazy.

Bauer: And I just knew because of my parents' financial circumstances, that I had three choices. I could go to a state school, I could live at home, or I could get a scholarship. I didn't think much about it because growing up in Indiana, I was very fortunate to have Purdue University, which is — some people are surprised — but it is a state university. And it's very strong technically, with a strong engineering department, and a strong science department.

Misa: And one of the very first, they claim the first, computer science department in 1965 so this was a take-off moment that you landed in the middle of.

Bauer: Exactly. And yes, they claim to be the first. They were one of the first or second to graduate people with degrees in computer science. As I'm sure you're aware of, computer science accidentally, as far as I can tell, sometimes came out of the engineering department and sometimes came out of the science department.

Misa: That's right.

Bauer: And at Purdue, it came out of the science department for whatever reason. I was in the science department as a math major, and when I started in 1969, they had both what they called a computer science bachelor's — Bachelor of Science in CS, and a Bachelor of Science in Mathematics, quote, with a computer science option. So your degree was in mathematics but you had a concentration in computer science.

Misa: Those are two pretty rich, attractive options I suspect for you.

Bauer: Right. Again, the one year of calculus I took in high school, I got a full year of credit for it at Purdue, so that gave me a year's worth of math.

Misa: A little breathing room in that first year that sometimes is a bit of a challenge, too, going off to a new place. So you were already a year ahead.

Bauer: Right. So I got placed into a special program for people who were taking second year in their first year, so all of us were in that category. I was in similar programs in English and chemistry. As long as I did well my first semester, I ended up with two semesters of credit. So I ended up testing out of, basically, a full year so I was able to graduate in three years.

Misa: So you had a really solid high school preparation then for Purdue.

Bauer: Right. And when I was a second semester freshman, I started taking computer science courses.

Misa: Second semester freshman, so that was very early on. Can you say a little bit about what the computer science courses at Purdue were like? Big classes, or small classes, very many women, what kinds of instruction? It's a very early time.

Bauer: It's a very early time. The computer science courses were not huge. My physics and chemistry were the thousand people and me in the lecture hall, and then smaller [groups of] students with TAs, smaller lab sessions with TAs. The computer science courses as I remember were kind of 20-40 people.

Misa: Medium size, then.

Bauer: So medium size, and I was not the only girl. I don't remember what percentage; I mean it wasn't half, but it was probably a good solid 10-20 percent, again, looking back. And looking back I do definitely remember that one of my TAs was a female.

Misa: Okay, so it means that she was probably studying computer science as a graduate student then, and being part of the educational process.

Bauer: Exactly. So that was reinforcement that this is okay.

Misa: Right. Do you remember any of your classes?

Bauer: Oh sure. There were programming classes. I learned FORTRAN. I learned assembly on a CDC, which never did me any good. I learned COBOL. I had a compiler course I remember. I had an assembler course where we actually wrote in Assembler. We wrote a compiler, string processing, I'm drawing a blank.

Misa: Did you have any courses in databases or algorithms?

Bauer: Algorithms, yes. Not *per se*, databases, this was really pre-database. In fact, I actually ended up writing a whole database that we invented.

Misa: Okay, well I'll have to get this down.

Bauer: One of my early assignments and so those were the ones I remember. When I went to my master's program — maybe I'm getting ahead of myself — I had trouble at that school because I had already taken most of the courses so I had to search around for courses I hadn't taken.

Misa: So you really landed at Purdue at a very supportive, stimulating environment.

Bauer: Right. Oh, the other thing I vividly remember, I went to summer school my first summer. My best friend who was a girl from high school and I had gone as roommates to Purdue. She was not particularly mathematically inclined so I became her math teacher. I got her through number crunching. We had to write a program in machine language, at one point or another in one of the basic courses, and I got her through that. I ended up getting all the girls in my dorm on my floor through it. So I went to summer school and got assigned a roommate who was totally unfamiliar with me, and it turned out she was a computer science person. It turned out purely by accident that we had both signed up for

this philosophy course — you know you have to take so many liberal arts and we had both signed up for this philosophy course, which was taught by the philosophy department, as a liberal arts elective. It was logic.

Misa: Okay, which has an important connection to computing.

Bauer: She and I were I think the only math/science people in the class. All the rest were philosophy people. They hated it; we loved it so we both breezed through that.

Misa: What was attractive about the logic course?

Bauer: I don't know, it just suited me. My favorite puzzles are still logic problems.

Misa: Really?

Bauer: Yes. It's just the way I think. So she and I became very good friends and had courses together I think throughout the rest of the time period. When I became a senior — oh, another funny story, not particularly on computer science. I have always detested counselors. Somehow, I have never really had a good guidance counselor. The advice that they gave me in high school wasn't particularly good. The advice they gave me in college wasn't particularly good. So I ignored them and did my own thing. They didn't want me to take so many hours because I 'wouldn't be able to handle it,' for example. And told me I shouldn't be trying to test out of courses. So I ignored the guidance

department and I was taking one course, and I don't remember what it was, but I had to get a guidance counselor to sign it to let me do it. I think it was a dual undergrad/grad course and I was only a junior at the time, I think that might've been it. So I had to go into the guidance department to get this signature, and since I didn't have a guidance counselor, I ended up with the head of the guidance department. And he looked at my transcript, and he said you're not a junior, you're a senior. And I said well, yes, by credits that's right but I'm only in my second year. He said that's ridiculous so I graduated [pause]

Misa: So they waved the magic wand and created you as a senior. Then basically you were ready after the three years. You'd had this strong high school background and taken a full suite of courses, so yes.

Bauer: Right. I had started working my second semester in college and I was working, let's see what was it, six hours four nights a week, so 24 hours.

Misa: Twenty-four hours, that's a lot.

Bauer: Twenty-four hours. So the summer between my, quote, junior and senior year, which was my second summer there, I decided to stay on the campus and work full time because I had this job and they were hiring full time for the summer. I decided to move out of the dorm. I was tired of dorms after two years, and I got an apartment for the summer, and then my senior year.

Misa: Was the job that you had at all related to math or computing?

Bauer: It was a switchboard operator. [Laughs.]

Misa: Oh, okay, related in a way to math and computing but in a very physical way.

Bauer: In a very physical way a cord board is a computer, sort of in a data processing sense. So I was a switchboard operator, and when I started my senior year my boss asked if I would continue working full time, so I said sure. I would do the hours around [classes] so I started working 40 hours a week, and taking 18 hours of credit, and that was too much.

Misa: You must have been unusually, exceedingly busy.

Bauer: Well, I was fairly quick, and I was very busy. I basically ate, slept, went to classes, and went to work. I got my first Bs that semester and I think it's because I didn't put in the [needed] school time.

Misa: That's quite understandable.

Bauer: And so at the beginning of my second semester I went to my parents. I really tried. They paid tuition and room and board, and they contributed the amount to my

apartment that they would've paid for room and board. And I just really didn't want to tap them any more than I had to. I went to them and said would they pay for my apartment so I could quit my job. They said absolutely, and then they suggested that I approach my grandmother to borrow the money for a car. And so I did, and she was delighted to do it. So I bought a new car for \$1,000 and I just felt like I was independent. So the second semester was a little bit easier, and I started interviewing. I didn't interview that many places.

Misa: Helen, before we do that, you said that there were those two different options, which did you end up selecting, the computer science or the math with this computer science option?

Bauer: Math with computer science option, which becomes important in a minute because I'd never bothered to change it. Again I never went near the guidance department, which I would have to do to change it.

Misa: So you came in with a strong interest in math, that was really the key thing, although it sounds like you had a bunch of computer science courses, programming courses, etcetera, etcetera.

Bauer: I ended up by my senior year, I was basically taking math and computer science. I had gotten my electives out of the way. I qualified for a computer science degree, it was just a matter of changing it. I had taken all of the courses for the computer science

degree. So I had all of the credit for either computer science degree or a math degree, and by the time I hit my dual level —the senior undergrad/grad courses that were taken by both seniors and master's students — by the time I had hit those math courses I was discovering that was as far as I could go easily in mathematics. I've read later on that studies say that in mathematics, most people hit a wall at some point where beyond that it doesn't come naturally. And I hit it in those courses so I would never have been able to get a Ph.D. in mathematics.

Misa: In pure math, or applied math, or something.

Bauer: In pure math. Applied math I probably would've been able to do, but pure math, theoretical math, probably not. I could've gotten a Ph.D. if I'd been interested in statistics, or numerical analysis, or things like that but by that time, I'd pretty well switched to computer science. As I said I'd just never changed my degree. So I started interviewing and I didn't interview that many companies. I remember interviewing and sending in a resume to NSA, because I had to go get my fingerprints done. And then I interviewed with Bell Laboratories. They offered me an interview trip, and it was specifically Bell Laboratories, which at that time was part of the Bell System owned by AT&T but it was a wholly separate legal entity. So I interviewed with Bell Laboratories and they were very interested because they were desperate for programmers, basically. And so they were desperate for computer science people and as you probably know, as I found out later, the Bell system had gone through the very famous 1968 consent decree, which had been one of the very first sex discrimination suits around, and come to a

consent decree. So at that time, Bell Laboratories had — and Lois talks about this in a book — so [pause]

Misa: This is *Women, Power, and AT&T*, the book by Lois Catherine Herr?

Bauer: Right. So Bell Labs had this — hadn't been quite sure what to do with computer science. At that time, they had a policy, and this was an employment policy, that they hired engineers at a higher level than math majors. So math majors were hired as Senior Technical Associates, and engineers were hired as Members of Technical Staff, which was actually two levels up. It was really hard to get promoted from STA to MTS.

Misa: So really a separate kind of track, then, that the math majors were slotted into.

Bauer: Right. If you were hired as a Member of Technical Staff, as a bachelor's, really they would've preferred to hire master's degrees at that level but they couldn't get enough. So they were hiring you as a Member of Technical Staff and sending you for your master's degree, paying for it totally, if you were hired as a MTS. If you were hired as an STA, you weren't, not at all.

Misa: How did computer science fit into there because there would've been some people with engineering degrees, and some people with math degrees, and you're going to tell me about it. Okay. [Laughs.]

Bauer: I'm going to tell you about it. They weren't quite sure what to do with computer science degrees. If they were engineering degrees, there was no question, they were hired as an MTS. If they were a math degree, then they did a transcript review to how close it was to an engineering degree. Okay, well, something very surprising was happening, women were hired as STAs and men were hired as MTSes. Purely coincidentally.

Misa: Purely coincidentally, you say. Okay.

Bauer: Purely coincidental. So we now have about 1970 — I found this out later — about 1970, Bell Labs, which wasn't part of the consent decree but was a pretty forward looking company, decided to take a look at what they were doing and they found this out. And again, it was starting to be an uprising. That's why I say, and Carol has said, and all of us would say, the women's movement was very important at Bell Labs because all of this would not have happened. But Bell Labs was independently going through and they had discovered this and said, oops.

Misa: That there was essentially gender discrimination at this important entry point that really defines two well-defined career paths.

Bauer: Yes. And this comes in about 1970 — I'm pretty sure about this — about 1970 they discovered this and said, oops. So what they did is they invented something called a courtship program, and what that was is if you came in as an STA with a very strong science degree, i.e., mathematics with lots of computer science, you would come in as an

MTS. If you had been hired as an STA you would be given a courtship program and sent on a master's program, and if you completed the master's program, promoted to MTS.

Misa: Okay. So it was the connection between the two tracks.

Bauer: And then they made the very strict policy, or sort of strict, that math majors would be hired as STAs and computer science majors would be hired as MTSes. I started in 1972, very fortunate timing for me yet again, because in 1972 they had implemented this. But I do vividly remember when I went on my interview trip, the person in personnel that I had this arbitrary very short interview with said something about my computer science degree. And I said well technically, it's a math degree. I was very naïve at the time, but I still remember his expression and I didn't know what the problem was but I somehow realized that this was a problem.

Misa: That there was a divide that you were perched perilously on.

Bauer: So I said if it matters I'll change it. He said if you can do that, it doesn't matter. [Laughs.] Looking back, I didn't find this out of course until after I was there. But I also do remember that the day I was hired, one of the other people starting was a male math major who was hired as an STA on the courtship program.

Misa: As an STA, okay.

Bauer: And what they did was if you were hired as an STA on the courtship program, you worked a year and if your work was satisfactory, then you went on courtship, got the master's program, and were promoted to MTS.

Misa: That was something that Bell Labs would've released you from your work, but did they continue to pay people on the courtship program? Did they pay tuition? Was it at that level of support?

Bauer: What the master's program was, is an extremely generous program. There were two options on it. OYOC — which Bell Labs, like the rest of the computing industry is high on acronyms — OYOC was one year on campus. You worked, they paid full tuition and a half salary. The other option was LUPT, local university part-time, and that was a two-year program. So OYOC you had to get a master's done in one year; LUPT you could take two years and you got full-time pay and worked whatever hours you were not at school.

Misa: Then in 1972, how did you get hired into Bell?

Bauer: I got hired as an MTS.

Misa: Member of Technical Staff, so that computer science degree in 1972 landed you at that higher career track.

Bauer: Exactly. Mary was hired as an MTS because she had a master's degree. I believe Anita was hired as an STA and managed to get herself promoted.

Misa: That's Anita Marsh and Mary Feay?

Bauer: Yes. The two.

Misa: We'll be talking to them later this week. Splendid.

Bauer: That's why I thought I'd mention that, so you can get this confirmed and get their exact stories. My story is I came in as an MTS, I was supposed to go on an OYOC — that's what I had originally signed up for — and my supervisor when I met him when I started in June, talked me into changing into LUPT. So I went on the local university part time. I went to Northwestern University. Along with at least two women, my officemate and Fran Chessler, who I knew well, who had been hired as math majors, as STAs and had gotten this courtship program.

Misa: You interviewed out east but you went to work in the Chicago area.

Bauer: When I interviewed with Bell Labs, he [the recruiter] had asked where I wanted to work. I said I really didn't care but I really wanted to leave the Midwest. Alright, so I went on this interview trip to New Jersey, and the way Bell Labs did interviews, you had a two-day interview, and you interviewed with four different organizations for a half day

each. And then they asked you if you wanted to work for them, if they wanted to hire you.

Misa: So a bit of matching, then.

Bauer: Yes. You generally interviewed with three people, one management and two non-management who were in that particular group, so they told you about the work that they did.

Misa: Were these all Bell Labs units?

Bauer: Yes, these were all Bell Labs units. This was separate from AT&T and Bell system, and it may still be for all I know. I don't know how Alcatel does it. I basically flunked, but because two of the organizations between the time that they had signed up to do the interview and when I came, had filled their openings.

Misa: So they were slotted to interview but they didn't have a position to offer anyone.

Bauer: So the interviewer and the recruiter who recruits you on the college campus remains in touch with you. So he called me up and he said he was very sorry but they hadn't been able to find a match, but he was so impressed basically with my grades — that's how Bell Labs hires — and because it wasn't that I couldn't do the work, would I

like to come back for a second interview? I said sure, you're paying for it, I get great lunches, I learn all about different kinds of things that are going on.

Misa: Yes, talk to some notable people and find out about some notable projects that otherwise you'd never know about.

Bauer: Yes. So anyway, he set me up for a second interview trip, and this time I had one day in New Jersey and one day at Indian Hill. Actually, I still remember this only because we became friends, Mary Feay was one of the women. She interviewed me.

Misa: Oh really.

[Laughter.]

Bauer: I did not pick her department but I remember interviewing with her and actually interviewing with women, and I always did. If they were interviewing a woman, they tried to have a woman . . .

Misa: Part of the interview team.

Bauer: . . . be one of the interviewing team, so that (a) you would see somebody like you and (b) you could ask them what it was like if you happened to be inclined. I never did, but I think it was a good practice. So anyway, I interviewed with the two organizations at Indian Hill, and what can I say? I liked the look, so I picked them, not Mary's department

but the other one. After I got there, I wouldn't have liked what they talked to me about, but they sold me so what can I say?

Misa: Okay, that happens.

Bauer: So anyway, I started and I got put in a group. My office mate was female. My supervisor was very supportive. And so I lucked out again.

Misa: Can you describe Indian Hill — the size, the working environment?

Bauer: At that time, probably 1,000-2,000.

Misa: Okay, good sized unit then.

Bauer: It was a fair sized unit. It was very young. Indian Hill was started in 1966 and it was started by transferring a whole bunch of people from New Jersey. Most people who transferred from New Jersey hated it, so anybody who was in New Jersey who had any seniority, i.e., older, refused to transfer.

Misa: Stayed in New Jersey.

Bauer: Stayed in New Jersey. And almost everybody if they did transfer to Indian Hill, transferred back within five years. So Indian Hill, at that time, was very, very young,

except for the management. And it was really growing by new hires, and that's the only way they could because they couldn't get people to transfer. So it had a very skewed age population and because they were having trouble hiring computer science people, which Indian Hill was 90 percent software, so very few hardware units. It had been set up to do what was called an ESS, are you familiar with that?

Misa: Oh, yes. The ESS just so that we're clear that was Bell's name for what was a stored program computer.

Bauer: Correct.

Misa: And because of an earlier consent decree, Bell was forbidden to sell these in the external environment. This is a resolution of the puzzle because Bell Labs has Claude Shannon and everybody else in computing, and yet they don't do computing. But they're doing ESS so that's a really important story, and Bell has done some interesting things with shaping its own history. We could have a conversation on that at some point in time, but the ESS I know is a computer, and that's why the software is so crucial.

Bauer: It's a computer, and all of the software was done at Indian Hill. So they're desperate for programming people. They are hiring women. So there were not so many of us that we didn't all know each other or learn each other very, very quickly but we were starting to get a critical mass. And so we've started to network and we started finding out things that were going on and what ended up with the courtship program. The time from

1972-1977, it was growing but it was growing purely at the worker level. So they're basically in about 1974, I think, they were closing down one of the major defense programs and so they had to find jobs for those people and they were getting first pick. They were taking basically all of the management jobs. So there were basically no promotions at Indian Hill.

Misa: At the worker level, that would be worker but that would be the MTS level.

Bauer: Worker to management, which was the next step from MTS at that time.

Misa: Right.

Bauer: That time they didn't have a dual ladder so you peaked at MTS for your whole career unless you went into management.

Misa: And the management was through this middle part of the 1970s, highly filled with people that were transferring from Bell's military division.

Bauer: Correct. So there was great excitement in, I think it was about 1974, again I couldn't swear to the year, but close, that we got our first technical woman supervisor. Her name was Karen Boozer, and fortunately she was a dynamo.

Misa: And can you spell Karen's last name?

Bauer: B-O-O-Z-E-R. And I don't have her e-mail but I know who does, so if you want to get in touch with her, she's now in Atlanta. She would be one to really talk to because she went through hell.

Misa: Yes, wow.

Bauer: She was the only woman technical supervisor, and that was really a role model for women MTSes. And again, I would say most of us were or became feminists pretty quickly. It was because of the women's movement and the fact that we had this growing group. So Bell Labs, again, was very forward. They started in the 1970s, these affirmative action programs and the technical women started to be resource people for departmental affirmative action programs. And that further energized us and activated us.

Misa: By resources, management might simply have a question about how to effectively integrate women into their unit.

Bauer: Or what we did, we would go to these departmental meetings where all staff, management and the technical staff so it wasn't so much on the administrative side. But it would be all of the technical staff and all of the managers, and a set of resource people that might not be in your department but were women, blacks, Asians, primarily.

Although all of the affirmative action classes became very strong at Indian Hill. But at least for most of these 1970s meetings, if they didn't have women in the department who

were willing to talk about what it was like to be a woman they would bring in a woman from another department. So that's what I mean by resource people. It's basically a woman who was willing to talk about what it's like, and most of them were not biggies, but they impacted women on not so much policies, but practices.

Misa: Can you give me an example of one of the issues that people were wrestling with at the time?

Bauer: Couple of good examples, neither of which for various reasons I ever experienced, but knew people that did. One was lab hours. In order to test your program you needed time on the actual ESS, which required lab hours and because we were so busy, lab hours ran 24 hours a day. The practice was not to let women work midnight shifts [because of] safety concerns. Not a policy but just supervisors being well-meaning.

Misa: If you were running a program you physically needed to be there.

Bauer: Yes.

Misa: So it wasn't that you could turn this in at 6:00 p.m. and have it run, you physically needed to be there to supervise the process.

Bauer: Correct. For the work that the people who were programming the ESS did. Now it turned out that I was not working directly on the ESS, I was developing tools for the

ESS. So my programs, I could turn in and come back in the morning. So that's why I said I didn't experience this directly.

Misa: But you knew other people that did.

Bauer: Yes.

Misa: So the laboratory hours, essentially the hours with access to the ESS machine itself, was one of the concerns that women were raising.

Bauer: The other one that I remember vividly was women who happened to work in field support, again not as a policy but practice, would not be sent to the field because of safety concerns. Well, that limited your ability to do your job.

Misa: Staying in the office, you're not doing field support.

Bauer: You could only do field support remotely, by telephone. So that was another one that was still going on during the 1970s period.

Misa: Would you like to describe your technical work at the time?

Bauer: Like I said, I was developing tools that allowed the ESS programs to work. So I worked on a loader, and then I started working on a system that was basically providing a

computing environment for the ESS programmers. So our group was called Program Administration, and that was basically we did all of the tools that enabled the ESS programmers to take their program, get it compiled, and on the machine.

Misa: Essential tool, then, that you were developing.

Bauer: Correct. In 1975, somewhere in the 1970s they started two affirmative action programs that were run by outside consultants for the particular affected group, and the two earliest ones were the Urban Minority Workshop, which was African Americans, and the [Men and] Women in the Work Environment. In 1975, I attended one of the first ones [Men and Women in the Work Environment] that was held here at Indian Hill. I think there were about 12-15 women with an outside consultant who basically stirred us up. That was the whole thing, to —

Misa: And this was a workshop that was organized by Bell Lab specifically to address affirmative action issues that were still obviously unresolved?

Bauer: So the workshop was basically dual in some sense, it was managers who were almost all white males and then members of that resource group stirred up by an outside consultant to sensitize the managers. It basically was a management sensitizing course. So I attended as a non-manager, the [Men and] Women in the Work Environment, and that really energized the women who attended. So we all went back ready to rock and roll, and we started then, and as more and more women attended it, became resource

people for departmental affirmative action meetings. Because non-managers couldn't attend these workshops but they would get at least a second hand dose of it from us. And I became very energized by that and was comfortable doing it in my own department. Not all of us were, but I was fine doing that. As I said, I was lucky I had a very supportive supervisor and my department head was okay. So that was like 1972-1977, my experience was doing my technical work and then this whole affirmative action/women's rights thing. We started to have just a few promotions. I think the first one that was promoted was a couple years after Karen. So 1975, 1976, we started to get our first few women into supervision.

Misa: At that time, that was still prior to any kind of dual track so in other words, it wasn't exactly a glass ceiling but it is a flattening out and if you wanted to have any kind of additional responsibilities or additional salary, then it's a managerial track. Substantive and symbolic change, then.

Bauer: And I don't remember when the dual ladder came in. Anita will probably remember it because she went on it. She never went into management. A lot of the rest of us did of that very early group. If we stayed, we tended to, eventually. So then in 1977, in September — this is a very vivid memory — we had the very famous Kettledge reorganization, in which he took all of Indian Hill, which was a project structure, so one laboratory did one ESS, one laboratory did 2 and 3 ESS, and one laboratory did 4 ESS. Very project organized, and Kettledge, who is an executive director at the time, decided to do a functional reorganization. Threw everybody up in the air and they landed in

different places. He ended up in the process of doing this, creating a whole bunch of management positions and doing a whole number of promotions.

Misa: So the functional groups could you describe what functions this organization created?

Bauer: Couple of examples, my area, PAG, Program Administration Group, our group was a group within the laboratory that did 1 ESS, so we specifically did tools for the 1 ESS. There was another group in the 2/3 laboratory that did the same kind of tools for those ESSes. Same thing within the ESS, you would have recent change, which is a function that takes a person in the field saying that this number has moved to this place and making that happen. And there was a recent change group in 1 ESS, a recent change group in 2/3 ESS, and a recent change group in 4 ESS. He took those three groups and squashed them together so one group would do a function for everybody. Make sense?

Misa: Yes.

Bauer: And in the process he ended up with the first large number of supervisor promotions at one time. For me, I had never thought about going into management, it wasn't of particular interest to me and there weren't promotions so I was really happy as a worker bee.

Misa: Not really a concern.

Bauer: Not of concern at all. Reorganization was supposed to be announced on a Wednesday and it didn't get announced. Rumors had been all over the place so on Thursday, it was announced that it would be announced at noon. Fine. One of my tools was having problems and I was trying to figure out what the problem was, and my department head secretary — at that time, department heads tended to be very distant — I knew him, he was very nice, but I didn't interact a lot.

Misa: Your supervisor's boss.

Bauer: My supervisor's boss. My supervisor happened to be out of town that day, so my department head secretary came over and says, 'Bill needs to see you in his office.' And it was like, I'm busy. And she's like he needs to see you RIGHT NOW. [Laughter.] So alright. So I got over to Bills office and I sit down, 'What have I done?' He says, 'You know about this reorganization?' 'Sure, I know about it.' He says, 'Well at noon, we're going to announce that we're going to be forming this functional PAG group, and a separate group for the underlying tools, and you're going to be promoted to be the supervisor of the overall PAG group.'

Misa: The overall PAG group.

Bauer: I said, 'What?' And I remember I had two thoughts in my mind. One was I'd gotten married earlier that year, what was my husband going to say? And you know, I

was not being enthusiastic and Bill stopped and said, ‘Well you’re going to take it aren’t you?’ All I could think of was I could see this whole pile of new organization charts with my name on them as supervisor, some poor secretary is going to have to go through and white-out my name. So I took it and I had two hours — that was at 10 o’clock — and I had two hours to find my husband and tell him. He was in the same laboratory that I was.

Misa: Was he also part of this PAG group?

Bauer: No, he was in a different department and different group, but at that time, performance review was done by all of the supervision across the laboratory so I would be doing his performance review.

Misa: Oh, okay.

Bauer: Or I would be part of his performance review, even though we weren’t directly connected. At one time — I think this was a policy though I can’t swear to it — the policy was that if a secretary married an engineer, and usually the secretary was a female and the engineer was male, in the same organization, they would transfer the secretary. Well they hadn’t really figured out the policy.

Misa: Spouses and reporting, and whatever.

Bauer: So in practice they were not going to promote in a direct line, so you wouldn't have your own spouse in your organization. They later changed that, but they would leave it up to the spouses. So anyway, I did manage to find my husband so I could tell him prior to his seeing this when he's with others and they're looking at him, etcetera, etcetera.

Misa: Dear, okay.

Bauer: And he was not particularly happy. Very supportive but he had never thought of his wife as a manager. I had always been above him one level so he had gotten over that. Anyway, I became a supervisor.

Misa: That year was . . . ?

Bauer: 1977.

Misa: You were describing September 1977.

Bauer: Yes. And my first year was miserable, I was the only supervisor in the department so I didn't have a peer to help me through this transition, and it's a hard transition, it's a different kind of work.

Misa: Yes, a lot of new responsibilities, and procedures, and things to work out.

Bauer: So it was a hard transition but I struggled through and decided alright, I like some aspects actually.

Misa: How large a group was it you were supervising?

Bauer: I had about 10-12 people, both men and women. One story that did happen to me, one anecdote, one of the men in my group who was very nice, we got along fine, but he told me that when it got around at his church that he now worked for a woman, they gave him a hard time. How can you stand that?

Misa: [Laughs.] Okay, at his church.

Bauer: At his church.

Misa: So he was happy with the relationship but just wanted to comment on this external expectation.

Bauer: So I went into management. I had a very supportive director. My department head was supportive but not very active. My director was very supportive and very on.

Misa: The director would be above the department head.

Bauer: Yes. So the groups had a supervisor. Five to six groups became a department with a department head. Five to six departments became a laboratory with a director. And then the executive director had multiple directors.

Misa: You're saying that at Indian Hill, that all of this was under substantial change because of this functional reorganization, so there were lots and lots of people that year that were undergoing some similar challenges that you were undergoing. They're peers in some way, not within your department, but that must've been a very common experience across Indian Hill for all of those months.

Bauer: And that's when — whether it existed before or not — we more formally organized as TWM, Technical Women in Management.

Misa: Ah, okay.

Bauer: And we met at lunch like once a month or so, and then there became a SWIM, Staff Women in Management, and then eventually a WIM, Women in Management.

Misa: Women in Management, okay. That would all be, you said, more formalized. You had formed these informal relationships through this workshop and through your working relationships, but at some moment it became a more formal . . .

Bauer: It became more structured, in terms of it being formally recognized. It wasn't a secret but clubs were just a really common thing at Indian Hill, and anybody could form a club and get support for it. So clubs in canoeing, clubs in that, baseball leagues, softball leagues, you know, all kinds.

Misa: Just different kinds of employee organizations. So this women's group fit comfortably within that.

Bauer: Right. So we never thought particularly — until we did some protests, which I don't even remember what they were — but I could go through some of my files. So anyway, I was very lucky personally, in having supportive managers and then peers. And I was never the first at any level. I was always like the third or fourth woman, so kind of got promoted into a peer group, support group, and we ended up basically networking at each level as we got promoted into it.

Misa: You said you had monthly lunchtime meetings?

Bauer: I believe so, that's what I remember

Misa: Would that be on the premises, on the campus?

Bauer: Sure.

Misa: So it was just a group like, you said, canoeing or something else, that was just a group that was forming and networking?

Bauer: Right. So it was more one of us would book a conference room, which was very easy, at lunch time and send out a meeting notice, and then anybody who was free at lunch would grab something in the cafeteria and bring a tray to the meeting. Sometimes we would just talk. Sometimes somebody would have an issue and they'd bring it up and we'd talk about that.

Misa: Roughly how large a group of women?

Bauer: We started out with about six and eventually grew to 20 or 30, I think. Can't really remember, but it kept growing, and then as I said we ended up, after we got a critical mass at the department head level, we formed a group at that level specific to us. We did it at the director level. We had enough at Indian Hill and then we did it across Bell Laboratories.

Misa: Across Bell Labs, so this is really a model then that moved upward into the organization as the group of you moved upward.

Bauer: Yes.

Misa: What would be some of the issues that would be discussed? You said sometimes you just talked, but people would have issues and use this networking opportunity as a chance to mobilize some concern.

Bauer: So long ago. Some of it was purely us. I mean, we had all been raised about the same time period because we're about the same age so we had been socialized in a female way, which isn't always as effective in a corporate environment. So, I mean, [Men and] Women in the Work Environment was basically an assertiveness training course in a lot of ways. So some of it was just I'm having trouble, you know, I've got this issue and I knew I should be more dominant on it but I'm uncomfortable. And then I think the big one that was pervasive that came up over and over, is being heard in meetings. Every single one of us could talk about being in a meeting and raising a point, and having the meeting go, 'um-hmm,' and then having a guy raise it 10 minutes later and the group say [pause]

Misa: Everybody says, 'Oh yes!' Right.

Bauer: And I started noticing, as I went on, a) I had not been raised to speak out. I am an introvert, which is another unique thing about Bell Laboratories, unlike a sales force because that goes together. I noticed that if I was in a group that knew me, they'd listen to me but if I got into a group who didn't particularly know me, I would have this happen more often — credibility.

Misa: You would make a point and then have it possibly be taken up by a male in the meeting and then have that moved forward.

Bauer: Yes.

Misa: Did you have any theories or ideas about why that was happening or what strategies might be effective to counterbalance this? Must be terribly frustrating.

Bauer: No, I think it's street cred, is at least one factor. Loudness. I don't know.

Misa: Okay.

Bauer: You know, it's some of the *Men Are From Mars, Women Are From Venus* [1992] kind of thing.

Misa: Yes.

Bauer: The other one I do remember vividly, because it comes around something you're looking at, which is the next generation.

Misa: Yes, now you're in the position of hiring and forming teams, and forming workforces, and hiring graduates so very interesting to hear your experience.

Bauer: Right. The women who were starting to come into the workforce starting in the 1980s, and who were a different generation, and a lot of them they had come in when schools were trying to be more evenhanded. But somehow, a lot of them were starting to come in, there were more — this is a terrible thing to say, but I'll just say — there were more princesses. And it's like well, I'm entitled to things. No, you have to earn certain things. And then the men would react to this; I mean it was a real turnoff to them. So the one I really remember was I had women in my organization — this was when I was a department head — and I had a group of the younger women, goes back to the lab hours that I had mentioned, well over time, because of my generation, there was no restriction on lab hours. Well I had a group of women come to me and say we do not feel safe working the midnight shift.

Misa: Oh, okay, so back to the [pause]

Bauer: And I was like ar-r-r-gh!

[Laughter.]

Misa: We fought for this but don't you understand? Okay.

Bauer: Right. But it's a different generation, what can I say. And I mean I don't want to, as a manager, I don't want to belittle the safety factor.

Misa: Right, so how did you approach that tension?

Bauer: I didn't know what to do so I went to Johnny, that was my director, my boss, and I said, 'Johnny, do you have any advice for me?' And I told him this concern. And he said, 'Easy, we will make a policy in this entire laboratory that anybody working the midnight shift can call the guards and with a 15-minute notice get an escort to their car.' I said, 'What a great idea.' And that's what we did.

Misa: So it wasn't a safety concern while at work, it was a safety concern going from the computer facility out to a dark parking lot, to a parked car, that was the safety concern.

Bauer: That was the safety concern, yes. Now I don't think any of us felt unsafe inside the building, not that I know of. Most of us just learned to live with it, or if it was important to us, make our point again.

Misa: You said that at a certain moment, this group ended up creating a protest. Was that something that you'd like to discuss?

Bauer: I don't remember what it was.

Misa: Oh no.

Bauer: I really don't. Let me get a couple of files I have.

Misa: Whatever comments you might have about your files, we can connect that to the recording.

Bauer: I remember a thick file that I had and I have no idea if I threw it out or gave it to somebody. But I, for one reason or another, I'm an organizer so I was usually active in organizing, at least doing my part at each level I reached, then becoming part of that group. Bell Labs was supportive. We would create a workshop for ourselves. When I was at the director level, we decided that were going to do this — it was an outside program — but we wanted to do it as a group of women directors and Bell Laboratories was quite willing to do that. And as I said, they formed resources groups for all of the major, quote, protected classes, and would sponsor yearly conferences so for example, there was the women's group. The women's group would have a yearly conference in various locations, which would be paid for by the company and all the participants would have their expenses paid. It'd be like a three-day conference with outside speakers. So the women would have one, the blacks would have one, disabled [pause]

Misa: It sounds like Bell Labs was really trying to do the right thing, which is to support people to get their own interests and concerns made clear among themselves, and then also bringing in people in the position to bring about meaningful change.

Bauer: There was one [women's] conference that was held in Orlando, Florida, and so that was all of us. But there were about 10 of us there who had all been at Indian Hill in the 1970s, and knew each other. We always stayed in loose touch because there would be

mutual friends who keep in touch. So we deliberately started to spread the word via e-mail to anybody we thought might be interested. Why don't you try and go to the conference, and then we'll have our own reunion. So we did. We got together and most of us hadn't seen each other for a long time and hadn't been in touch, so it was just great. We played hooky the next day, as a group, and went to Disney World. And spent the next evening talking. And then we said well we're going to have to do this again.

Misa: Now this is a group of women that all worked at Indian Hill and then scattered because Bell Labs would move people around.

Bauer: Bell Labs would move people around, or people would transfer. Particularly as women got promoted, a lot of them got promoted back East. And then some people had actually left the company but had kept in touch with somebody and had received an e-mail and some of them came just for us.

Misa: Do you think Indian Hill was at all a unique or distinct part about networking? Were there other centers in New Jersey or some other place where there were similar women's networks that were forming?

Bauer: Oh, absolutely. I know that Holmdel, I know had that, partly because of women transferring from Indian Hill and partly on their own. I think Indian Hill, because of the age skew from the beginning ended up being one of the more active first ones.

Misa: You said because it was a relatively new facility there was this cohort almost that came in and in a way moved forward, and then moved up into management. So it wasn't that it was mixed to start with, it was a bit more of an age specific cohort.

Bauer: I think so. I worked for a while at Holmdel but I wasn't very active in non-management. Well, in any of the networks there so I'm not as familiar with that. I don't know about Whippany and Murray Hill. It had to be a location that had enough mass, I think, although I don't know. It would be interesting to talk to women from some of the smaller locations. So then, I don't think we did anything about it until 2001, I'm pretty sure. One of us — wasn't me — had the idea of having this reunion. By that time almost all of us had retired. 2001 is when things imploded — my words — in the telecom industry and what had then become Lucent Technologies, which contained more than Bell Laboratories over the years got absorbed into the overall structure, it wasn't a separate company. It got split a little bit in the first divestiture, and then got split more in trivestiture [sic]. So by the time we were Lucent Technologies, which was more than Bell Laboratories but contained the bulk of the development [pause] where was I going?

Misa: 2001 you said there was a reunion.

Bauer: In 2001, what had then become Lucent Technologies, which contained the bulk of Bell Laboratories, imploded and went from 125,000 employees to 30,000 employees in about five months. And as part of that they had a very generous retirement program, and a lot of us took it.

Misa: So there's a real cohort here, then.

[Laughter.]

Bauer: As I remember a total of 13,000 retired on Friday the 13th, July 13th, 2001.

Misa: Is that your date?

Bauer: That's my date. So I think actually in the spring of that year, Mary Holt, who still lives around here and who I do have contact with, I think was the one who organized the reunion. Anyway, she organized the reunion, got facilities, sent out e-mail, got e-mail responses, had lined up a whole bunch of people, and it was scheduled for approximately September 15, 2001.

Misa: Oh dear.

Bauer: It didn't happen for obvious reasons, September 11.

Misa: September 11, 2001, yes.

Bauer: No, it picked up momentum after the retirement because more of us were retired.

Misa: Ah, so this wasn't an internal event . . .

Bauer: No.

Misa: . . . this was an external reunion. Sorry, I missed that.

Bauer: They had become for us more external every time because we were keeping in touch with women who had worked at Indian Hill and had left completely the Bell System.

Misa: So it wasn't a Bell affiliated, or Bell sponsored networking. Got it.

Bauer: It was purely a networking of ones who had known each other in the 1970s.

Misa: But you had plans to meet [shortly after] September 11.

Bauer: At about that time, just after September 11. We did reschedule; got rescheduled for May of 2002, and it did occur. I couldn't attend, which I was devastated about, but I had just retired and another whole story. We had booked a seven-week cruise over that time so I couldn't attend, which I was devastated about. So I decided, which was purely selfish of me, that I take at least the ones who still lived in the Naperville area and form a 4X4 lunch group. This has become very, very popular at Indian Hill. What it was is it was a networking program, not sponsored by the company, but sponsored somewhat by the company, in which somebody would take every single person either at Indian Hill or at

least in an organization and do a random number generator, pick four names, send them e-mail, and tell them to go out to lunch. They do it. And the next month, you'd be in a different group, and the next month you'd be in a different group.

Misa: Oh, so it was kind of a chance for having a small group, four people, but then to have it revolving in some way.

Bauer: So this has become very popular at Indian Hill, so I said why don't we do that for us? So I got everybody's e-mail and I sent it out and I said okay, here's four names, four names, four names — I think I started out with 16. I designate one of you as the convener so arrange a lunch, and I'll send out another e-mail the next month.

Misa: So on a monthly basis, then.

Bauer: On a monthly basis. I've kept it going. Since then it's gone up in numbers and down in numbers, women have moved away, occasionally we recruit when one of us runs into somebody who may not have worked at Indian Hill in the 1970s, but close enough. And if they're interested, they join. My only rule is they have to be responsive to e-mail. And we've also evolved. We're now every three months because we travel more, but we've kept it going.

Misa: So roughly four times a year.

Bauer: Four times a year we get together for lunch. We're no longer talking about workforce issues but we're all reaching Medicare age, a lot of us have aging parents, some of us have grandchildren, so that's what we talk about.

Misa: So you're dealing with the concerns and issues that you had when you were in the workforce, and that now you have in retirement.

Bauer: Yes. So sometimes we don't see each other for a year or so, so it's a nice chance to catch up.

Misa: Is the number around 16?

Bauer: We're now at, it's less, so we now have I think it's 14. So we run 4-4-and-5, or something like that. Maybe 13.

Misa: Helen, I had a question about the 1970s and the women's movement, and I think you very effectively addressed that. Then another question I had, and you touched on this a bit, but in the 1980s I mentioned before our recording that that was the peak of women getting computer science degrees, at least proportionately, almost 40 percent, and then also peaking in the white collar workforce, again almost 40 percent. You mentioned there was this, you put the word "princess" in quotes, there was a change in the cohort, at least the type of people that you were hiring into Bell Labs. Do you have any other comments about the 1980s and the status of computer science? I mean a lot of things were going on

at Bell, I'm mindful of that, but in terms of thinking about the workforce in computing. A key puzzle that I think we are treating as a mystery, is that the mid 1980s was a peak and then women's participation begins falling, and that's a real puzzle that continues into the 1990s. So any thoughts or anecdotes or insight that you might have, I'd appreciate hearing it.

Bauer: I was somewhat involved through the 1980s and 1990s with actually both Purdue and Northwestern, with the advisory committees, so I know I had heard that. They were — the faculty and the advisory group — were both puzzling over it.

Misa: It's been a big puzzle, yes.

Bauer: I think there were some changes in general, you know, there's all this stuff about the Gen X versus the Millennials versus — how much of that is both the overall class and then impacting women? I don't know. I mean clearly there's a difference between those of us who came up in the 1960s and the 1970s, because of the women's movement and the change that reinforced those of us who got into it early tended to be pioneers by nature. And I have no idea how much of this is hard wired versus upbringing, but women still tend to gravitate away from math and more toward the English and social science. And how much of that is analytic being a different hard wiring, and how much of it is expectations, I have no idea.

Misa: The thing that's a puzzle is people made those observations but in the 1980s the numbers are really high. That's both the success from the 1960s, during the very years you were moving into the profession, and then it's a more serious and grave concern with the proportional numbers of women going down. So in the 1970s and 1980s, that was going up, so there were a lot of women going in with math backgrounds or engineering backgrounds, electrical and computer engineering. So that was a peak time and it's fallen since then. Can I toss out a couple of hypotheses to see whether this resonates with anything? You might comment on Northwestern or Purdue. I talked with one woman who's involved with computer science teaching and she commented that there was a big impact when the computer science department that she was teaching at moved from a *science* college to an *engineering* college. You were working at Bell Labs, this was an engineering place, a technology place, but do you think that might have anything to do with the relative decrease in the number of women going into computing? That was her suggestion.

Bauer: I don't know. I mean, I didn't really consider becoming an engineer. My father had been one. And I certainly would've had the skill set — in fact my master's degree is computer engineering, although it's out of a combined technical engineering science engineering school, because that was how Northwestern [did it].

Misa: That was Northwestern, yes.

Bauer: So it's possibly because for some reason engineering still has more of a put-off to some women, for whatever reason.

Misa: How did you see your own career? As a computer scientist? Not that there's a single label, but you said you're not quite sure about the label engineering. Was the label computer scientist or programmer? You became a manager.

Bauer: When people ask me in the general public what did you do before you retired? It's a standard question, and I say I was a systems engineer, that's the term I use because it's more than a programmer, and then went into management. So I do use the word engineer, and I'm not sure why.

Misa: People use the term software engineering. Was that a concept that Bell embraced? What do you make of that?

Bauer: I prefer software engineer to programmer, so I probably sometimes use that. But when I went into management I ended up managing all aspects, so that's when I guess I preferred the term systems engineer. But as my technical career was mostly as a programmer, but more than that, so that's why I tend to stay away from the word programmer.

Misa: Can I ask you a question from your management years? You must have hired and been involved with promoting quite a lot of people who worked in computing: were there

characteristics that you looked for? Either technical skills, or people skills, or a certain personality bent? What kinds of things did you find made for effective team members?

Bauer: My husband and I used to have, for many years, some very interesting dynamic discussions about management versus non-management. And from his perspective, management didn't understand what was going on at the technical levels and were constantly promoting the wrong people, and that they were erring on promoting in Bell Laboratories for technical skills, not management skills. And partly because I agreed with him, and partly just because, if I erred at all it was probably in the opposite direction, looking for management teamwork skills, communication skills, and as we talked about the dual ladder had come into being. So you had to be strong technically to supervise but it was a lot more important that you had people skills, to manage people in my view.

Misa: Were there any of the [papers] that you had that you would like to make a comment on? Sometimes that's a good way of refreshing memory.

Bauer: 1994.

Misa: Oh, the Grace Hopper Celebration of Women in Computing. That's a big conference these days, huge.

Bauer: It's a huge conference.

Misa: But 1994 is fairly early on.

Bauer: 1994 is fairly early on. Actually, I had lunch with my group about three weeks ago, and one of the women's daughters just had a chance to attend this year.

Misa: In Houston, I think.

Bauer: So she said her daughter called her just laughing, because she said her boss had called her in and said would she like to go to the — and he absolutely mangled the name — like, the Weaver Conference. [Laughs.] She was like, what?!

Misa: It was Grace Hopper but the manager had not been clued in.

Bauer: It was this Grace Hopper Celebration but it had gotten passed orally from one male manager to another male manager, to another male manager, and in the process it was like telephone tag.

Misa: Like telephone tag that spirals out of control.

Bauer: But she had had a chance to attend, and Laura decided that she was one of the few women who had gotten the nod at [her company]. So she had gone and just been thrilled, so that's where I had heard that it had gotten very, very big.

Misa: You attended in 1994? Where was that?

Bauer: I attended in 1994. It was in Washington, D.C.

Misa: This says Washington, D.C., June 9-11, 1994. Is this the first?

Bauer: No. I think it says 1990. No, it wasn't in there. Here's a handout from Microsoft. The Microsoft Hoppers was formed in 1994.

Misa: Microsoft Hoppers. I'll just read this, "Hoppers was founded in the fall of 1990 with the purpose of making Microsoft a better place for women. We seek solutions to the issues that affect women and we provide support to each other. 'Hoppers' is named for the late Grace Hopper, a computer science pioneer." From Microsoft, great. Mission statement: committees, recent highlights, future goals, interested in learning more about Hopper. So a flyer then from Microsoft.

Bauer: I was just interested in pulling it [my file] to see if there was anything about women in the program, and it really doesn't — except the one, education for *both* boys and girls.

Misa: Oh, it's actually Maria Klawe; she's now at Harvey Mudd [College]. From here, she was at the University of British Columbia; "Making Electronic Learning Environment Succeed for Girls and Boys" was the title of her paper.

Bauer: Right. Here's an interesting note. That's from my notes from one of the lectures. Obviously I didn't note which one, so it's not my observation but somebody commenting on [pause]

Misa: Was this from the Grace Hopper Conference?

Bauer: Yes.

Misa: It's not dated but you think it was 1994?

Bauer: Oh it would be because this is my folder of the conference, so I'm sure it's [pause]

Misa: SW Software I presume is a "craft becoming commercial" I'm just reading from your notes. "Profession being only in isolated instances. So the 1960s, programming any which way; in the 1970s emphasis on algorithms; 1980s, large emphasis on systems, structures, and management." That's kind of your career, isn't it?

[Laughter.]

Bauer: Well, this is interesting.

Misa: What do you have there?

Bauer: This actually isn't from 1994 but it is dated, it's actually from Barbara Hornbach.

I don't know [how] it got in here.

Misa: It's a memo from B.H. Hornbach, May 1977, to Helen Bauer. "I want to thank you for your support in developing my talk — we made history in computing and communication — given at Vassar College on two occasions in April. A copy of the talk for your information here." So that's a talk that Barbara S. Hornbach and Anne W. Laffen of MITRE did at Vassar College. Did you do outreach events, when you were at Bell Labs?

Bauer: Yes.

Misa: Sometimes executives or people in upper management end up doing a lot of outreach and talking to people in the community, talking outside the organization.

Bauer: We had a very active program, actually not so much at the upper management level but at the engineering level. A very active program of going out, sending a team out to middle school, so about seventh and eighth grade and talking about science and engineering.

Misa: Was that specifically computing or just basically saying — there's lots of different messages but Bell Labs is an exciting place to be — or the profession of going into the science and engineering more broadly.

Bauer: It was broader. It was more aimed at science and engineering but most of us, again because of Indian Hill, were from the software side, and we had a few hardware engineers and physical design people, mechanical. But overwhelmingly, those who would be going would be software engineering people. But we would try, at that age, we would try more to hit math.

Misa: Math, just basics across the board. That's a good foundation for lots of different technical careers.

Bauer: Yes. That's my memory of it. And as I said, I ended up being the AT&T ambassador for a while to Northwestern and Purdue. So I would serve on an advisory committee that would meet, I think, once or twice a year for a couple of days with the school of science. It was not just computing, it was more trying to bridge corporate and academia.

Misa: Do you remember topics of conversation? [Laughs.] We are still trying to do that today, in case you're wondering.

Bauer: No, as I said, it was broader in the sense of, that this whole issue of working in a team versus working individually. I got an interesting viewpoint, from a corporate view we really stressed the teamwork, and as a result, academia has done a lot more teams. I think they've really listened to that and tried to do it because that's what you're going to be doing in corporate life. The daughter of a very good friend of mine that hated team projects because she always did all the work.

Misa: Everybody got a free ride or something, okay. I suppose that's a testimony to the real world, too, that might even happen. [Laughter.] Especially when you were in managerial roles, did you have relationships with any of the Chicago area colleges or were you really hiring from a national pool? You said when you were hired, you were interviewing in New Jersey, and that was obviously not part of a local ecosystem.

Bauer: No. Bell Labs college interviewing was primarily focused nationwide, so all of the major schools would have a recruiter assigned to them. And so the program was Bell Laboratories wide, and it would be managers, in this case, who generally for the school they graduated from, would go once a year, be on the sign-up program in whatever disciplines were wanted across Bell Laboratories would be looked for. So I recruited at Purdue.

Misa: At Purdue, not also at Northwestern, mostly at Purdue?

Bauer: Mostly at Purdue. Purdue's program is much stronger/larger than Northwestern's. We did recruit from Northwestern but not a lot. But we did send a recruiter there. And the one [Chicago school] we did recruit heavily for the STA level at DeVry, but those degrees [BEET] were brought in as STAs. And then we also would recruit heavily at — I'm drawing a blank — at a predominantly black college two-year degree. We would hire TAs from there as part of affirmative action. There was somewhat of a backlash against that because they weren't always the strongest performers and a lot of them really, really struggled. We also — talk about Indian Hill because I think this program is unique to Indian Hill — is one of our managers, Mike McPheeters, became very interested in hiring disabled, challenged, whatever the politically correct term is, and he recruited at the Rochester school [for the deaf]. We ended up with enough of a population of hearing impaired people that we ended up with two contracted interpreters on retainer, basically that could be scheduled for any meeting.

Misa: Oh, so that hearing impaired could be part of the meeting through the interpreter.

Bauer: And we ended up hiring one of them [the interpreters], so the Indian Hill actually had a full time signed interpreter who would do all big meetings, and then on scheduled basis would cover a coding review.

Misa: A working meeting, then.

Bauer: Yes. And as far as I know, that program was unique to Indian Hill because Mike McPheeters wanted to do it, then got enough of a population. [The company] was very supportive in terms of doing reasonable accommodations.

Misa: You said that for a time you were transferred to Holmdel?

Bauer: Yes.

Misa: Were there other positions in the Bell Labs network that you worked at outside of Indian Hill?

Bauer: No.

Misa: So it was just Holmdel, and then returning to [pause]

Bauer: No, I retired from Holmdel.

Misa: Oh, you retired from Holmdel.

Bauer: I have attended lots of meetings at other locations.

Misa: Sure, but as an assignment or in residence work.

Bauer: But as in residence work except for a two-week hitch on a task force. It was all Indian Hill until about 1995, 1996. And then I transferred to Holmdel and lived here.

Misa: So you didn't move, you just transferred.

Bauer: Yes.

Misa: Can you explain how that worked out?

Bauer: Sure.

Misa: Did you telecommute or physically commute?

Bauer: No, I physically commuted. It started out, I had an organization that was half at Indian Hill and half in New Jersey. So it started out just traveling there for a couple of days every two weeks and then over time started shifting, so then I was four days a week in New Jersey and one day a week here at Indian Hill. I maintained my main office here at Indian Hill but had an auxiliary office, and then I said this is ridiculous and so I switched to five days a week. My husband was fine with it. He said I never see you during the week anyway.

[Laughter.]

Misa: So you'd go out Sunday or something.

Bauer: I had a whole routine.

Misa: Worked through the week?

Bauer: I flew out United. I would get a ticket on the 8:30 Monday morning and try and catch the 7:30, and I'd be in my office by noon-1:00. And I'd work until 6:00 p.m. on Friday and catch the 8:00 p.m. United flight out of Newark and be home by midnight.

Misa: That's a long week.

Bauer: And sometimes my husband — my husband had retired by that time — would come to NJ. For example, he loved to shop, I hated to shop, so he went out and furnished my apartment for me.

Misa: Oh really. [Laughs.]

Bauer: I had my apartment, he furnished it for me. And people asked didn't you hate that? No actually, I slept on the flight out; on the flight back I was always able to upgrade to first class.

Misa: Little bit of end-of-the-week, then. Come home in some style.

Bauer: The other question people will give me, well did you get to know the airline crews? No, because they change those but you know it's something when the Avis driver knows you.

[Laughs.]

Misa: Oh, dear. Because this is a common pattern back and forth.

Bauer: Because I used a rental car for the weekend, so I parked my car — we had driven my car out to New Jersey — and then I would fly home and rent a car over the weekend.

Misa: Oh, I see, you had your car with your work, but your house and a rental car would be here.

Bauer: Right. And the other thing was it was very convenient that everybody in the Red Carpet Club at Newark knew me because I dashed in at the last minute. This was pre-9/11, and I dashed in one night at the last minute and the agent said we tried to call you, the eight o'clock [last flight of the day] has been cancelled. But you're okay, I got you on the American flight. You know, just time to get there. [Laughs.]

Misa: Okay.

Bauer: And then the other funny story about that was my car got drowned there. They had a flash flood at my apartment building and my car got drowned, and my husband said just tell the insurance company you were on a business trip.

Misa: Which you were.

Bauer: Which I was. So I probably don't want it in writing.

Misa: I doubt that they're going to do anything about the insurance settlement at this late date. Helen, this has been fascinating. Are there any other topics that you'd like to include in this recording?

Bauer: I can't think of anything offhand. Oh, wait, I can think of one. I was going to tell it to you and I got sidetracked.

Misa: You have something that you did want to say?

Bauer: This is an anecdote that's at least, I had it firsthand. I was talking about Karen Boozer, and the fact that as a woman supervisor — the only one — she really went through it, but she had guts. She had balls, what can I say? Her story, which she told us, is they used to have staff meetings, this is all the managers in the department discuss various issues. And they would close the staff meeting and all of the men — the rest of the managers — would head into the men's restroom still talking about the issues. So she

called them on it. She said you're doing this. You know, I understand the nature, but I'm missing out on some information. Please don't do this. And if you keep on doing it I'm going to follow you in. They kept on doing it, and she did.

Misa: Did she? Good for her. [Laughter.] Did she need to do this more than once or did the guys get the message?

Bauer: They got the message.

Misa: I've heard that story, not from your colleague, but somebody else related a similar anecdote. It's like okay, at some point in time these automatic patterns about the men's room conversations are really difficult to break, so an effective way of saying yes, we're serious about this. Well, Helen, you've got a really interesting collection of documents here, we can maybe talk about those but thank you so much for your time this morning, this has been really splendid. Thank you so much.