An Interview with

FRAN H. HENIG

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Conducted by Thomas J. Misa

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Abstract

Fran Henig graduated in 1964 from Wheaton College, an all-women school in Massachusetts, as a math major. She accepted a job with Bell Labs and began work at the Whippany NJ computer center, doing part time study for a Master's degree. With the advent of time-sharing, the computer center moved from IBM to GE/Honeywell machines to run MULTICS. Henig initially worked on adapting IBM programs and applications for the GE computers using FORTRAN, machine language, and SNOBOL. She emphasizes the importance of affirmative action for women at Bell Labs, including the women in the work environment workshops; and discusses strategies for making women's voices heard in meetings. She accepted a technical supervisor position in 1971, then moved to a development division working on phone-system troubleshooting and became a department head. She shares observations about the organizational and cultural changes at AT&T in the 1980s.

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Misa: My name is Tom Misa. It's the 16th of December 2015, and I'm talking this afternoon with Fran Henig. We're doing a set of interviews for the Sloan Foundation to try to understand the experiences and careers of women in the computing industry in the 1960s, 1970s, 1980s, and 1990s. Fran, could you take us back to your childhood or grade school and high school years? Were there any activities, or hobbies, or classes that attracted your interest and might have inclined you toward the later pursuit of a technical career?

Henig: Okay. One of the major things that happened was that I was in junior high school when Sputnik happened and all of a sudden — it's a little bit like the emphasis on STEM today —all of a sudden everybody got worried about how the United States was doing in science and technology, and this became an area to encourage young people in. And it became it little bit more fashionable, it became a good thing to be doing. Although I never was discouraged from pursuing math or science. There was nothing else in my family background. I was from a middle class Jewish family living in Queens. My parents didn't have any college education. My father was an immigrant from Germany. My mother had been born here. They both had businesses. My mother gave hers up when I was born. But they didn't have any particular interest in science and I didn't know anybody who had any particular interest in science, or math, or any of the rest. On the other hand, probably because of my Jewish background, they were all interested in education. Education was really important. We were really encouraged to do well. I went to a New York City public high school, Bayside High School, and it was just a regular old high school but it had a very good math department; and it actually had very good

teachers altogether. It still does. It gets a lot of what used to be called Westinghouse Awards. It's still a good school, but it's not a specialized school, it's not a magnet school or anything like Stuyvesant or Bronx Science. This was a large school and classes were tracked — we had all these honors classes. My classmates were pretty much of the same background I was. A lot of us were children of first and second generation immigrants. For all of us education was important, getting into college was important, we all kind of [were] in this track within this high school. My senior class was 1,000 people. There was almost a school within a school, though it was never so classified. The other thing that was probably important for my career, and for me personally, was this was the period where the emphasis was on being well-rounded. So the emphasis was not on being very creative, or very technical, or anything else, you needed to be good at everything, so we all tried to be good at everything. So I did well in science, but I also did well in most other subjects. And then I went off to college. I went to Wheaton College in Massachusetts, which was a women's college at the time.

Misa: Fran, were there other options besides Wheaton in Massachusetts?

Henig: That's a long, peculiar story. It actually is partly related to my parents not having any background in college admission, and my not having any background in college admissions. So, yes, my other option was going to Queen's College [part of the City University of NY], which was an excellent school and actually cost nothing. Tuition was totally free at that point, but I would've also had to live at home. Leaving home for a college education all of a sudden seemed like a desirable thing. Wheaton wound up being

a last minute option. I don't think I ever would've purposefully chosen a women's college but it is what happened. It turned out to be a reasonable place for me, especially academically. Socially, it wasn't such a great place. [Laughs.] But academically I had lots of excellent teachers who *taught*; you weren't taught by TAs and graduate assistants. You were taught by almost all women, but not entirely, who had Ph.Ds. from Radcliffe, and Harvard, and all kinds of other interesting places, who really made a career out of teaching. So academically it was just a fabulous place. And this was also a liberal arts era, a liberal arts college, and it was in the years before they did away with distribution requirements so I was forced to take things like art history, and history, which have turned into lifelong loves of mine. But I knew all the time I was at Wheaton that I was going to need a job. There wasn't a marriage on my horizon that I could see at the time. I was going to need to work. So I was a math major and I stayed a math major until I graduated college, which was 1964. Let's see what I can tell you about that.

Misa: Were there ideas about what women at Wheaton would be doing after they graduated with a degree in mathematics?

Henig: Yes, a little bit, actually. So I was in college from 1960-64. I was young because I graduated high school at 16, so I started college at 16 [and] I graduated college at 20. It was the era when women went to college and then were expected to perhaps take a job, and the job was traditionally something like teaching or doing something in publishing, until they got married and had kids. But in math, things were a little bit different. Certainly one option was teaching, another option was something called actuarial work,

which I had no idea what it was, but it all seemed that, okay, as a math major I could get a job doing something. We didn't know anything about computing. I mean, there were no computers at Wheaton College at the time.

Misa: Not too many computers anywhere in 1960.

Henig: Right. By 1964, there were a bunch around, I guess, someplace, but not where we were. [Laughs.] So literally, we didn't know anything about computing. So there I was graduating from college, I knew I needed a job, and timing is everything. Actually that is one of the themes of my life – how lucky I was to live in the times that I did. I lucked out because this was the period when companies all of a sudden knew they needed some people to do software, as opposed to hardware, and there was no outside training so the companies were willing to take women who had math degrees and train them in computing.

Misa: Computer science as a discipline, basically people were still kicking around what that might be. I think it was 1965 that the first computer science departments are started. So this is an interesting moment. Lots of companies and labs needed people to program computers all the same.

Henig: Right. And so there was an active recruiting effort at this point. Here I was at this small women's college and we were recruited by IBM, by Bell Labs, by AT&T. And so I had three job offers before I graduated, which was pretty terrific and actually these job

offers were probably better than anything anybody else in my class was getting, except for the other math majors. When I took the Bell Labs offer — the IBM offer I think gave me $5 a month more — I was one of the highest paid people in my graduating class.

Misa: Not bad.

Henig: [Laughs.] Yes.

Misa: And at that time, when you graduated in 1964, you had no particular background with computing, *per se*?

Henig: I had never ***seen*** a computer! [Laughter.] I had never seen a computer, except on my interview, when I got to walk through the comp center and see these big, huge boxes. I had no idea of what I was in for; I really had no sense of what I was in for.

Misa: Where was the interview?

Henig: When they recruited at college, the person who was head of the placement office, said you are going to love this place, this building is designed by Saarinen, they are doing fabulous work. She had been there and they talked about putting up Telstar, and she said this is great. Of course, she was talking about the Bell Labs installation in Holmdel, NJ. My interview was at Whippany, New Jersey. Have you ever been at Bell Labs in Whippany? I don't know whether you have, but Bell Labs in Whippany when I went

there for the interview had been put up during the war as a temporary building and never gotten torn down. It had barbed wire fences all around it because the primary mission of that particular Bell Labs installation was doing classified Safeguard government work. And so this was not exactly this wonderful Eero Saarinen building that was down in Holmdel — though, I later worked there.

Misa: So barbed wire might've been a little off-putting.

Henig: It might've been, but you know I didn't know what I was doing anyhow. [Laughs.] I was more nervous about the interview than I was about the fact that this was not this great building that I had been told about. So yes, I started in the Whippany computer center, and one of the attractive parts of this Bell Labs offer — there were actually three parts that made me take this offer versus the IBM offer. One was that they were going to send me part-time for a master's degree at Stevens Institute of Technology. Bell Labs wanted their professionals to have master's degrees or PhDs. They already had a program that took people graduating with engineering degrees and put them through a master's degree program. It was called Kelly College, and the program was called Circuit Design Training. So they invented a program — I was in, I think, the second year — called the Program Design Training program. And as part of this program, you would show up at Bell Labs and you would be trained in-house, and they would also send you to a local college. And three years later, you would get your master's degree. Assuming all this went well, you would become a Member of Technical Staff. And that was a big deal because typically before that, all the women who had been hired had been hired as STAs,

Senior Technical Assistants, which was a non-professional classification. I didn't know this at the time. I knew they were sending me for the master's degree, and that was attractive.

Misa: So were you hired as an STA, or was there some special track that you were basically slotted in after this training to be promoted into the MTS rank?

Henig: I was hired as a PDT, a Program Design Trainee. It's kind of a funny classification. And I don't where they put us in the data that later got reported to the government, but my guess is that it was a pre-MTS kind of thing or a pseudo MTS thing. Or maybe transitional; I don't know.

Misa: Okay.

Henig: So what can I tell you?

Misa: So were you, as part of this, then given tuition reimbursement and time off to do the classes?

Henig: Oh no, no, no, it was better than that. We went to school three days a week on company time. They paid for our tuition. We didn't get a lot of choices, if any. I don't think we got any [choices] about the classes we were taking. But they paid for our tuition. Not only did they pay for our tuition but they paid for our travel back and forth. And so I

was basically working — I can't remember if it was three days there and two days off or two days there and three days working. So you were mostly going to school and doing a little bit of work on the side.

Misa: And they were paying your salary, that's sounds like a pretty good deal.

Henig: It was a ***very*** good deal. It was a very good deal. Later, they made it even better, and then, of course, it disappeared. But later, they gave you one year on campus and they had this program where you never showed up at work and they just sent you to a campus. And the campuses were places like Stanford and really hotshot places to get your master's degree, and then you were supposed to come back and work full time. That was even sweeter, but that was after I had gone through this program.

Misa: Fran, did I understand that you're still describing the first of three things that were attractive about Bell Labs?

Henig: Oh, good for you. Okay, yes. So one was this master's degree. The second was that the job was far enough away from home that I wouldn't be able to commute from home. This was important because my father was an immigrant and he believed that if a girl was single, before she got married she lived at home. But of course, if I was working in New Jersey, I couldn't be living in Bayside, Queens, because that was an unreasonable commute, so that was another attractive part of this job for me. And the third attractive part of this job for me — you might notice that none of this is the technical appeal of the

job — is that there was no public speaking involved in this job. I was terrified of doing any public speaking, which is one of the reasons I didn't take the IBM job.

Misa: Oh.

Henig: That was in New York, and I also would've had to live at home.

Misa: What kind of public speaking would IBM have asked you to be doing then?

Henig: Okay, so the IBM job was a systems engineering job. And they would've done a bunch of training but they also would've expected me to go out to customers and do training of customers and those types of things. I probably could've done it, but I didn't know that at the time. At the time, it just sounded terrifying.

Misa: Okay.

Henig: And ultimately, I had to get over the public speaking thing, obviously. So that got me to Bell Labs.

Misa: The Whippany Computer Center.

Henig: The Whippany Computer Center, yes.

Misa: Can you describe your actual work there with all these great inducements and attachments?

Henig: [Laughs.] Okay. So the Whippany Computer Center at the time was a standard computer center, you know, big, big boxes, key punches and tape machines, and the like in a very cold basement. And it was kind of a transitional time because at the time I came, we were running an old IBM 7090 — although that was state of the art at the time — but because this was Bell Labs, the operating system we were running on that was actually something that we wrote. So it was Bell System 7 (BESYS7). It was a Bell Laboratories operating system, and a Bell Labs-developed machine language that was being used on it. That transitioned fairly quickly over the first couple of years so that, in the Comp Center, we were no longer rolling our own, at least on the operating system level.

Initially, I was working at a much higher level. At some point in my early years there, Bell Labs threw out IBM temporarily, because IBM was not interested in providing time-sharing for the Labs, and the Labs — especially the Indian Hill people — really wanted a time-sharing system. So this was the era when Bell Labs and M.I.T. and GE Honeywell all formed the MULTICS project.

Misa: Yes.

Henig: And so our IBM comp center became a GE and then Honeywell comp center for a while. Initially, I was doing things like converting a graphics package that we had,

graphics tools, from IBM FORTRAN to GE FORTRAN and making sure it worked. So it was a lot of comp center work like that in those early years. The comp centers traditionally had more women in them than most of the other development organizations around the Labs. I think that's true universally at every Bell Labs location.

Misa: Could you give me a rough idea about proportion: one in ten, one in three?

Henig: Oh well, actually, it's going to be very rough and I don't know whether I have anything that will help that. It was probably closer to I'm going to say 20 percent. The support staff, not the operators and people like that — but the programmers, people who were doing the care and maintenance of the software were probably 20 percent women. Perhaps 30 percent. None of the supervisors were women. All of the managers at every level were male. And most of the lead people were male but there were more women there than there were in most of the other organizations.

Misa: Okay. So you're doing essentially programming work. I mean you're working in FORTRAN.

Henig: Right. Yes, I was working in FORTRAN. I was working mostly in FORTRAN and then eventually IBM came back. I was doing some work in PL/I. And then IBM had an operating subsystem called ASP, that ran on its 360 line mainframes. I don't remember what it stands for, but it kind of managed the job control, and scheduling, and things like that. IBM provided it and then we, in our famous Bell Labs tradition, modified

it. And so at that point I was actually modifying the ASP software to do the kinds of things we thought this software should be doing and wasn't doing, and that was typically in machine language, I believe. I'm pretty sure. God, that's a long time ago. [Laughs.]

Misa: It takes you back. You don't have to do all the details, but it's interesting. So somewhere along the line, you found enough from these classes or from other on the job training to understand FORTRAN, to pick up some part of the MULTICS system, then also to learn PL/I, and then this second IBM language as well.

Henig: No, no. Let me start this the other way, actually. What happened first was that as part of this training we learned how to program in machine language. So we learned how to program, initially, the IBM 7090s in machine language. And so when I started programming in FORTRAN, I thought I had died and gone to heaven because it was so much easier.

Misa: Oh yes.

Henig: And at this point, when things didn't work, you wound up with a two-inch dump that came out of the printer, and you had to figure out why things had gone awry and what was going on. So yes, we were kind of down in the bowels, as it were. I had programmed in machine language. I had programmed in FORTRAN. I had programmed in PL/I. As part of the training I learned — did you ever know the language SNOBOL?

Misa: Yes.

Henig: Okay. That was fun. Alright, so I did some programming in SNOBOL. You know, there was a whole variety there.

Misa: Did you ever think you'd be working [there]? I mean Bell Labs is quite a notable place and time-sharing was cutting edge; MULTICS was absolutely cutting edge for that time.

Henig: Oh, then let me correct that, because I was never working on MULTICS. MULTICS was the reason we had these GE machines, but I never personally worked on MULTICS, though some of my colleagues did.

Misa: Okay, that's good to clarify.

Henig: Yes. I did time-sharing stuff later, but that was with IBM standard time-sharing. Oy, there's a lot of stuff here. Okay.

Misa: Computer programming was more or less brand new, but when you looked around did you think that you might well do this for a career? It was a brand new field.

Henig: Okay, so there were some very attractive parts of computer programming. One was that it was a brand new field, and so there were many, many more opportunities for

women than there had been in most other fields. And we were getting paid really well. I had done really well in college. I graduated *Summa Cum Laude*, I was Phi Beta Kappa junior year. And I landed there at Bell Labs. I didn't know anything about Bell Labs and its fabulous reputation. I mean, I told you the reasons I got there. And all of a sudden, I was doing okay, but it wasn't like I was on fire about this technology, or this job, or anything else. As I said, what was really good about it was it was brand new. And when we looked at our salaries we were being paid in the top one percent of women anywhere, at that time, which was amazing.

Misa: Upper one percent.

Henig: So there was kind of a prestige associated with that. There was a lot of, you know, you were unique in some funny sense to the outside world. Not to anybody that you worked with, but to the outside world. But what kept me there was — until I eventually muddled through and got my sea legs — was I didn't know what else I wanted to be doing. So this wasn't being pulled by this wonderful new field or technology, or anything else. It was okay, if you don't do this what else are you going to do? And I didn't have any good answers for that.

Misa: Fran, there's one thing that we could zero in on, you said that because the field was new there were greater opportunities for women. Can you just expand on that a bit? Because that may be one of the key things that made the computing field so attractive for so many women. However they got there, you may have had experiences that were better

there than working in some other kind of office work, or maybe even in the physical sciences or engineering sciences.

Henig: Yes.

Misa: So there's something that your individual experience might be some part of this big puzzle, that women [during these years] are flooding into computing and this brand new quality is maybe something to think through a little bit. Can you help us with that?

Henig: I want to think about that a little bit, but I'm not sure. For me personally, and this may be very different for other people, [but] there were interesting aspects, to wit, you were learning new things all the time. Everything was changing all the time. So yes, in that sense, you had opportunities there to both learn and do things, and do some traveling. I mean, we used to go to these IBM user meetings that were all over the country. So you got to do things that you otherwise you might not have done.

Misa: Were those the SHARE meetings?

Henig: Yes. It's definitely hard to put myself back.

Misa: Sure.

Henig: I need to think about that. It's hard to put myself back and think about was it the newness of it? There was certainly something about the status of it, and the kind of uniqueness of it that was appealing.

Misa: Were there any downsides to it? You stressed the many attractive parts of it, but were there any parts of this early computing work that may have been less attractive?

Henig: So far as I was concerned?

Misa: Yes.

Henig: I wasn't a natural programmer, and having done so well in college all of a sudden I didn't feel like I — I mean I felt like I should be doing well, I mean doing ***really*** well, and I wasn't. I was okay. I wasn't in danger of losing my job but I wasn't setting the world on fire. Staring at pages of dumps just made my head hurt, so it wasn't like I was getting a lot of enjoyment out of this particular piece of my job. Things evolved over time. The job became more interesting. I found more interesting places to be. Ultimately I moved into management and the nature of the job changed, so it turned out to be broader than just sitting there looking at dumps. And it appealed more to my kind of skills than raw programming did.

Misa: Some women have told me that they were attracted to computer programming because of its logical characteristics, that it just fit the way their brain worked. Was that the case for you?

Henig: No. [Laughing.] No. No, if that were the case it would've probably been even better. No, I just can't say that. It was attractive because it was a ***good job***. And the people were nice. The people were interesting. They were bright.

Misa: Would you like to narrate forward? You said that your position changed and that at some time you moved into a supervisory position?

Henig: So, yes, a couple of things happened. One was that my responsibilities increased. I was doing a lot better. I was taking lead roles all of a sudden in these comp center projects, so that was a good thing. And we're now talking about the late 1960s, early 1970s, and all of a sudden, affirmative action comes into play. That's going to be another of my major themes because I think it's really, ***really*** hard to overestimate the impact of affirmative action on women in computing, certainly at Bell Labs. I don't know about everyplace else. A couple of years ago Gail Collins, who's a writer for the *New York Times* wrote a book about the history of American women, and it's a really good book. I really enjoyed it. But she doesn't mention affirmative action once in this book. But affirmative action for those of us who were in this period, really made a difference because from a whole bunch of different perspectives it opened up the opportunities for women. In the old days in the comp center, nobody would've thought about putting a

woman in a supervisory or management position. It just wasn't a thought. And all of a sudden, we were thinking about things like that. And here we were kind of looking at statistics, and looking the number of women MTSes there were, and how many of them were going into supervision. And how women were being treated and how women weren't being treated. So there was a huge sea change, both in terms of how the women viewed themselves — ourselves — and how management, in particular, viewed women and their careers. It wasn't just you were going to be there forever or until you got married and got pregnant. It was okay, yes, we need to think about women and careers, which they had never done before. So I got offered a technical supervisor's job in another department in early 1971, and I turned it down.

Misa: Turned down.

Henig: Yes, I turned it down. I turned down both my first promotion offers. I mean, part of this is me. I turned it down because it was a testing job and I didn't really know anything about testing. I didn't know anything about the application that they were developing, the system that they were developing. I knew some of the people who would be working for me and I thought they were much more qualified than I was and I was a little bit afraid that I was being offered this job because I was a woman, and they wanted a woman. So I said this is not for me, I turned it down. Then a couple months later, I got offered a supervisory job in the comp center at Holmdel and I took that one because I was more comfortable with it.

Misa: So that was still 1971, though, is that right?

Henig: Yes, that was 1971.

Misa: How many people did you initially serve as supervisor for?

Henig: It was small group. It was seven or eight people. They were all older than I was. They were all much more experienced, and they had a collection of different projects that they were working on. And so I was pretty confident that they could do the work and take care of themselves. [Laughs.] And I could kind of take care of them. That all worked out pretty nicely.

Misa: You said, roughly about 20 percent or so were women, so was that a mixed group of men and women?

Henig: No, actually I had one woman in that group. There was one woman, the rest were male. Oh, here's a story you'll like, just because it corrects something you said earlier.

Misa: Okay.

Henig: One of the things that was part of the affirmative action package was that every manager had to run affirmative action meetings once a year for their group. I'm a brand new supervisor, I'm running my first affirmative action meeting [and] after the meeting,

one of the guys who worked for me came up to me and said, actually ***I*** was the first affirmative action candidate. And it turned out he had gotten hired in the mid-1950s sometime, and when he got hired, he went to work for a group that was all women and working for a female supervisor who was called Miss Gray. Miss Marian Gray, whom I never met, but this was the day when women really were the people who were computing. I had a vice president for years afterwards who called these the "Computresses." So this guy, Ron, was actually the first male in this all-women group, which I thought that was kind of cool.

Misa: 'Computer' was used for years and years, to refer to the people who physically conducted the mathematical computations. Many of them were women, and big groups of computing women, right.

Henig: Right.

Misa: This male was hired into that otherwise all female group.

Henig: He was hired into this otherwise all female group, but he was actually doing programming. I think they all were.

Misa: Oh, he was doing programming. Okay.

Henig: Yes.

Misa: In terms of affirmative action, that was a formal process that Bell instituted is my understanding. Sometimes it was the case that it was women managers, and sometimes women employees served on the committees in other units and served in special outreach. Was that your experience, as well?

Henig: Let me see whether we're talking about the same thing. As part of the affirmative action stuff, yes, it was a formal program. It was kind of forced on them by the federal government but it got adopted company-wide. So as part of that, there were a bunch of different programs. One was that there were these Women in the Work Environment Workshops that they ran to get people familiar with the issues around women in the work environment. And there weren't that many female technical managers so I got involved in a whole bunch of those. And those were either for supervisors, I think, or people they thought were going to become supervisors, or department heads and executives. I ran a number of these for Bell Labs executives, which was a fascinating experience.

Misa: So higher level of management than a supervisor of a working group?

Henig: Right. So these were people like vice presidents, whose only experience they ever had dealing with a woman in the working environment was with their executive secretary. So it was a whole new world for them. And other organizations would also periodically want to bring in some of the women managers to talk to their organizations as part of their departmental affirmative action meeting. There was also a bunch of

outreach stuff. And there were a bunch of specific programs set up to do things like assertiveness training for women. I actually never went to one of those, but friends of mine [did]. I was just talking about that recently. A friend of mine said that when she told the people she worked with she was going to go to assertiveness training, they were terrified. [Laughing.] I mean, you could just imagine it.

Misa: Some people [have] said one of the issues that affirmative action needed to deal with was pretty straightforward. For instance, you were talking about the number of members of technical staff, or salary issues, or promotion. There were also sometimes more subtle issues, which was the dilemma of women's voices not being adequately heard in meetings. Was that a concern that you experienced?

Henig: That was absolutely a concern that I experienced. It was one that I talked about all the time. When I look back and think about the affirmative action stuff, it started with trying to clean up the environment a little bit. Stop calling women "girls" — which was a harder thing to do than you'd imagine — and get the girly pictures off all the computer stuff. But then it went fairly quickly to the issue that women were assumed to be in support roles. So if you needed someone to take minutes in a meeting, it was going to be the woman in the meeting. If you needed somebody to organize a department picnic, it was going to be the woman in the organization. Women wound up in support roles, and they didn't wind up in lead roles.

Misa: Oh I see.

Henig: So that was a real issue. And then there were issues like a woman would say something in a meeting, and then a man would say the same thing and everyone would jump on what the man said and say isn't that a wonderful idea? And the woman had just said it 30 seconds before. Or a woman would just be talked over at a meeting. All those things often happened.

Misa: Did you have any strategies to combat that specific problem?

Henig: The not being heard in meeting?

Misa: Yes.

Henig: Well, yes. I mean, you kind of get yourself in the middle of the table, and you say something, and you say it again. I didn't actually have much trouble being heard at meetings, but there were specific strategies. Later, I used to run training sessions for new managers. In one of these, a colleague of mine said, 'If you don't say something in the first five minutes of a meeting, you're not going to be heard, no matter what you say after that.' I may have the five minutes wrong, but that's the idea. You need to establish a presence early.

Misa: So the content isn't important, but your presence around the table?

Henig: Yes. Though obviously content is important, too!

Misa: I heard it was the case — maybe a little bit later on — if there were two women in the meeting, if a woman made a suggestion then the second woman would make sure to emphasize the quality of that contribution.

Henig: Absolutely yes, that definitely helped if there two people in the meeting. Actually, it helped even more if the person offering support was male.

Misa: Right.

Henig: I remember once I was in a meeting, and it was with some vendor, and he said something he thought might be offensive, like 'damn,' and he turned to me and apologized. And my colleague, God bless him, said, 'You know, Fran doesn't object to that kind of language but I do.' [Laughter.] And that was perfect; it was just perfect. And it's the kind of thing that we ought to be training people to do now, with racist comments and sexist comments, and everything else, because it is ***the*** most effective way because it takes the pressure off of the recipient and it just cuts the knees out of the guy who did it. So that was very effective.

Misa: Yes, displaces the point a little bit, but then also makes it that yes, it's natural to be offended by certain types of remarks. Funny the way we have to learn these things again.

Henig: Yes, exactly. One of the things that actually happened that may or may not be of interest is that when I got promoted to technical manager, my department head, the guy who promoted me, told me that he had gotten a phone call. He got a number of phone calls that said that they thought I was a great candidate for the job [and] one said, 'But I'm not sure that I would've had the courage to promote her.' Which I thought was really telling about the time, and I thought it was really true. I was something like the eighth female technical supervisor promoted at the Labs at the time and, when you think about that, you realize that the person who is offering that promotion is taking significant risk, as much as the person who's getting the promotion. But it's also saying something about the times — that this was a courageous thing to do. When a good friend of mine was promoted earlier — at least a year earlier—people went in to her boss and said I don't object to Judy's being promoted, but I know so-and-so isn't going to work for her. Which didn't happen. I mean, the boss didn't do anything about it and everybody ended up working for her. But it was a sign of, you know, this was a major step to have women in management because it was a whole new concept. One of the questions that came up in the Women in the Work Environment Workshop was would you want to work for a woman? And that was a question for women as well as men. It was a whole new world and it's hard for us to imagine now how new that world was.

Misa: Right.

Henig: And, oh, we used to do these departmental workshops and talk about putting women in lead roles and giving them more responsibility. People were afraid to send

women out to talk to a customer, and they were afraid to put women in lead roles. And why were they afraid to put women in lead roles? Well, the woman might get pregnant and leave. And this was an interesting concept because this was when the computer industry was thriving and there were men leaving right and left with two weeks' notice. If a woman got pregnant, even if she was leaving, you got nine months' notice, or whatever.

Misa: Right, not two weeks. Well, Fran, you were experiencing a cultural change.

Henig: Right. Definitely. Huge cultural change.

Misa: So can you talk about your early experiences as an early technical manager? I mean, if somebody was concerned about it, it sounds like your boss was courageous enough to push that through.

Henig: My boss was courageous enough to push that through. I had a group that was very receptive and put up with a lot of my learning curve. I had one funny incident early on, where I came back from some meeting and I found a typed note on my chair that said, 'Fran, we really like you as our supervisor and we like you as a person, but we can't stand that perfume that you're wearing.' That was the last time I wore perfume. I mean, literally the last time I wore *any* perfume. But in general, I didn't run into many problems with my fellow supervisors, or with my management. Dealing with my fears of public speaking was an issue, but a personal issue.

Misa: Did you have any experience with the Bell Labs merit review system?

Henig: Oh, God, I hated it. I mean, if I think about my career, the worst part of every year was that performance review system. It always felt — especially in the early days — in the early days when we'd rank order people. We'd be in a center — I don't know what you'd call it — an organization that was 130-150 people, most of whom you didn't even know. And you would be trying to rank order these people, one through N, and argue with your fellow managers about who was right and who was wrong, and on, and on, and on. It just ate at me. In fact, at some point, I convinced my husband to buy a timeshare at Hilton Head right after the performance review process ended so we could take a vacation once it was over.

Misa: Wow.

Henig: And then the awful part of that was this wasn't the time of year I would've wanted to go to Hilton Head, and the next year they changed the dates for the performance review process! But that's how much it ate at me. This was just a horrible thing. It got better over time because they changed the process.

Misa: It was initially rank order; then my understanding is that it was relaxed a little bit into different categories. Do you recall that shift? Was that a profound shift?

Henig: That was definitely a profound shift, it was much better. It improved things a lot and I can't tell you when it happened but somebody else probably could. But it was much better. I mean, when you were rating people and giving them specific feedback, when you were saying that this person has fully met, or exceeds expectations, or far exceeds, that was a lot better. Before that, we rank ordered people but then we didn't tell them where they were rank ordered and so people tried to read the tea leaves. The whole process was just dreadful. There was once a study that gave people three different performance review write-ups — real write-ups with the names and identifying facts changed. And they said okay, how would you rank these people? And they discovered that you couldn't tell from the write-ups how these people should be rated. It was not a good process and it was stressful for both the employee and the manager.

Misa: Were there ways that that rank ordering was particularly hard on women? Not necessarily as managers, but also as employees being ranked.

Henig: I don't know. Certainly, I think as women, we felt more vulnerable. As employees being ranked, well, I guess my experience is that in general — and this is not true in all cases because I certainly had lots of exceptions — that women are much more inclined to look for their faults, and for criticism and negative feedback, and men are more inclined to fight any criticism, any negative criticism. So I think there's a bias that way, but that's a very stereotypical characterization and I don't know if it is really accurate.

Misa: Can you again narrate for us a little more about your professional career, please?

Henig: Okay. At some point when I was still working down at Holmdel, a department head from Indian Hill came by and he said, you need some development experience. I took that to mean somebody was talking about me for promotion, but I couldn't be considered for the job because I didn't have any development experience. At the time I wasn't really interested in a department head promotion so I didn't do anything about it. And then I got transferred. My boss took a job back up in Whippany doing long range planning for the Bell Labs computer centers, and brought me back up with him. So I was with a long range planning group. This was not a particularly good fit for my talents, but I was there for a long time, for a couple years. And at some point I got passed over for a comp center job, that I didn't know whether I wanted, but I felt I should've been considered for, in the Piscataway comp center. And I learned that the reason I wasn't considered was that I didn't have any development experience. Ta-dah.

Misa: By development, that doesn't mean personal development but experience in switching systems, is that correct?

Henig: Switching systems, or other applications, but yes, something out of the comp center but actually working on a product of some kind or another. I mean, if you think of the comp center as being a corporate role, in some sense, and these others as being line jobs, I didn't have any of that kind of line experience.

Misa: The line experience, yes.

Henig: Right. I mean, those aren't the words that anybody [used]; everybody would say development experience. In any case, shortly after that I took a lateral transfer into a development organization that was developing what we called operations support systems. And these were systems that the telephone operating companies used to run their operations. I spent the last half of my career doing that stuff and it was much more fun than the comp center. It was a much better fit for me, and it was much more interesting. Initially, I was part of an organization that was doing a second version of an application called LMOS, that's L-M-O-S, that ran the trouble reporting systems for the operating companies, so that when you called Illinois Bell and said my phone isn't working, they would run a test, they would track the problem until it was cleared. It was just the whole process. And they were using all kinds of new technology to do this second generation of this system -- distributed processing, interesting new languages, a whole bunch of interesting techniques. And I had a great boss. And that provided a whole different dimension to my career. I knew nothing about Bell System operations, about the telephone company. Now I was out in the telephone companies, learning about the telephone companies. I was dealing with real customers, I was building something that was useful and it was helping the business as opposed to being in a comp center. In most IT jobs, you know, your best score is zero because what you're doing is you're trying to keep the lights on. If the lights go off, you're the one to blame; but if the lights stay on, nobody notices. But here we were actually building something, and I really liked that part of the job.

Misa: Did you stay in New Jersey, then, or did you actually move out to Indian Hill?

Henig: I never moved. I was never at Indian Hill.

Misa: So you stayed at one of the New Jersey facilities?

Henig: I worked in Whippany, initially, and then Holmdel, and then back to Whippany, and then the whole organization moved to a place called Liberty Corner. I did eventually have a couple of groups at our Columbus, OH location working for me, and some people on international assignments.

I worked on a whole bunch of these different systems, applying new technology to streamlining and improving telephone company operations and identifying areas for preventive maintenance. One system that I think we started building in 1979 is still running.

Misa: Really? That's great.

Henig: Yes, isn't that cool? So I learned development, which I didn't know anything about, and that whole process, a bunch of new technologies, and had a much broader spectrum of responsibilities. When I got a promotion offer from the Piscataway comp center that had passed me over the first time, I said no, I don't think I'm interested in that.

Because I wasn't. If I was going to get promoted, I wanted a development job; I didn't want a comp center job anymore. And then a little bit after that, I got promoted into a department head job in Whippany, building another one of these operations systems applications. And that was the right level for me, being a department head was a good fit. It met my needs and my talents so it worked out nicely. I was close enough to the technical work so I could still get involved, but it was broader so that I wasn't doing the equivalent of looking at the ones and zeroes and dumps.

Misa: How large a group then as department head would you be supervising?

Henig: Those varied in size from probably 30 people up to something like 60-70, depending on what the project was. And at some point, we re-reorganized and I was put in charge of a collection of different projects. One of them was an early expert systems AI project. We wound up building — I don't get credit for this, the person who gets credit for this is the manager who was working for me — but we wound up building a system called ACE, the first commercial expert system, first expert system that actually got sold and used as a real application. And doing a whole bunch of work in AI and AI tools, and trying to get some research work transitioned into development, and doing what we used to call forward-looking work, turning riskier skunkwork kind of stuff into real products. I had a number of different jobs like that, or a combination of that, plus developing more traditional products.

Of course, what I haven't talked about yet is that in 1984, the AT&T divestiture happened and so all of a sudden, the operating companies were not the captive audience they used to be. When I first started the development job, we were all part of one Bell System, and there was an organization that told the operating companies what software they were going to run, what systems they were going to run, and basically how they were going to run them. And then gave the companies whatever leeway they wanted to give them within that. Once divestiture happened, and the operating companies were separate from Bell Labs, there was no big Bell System anymore; we actually had to sell the companies on what we were doing. So the business side changed the model. Later, we also started trying to do some business overseas; business internationally with other organizations, so that expanded. And at some point, we also reorganized so that instead of organizing along functional areas — there was a development organization and there was a product management organization that worried about profitability — that all these things were formed in product teams. So I wound up with a product team that in addition to having the technical responsibilities for the applications, also had profit and loss responsibility. And that was then a whole new aspect of growing and learning. As I look back on my career, there's a lot of chance and accident there, and it was a huge amount of change. But there was also a lot of growth. It was never boring. Sometimes terrifying but it was never boring.

Misa: Sure.

Henig: There was always something new, and you were always stretching yourself and learning something. And there was always new challenges, that was a really attractive part of the opportunities that computing provided for me, personally.

Misa: Fran, I wonder if we could step back for a moment. You were just coming into Bell Labs at the beginning of your career in the 1970s, and you mentioned affirmative action already. But I wanted to ask a question about the wider 1970s women's movement. Was that an important influence or inspiration for you?

Henig: Yes. Actually, I started at Bell Labs in 1964 and I read Betty Friedan's *Feminine Mystique* in 1965 when it came out in paperback. I don't know whether that was the year it came out in paperback, but that's when I remember reading it because it really had an impact on me, in terms of thinking about the roles of women and society's expectations. Yes, the wider women's movement definitely had an impact. Among other things — and I guess this predates affirmative action — there were few enough women, especially once I wound up in management but even before then, women would get together periodically over lunch, and once we got into management, we had formal meetings. We used to have meetings of all the female supervisors who could come. I think once a month or maybe once every two months, [we] had dinners and invite speakers. It was both a consciousness raising, I mean the value of this was really kind of consciousness raising; also, even in the early days it was, you are not alone in dealing with these issues, that you had friends who were going through the same thing. There was also a lot of what later got called networking, so if you were looking for a job, you knew people to call, or at least you

knew somebody. So that, I think, really helped and provided support that I actually think is missing today. And part of that is because there were fewer women, we just kind of naturally depended on each other whereas I think today's world is different from that.

Misa: The meetings you were talking about with dinner, that was a formal Bell Labs activity or was that something that you did outside of Bell Labs time?

Henig: We did it outside of Bell Labs time and we organized them ourselves. I don't think we ever had anybody refuse to come talk to us. Occasionally, some executive we invited to come and talk to us was really nervous about talking to, I don't know, 20 women over dinner; afraid of putting his foot in his mouth. But they were just informally organized. Then periodically, you'd just have smaller lunches with the women at one place or another, and you know, see who would show up. But that actually was an important part of our lives. On the other side, you know we were kind of, I don't know, kind of standard, naïve suburban women. At one point, five of us — this was way before any of us were promoted — went to a program at Town Hall in New York where Norman Mailer was taking on five feminists. There were security guards at the door, there were police all over, you had to open your pocketbook, which was unusual at the time, to make sure there were no bombs in there. The thing was totally raucous. We realized that yes, what we're fighting for is just kind of peanuts compared to all the stuff that's going on, on the outside, that we felt was kind of above and beyond us. [Later, I thought of us as "foot soldiers of the Feminist Revolution." The generation of women before me at Bell

Labs had done all kinds of outstanding pioneering technical work. My generation was the first to move into technical management, and put some cracks in that glass ceiling.]

Misa: Yes.

Henig: And then, when the sexual harassment issue came up, that was interesting. I was department head at the time and my director asked me whether this was really a problem. I said, 'Well, I'm a 40-year-old married overweight department head so it hasn't really been a problem for me recently, but let me go see what I can find out.' And I sat down with the women in my department — there must have been about eight women at the time — and the stories I heard just raised the hairs on my head! You know, they were horrifying.

Misa: Stories of sexual harassment?

Henig: Sexual harassment in the environment sense, not in the sense of rape or you're going to lose your job, but just in the sense of a woman showing up at a meeting at an operating company and the men there kind of blatantly staring at her breasts and saying didn't you want to take off your jacket? Another: at Whippany the canteen where we got soda and candy was in the basement, past an area where some of the construction crew hung out, and the women talked about the comments and catcalls and the gawking on the walk to the canteen. And I had a woman who was religious and walked to a nearby church frequently, and had a guy stalking her, just walking behind her to church. It was

just creepy stuff, horrible stuff. So yes, I discovered these really were issues, and they ***were*** issues.

Misa: So you could basically then explain yes indeed, this was a significant problem.

Henig: Yes. And it actually was, yes. Yes.

Misa: How did your supervisor take that news? Might not have been so welcome.

Henig: No, no, no. He was good. I mean the fact that he asked the question was an indicator. No, he was terrific about this. I was a department head at the time. He was my director. So it was kind of my responsibility to address these issues. But it was also a time of increased general awareness of the issue. I had a friend who worked for IBM for a long time, and at some point, there was an IBM branch office meeting — so there are like 200 people in the room. And some branch office manager got up —this was actually before sexual harassment had become an issue — and he said, 'I want the ladies in the room to know that under no circumstances is IBM asking you to compromise your morals for any customer or business reasons.' All of a sudden there was this voice at the back of the room, my friend Geri said, '***Now*** you tell me.'[Laughter.] She *was* just kidding.

But the other side of that is I had a vice president — this is early on, probably early 1970s — who came back from one of these Women in the Work Environment Workshops, not one that I was running, and wanted to talk to me. He was really bothered about the idea of

women and men going on business trips together, which was a real issue at the time. When I started work — this may be apocryphal — but I think it's true. When I started work, I was in an office that had both women and men, and we had two coat lockers because in the Employee Instruction manual, it said that men and women are not allowed to share a coat locker, so there was one coat locker for the women and a separate coat locker for the men. The story behind that was that some man had wound up with blonde hairs on his coat coming home, and it led to all kinds of marital problems.

Misa: Where did that come from?

Henig: Where'd that story come from?

Misa: No, where'd that hair come from? So this is more or less protecting the men.

Henig: This was his office mate sharing a coat locker with him. This was before they introduced this two locker requirement.

Misa: Right. Do you recall how the question about men and women going on business trips was handled?

Henig: He asked me that and I said, 'No, this really isn't the problem and you've got to deal with it.' The women can handle it, the men can handle it, we've got to do the business stuff. On that same topic, I had a woman who later came to work for me when

we closed a Bell Labs location down in North Carolina and said back in the day, she was actually sent as a chaperone when women and men went traveling together. I mean, she went along so there'd be a third person there. A lot of the reasons that women weren't given opportunities came out when affirmative action started raising these questions: Do you want women and men traveling together? Do you want women traveling at all? What do their husbands think? Don't they have families? Or all of the above. I mean, there were all these assumptions that were built into the culture that we actually don't think a lot about today, that were real issues back then.

Misa: It's another measure of the change in our cultural expectations.

Henig: So I look at this and I say okay, there are changes in technology that happened throughout my whole career; and changes in the business that certainly happened to AT&T throughout this whole period, dramatic changes; and there are changes in the role of women; you know, all of which kind of contributed to my career. All three of those things are major factors in where I wound up, and what happened, and how it all evolved.

Misa: You must look back and think wow, there have been some significant developments.

Henig: [Laughs.] Definitely. I also look back and think timing is everything. My husband says we were really, really lucky that we came into the work world where both of us had opportunities that we never could've imagined. It was also kind of the golden

age of the American corporation. He was working for IBM. I was working for Bell Labs AT&T. And the golden age of middle management. It was a good time, to say nothing of 401k's and pension plans.

Misa: We talk about the 1960s and especially 1970s as a particular focal time for changes in women's issues but I'd like to ask about the 1980s. Some people have commented that women's issues in the 1980s became 'less focused, or less pressing, less urgent, less concrete' and therefore it was harder to be an advocate for women's issues in the 1980s. Does that connect with any of your experiences?

Henig: It connects in a couple of different ways. On the one hand, one of the things I went looking — someplace I have work files. [Sigh.] You have to understand that I've been retired since 1996, so it's been a long time since I've actually thought about any of these things. But I stored some of this stuff away, and I went looking for stuff. The only stuff I actually ended up finding was some affirmative action data, so I'm going to start there, okay? So in 1977 at Bell Labs, there were two women who were technical department heads or higher, out of 591 technical department heads. By 1988, there was 32 out of 644. And the same kind of thing happened with technical supervisors and MTSes. So in 1977, about nine percent of the MTS population was female; in 1988, about 23 percent of the MTS population was female. So these were periods where in some sense affirmative action actually took hold.

Misa: Right.

Henig: So probably because it took hold, and partly because the business focus of AT&T was different, you know, all of a sudden we were in this competitive environment and there was a sense that affirmative action was not your prime issue, the prime concern of management was making the business competitive. So yes, I think it was harder to address those issues, partially because of some level of success and partially because of the outside pressures, which only got worse over time.

Misa: Yes. So you'd point to the changes in the business environment — the press to be competitive, the press to be selling products — where before this was it, this was what the operating companies were going to use, nobody had to do any selling at all. This is quite remarkable then, you ended up taking on you said profit and loss responsibilities. That must have been an immense change.

Henig: [Laughing.] It was huge. And that actually happened in more of a transition than that because before that there used to be a product management organization, and I had a development organization, but we were kind of paired so I was working closely with my counterpart in the product management organization. But now that organization was part of my organization, you know, it was ***mine*** and I had the bottom line responsibility. We weren't the people doing the selling, we were supporting the account teams. But if we didn't get the sales then we suffered for it in terms of budgets and products and everything the next year. So yes, it was a huge responsibility.

Misa: Did you get any business training somewhere along the line to help you make decisions about revenues, costs and profits?

Henig: Kind of informally. I went to two executive business short workshops, one week workshops. One up at either Dartmouth or Tufts — Dartmouth I think — and the other down at UVA, but those were on specific topics. But how to learn to read an income statement? — that kind of training I got from the product managers who were working for me/with me, and it hasn't quite taken. [Laughs.] I mean, it certainly hasn't lasted with me through all these years. There was a lot of on-the-job stuff in everything. There was certainly a lot of on-the-job stuff in learning how to be a manager.

Misa: Well, Fran, this has just been really an enjoyable conversation. Thanks so much for your time. I want to make sure that you have a chance to add any additional topics or respond to any questions you might want to, in case I haven't led us down that path. We've covered quite a lot of terrain.

Henig: Yes, we've covered a lot. I guess the only thing I would say is there was a lot of both accidental and organic stuff that happened in my career, which I think is good, and often underestimated when people talk about careers. A part-time part of my job as a department head was helping train new managers every year, in my division. There were a handful of us that gave new managers a four-day workshop every year. And once I retired, I got asked to come back and do that for a colleague, and that turned into a nice little post-retirement activity for five years, which was a nice end to my career.

Misa: Was that for AT&T or for other companies as well?

Henig: That was for Lucent and AT&T.

Misa: Give you a chance to continue your learning to the next generation, too.

Henig: Maybe. Hope so.

Misa: Thank you so much.

Henig: Alright, Tom, it's been fun. Thank you.