Interviews of the Margaret MacVicar Memorial AMITA Oral History Project, MC 356
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Lita Nelsen – class of 1964
Interviewed by Amber VanHemel, class of 2019
October 24, 2017 and February 9, 2019

MIT Libraries

Margaret MacVicar Memorial AMITA Oral History Project

Lita Nelsen (SB Chemical Engineering '64; SM Chemical Engineering '66; SM Sloan Fellow '79) was interviewed on October 24, 2017 and February 9, 2019 by Amber VanHemel (SB Civil and Environmental Engineering '19).

Nelsen played a significant role at the Institute after her years as a student, working at MIT's Technology Licensing Office for 30 years – from 1986 to 2016 – and serving as director for most of those years. Her tenure at the TLO dovetailed with both the computing and biotechnology revolutions, the growing – and critical – significance of technology transfers to universities such as MIT, and the transformation of Kendall Square from a forgotten industrial area to one of the world's most influential technology hubs.

Nelsen also worked for several companies following her student years, including Amicon, Millipore, Arthur D. Little and a biotech startup.

In this oral history, Nelsen – a past president of the Association of University Technology Managers who is currently a member of the MIT Alumni Association's Selection Committee and a technology transfer consultant – discusses her early life, her years as a student at MIT, her years at the TLO, and the changing role of women at the Institute and in the professional realm.

VANHEMEL: First, I'd like to know about your background. Can you tell me about your early life? Is there something about your family that you feel is important to your personal history?

NELSEN: Yes, there's a lot. I grew up in Ozone Park, New York, which is a part of Queens. I had two younger brothers. In those days, if you were good in science and math you could go to Stuyvesant [High School] or Brooklyn Tech, if you happened to be male – not if you happened to be female.

But let me go back before that. It was a troubled family in that my mother was mentally ill. My father was older and then he got injured, so it was a family where there was certainly a lot of incentive to get up and out. We were also somewhat different from the neighborhood. It was a very blue-collar neighborhood. People didn't go to college.

But we were, again, a little different. It was a mixed Jewish/ Protestant marriage, which sounds like nothing nowadays but was isolating to some extent

at that time and place. It was different also in that my father was very much education-oriented – and, interestingly enough, even more so for his daughter.

He was two generations older than I. As an adult in the Depression, he saw how people suffered. He also saw what women suffered generally, and he said, "You've got to get an education because it's the only way you'll protect yourself and your children."

When I was just a little girl, I remember he drove me through Vassar and said, "Someday, you will be there." In grade school and high school, I was academically talented, which is, I'm sure was true for everybody you're interested in [for this oral history project]. You know: “smartest-kid-in-the-class” kind of thing.

My family had very little money, but we lived within the confines of New York City, and the city colleges were free. You had to get an 86 average, but I had a 96 average or something, so that wasn't an issue. As a result, I could plan on going to college regardless of my family’s financial situation. I was good in math, good in science; probably even better in English, but college, to me, was very vocationally oriented: get yourself a career in which you can earn a good living, and then read books if you want to read books. So that was the plan.

Oh, and by the way, I didn't go to Bronx [High School of] Science because from where I lived it would have been about a three-hour commute or something awful. However, we lived in a funny place where districts crossed, and there were three high schools to choose from. And one of them, Richmond Hill High, somehow had a reputation of being the most academic. Even though none of the kids in my neighborhood went there, I was able to go there on the bus.

I was very fortunate in that I had teachers who were products of the old New York City colleges: children of immigrants who grew up to be teachers, but who were very intellectual. I was also lucky in that my sophomore this was the first year that the high school had advanced placement classes.

VANHEMEL: First ever?

NELSEN: Ever in that high school.

VANHEMEL: Oh, wow.

NELSEN: Only in history and English, but those two classes meant there was a sort of sub-group of the smart kids in the class. We formed a sort of “nerd” social group

(although never called it anything). Then came the SAT exams and then the National Merit, application (I don't think they had PSAT's). I scored well enough to be a National Merit semifinalist. But nobody in my high school ever got those kind of things, so it was just a kind of, "Yeah, sure."

When I became a semifinalist, and you had to figure out what school to go to – which was never going to happen. My father had been pushing me into engineering; he was a sort of self-educated electrical engineer. So anyway, we thought, "MIT. Sure." So first we had to look up if they let girls in!

VANHEMEL: [LAUGHING] Step one.

NELSEN: Remember, a lot of the top universities didn't admit women.

VANHEMEL: That's true, that's true.

NELSEN: Most of the Ivies. Some of them had sister schools, but other than that, you didn't go to Princeton or Yale. Well, we found out that MIT did indeed admit women; though not very many. I think there were 60 women undergraduates at the time – total, not in a class.

Anyway, I filled out all the forms. And then there was also a postcard on a bulletin board, which I picked up. I had never heard of it: the General Motors National Scholarships. They gave 100 in the United States. I filled out the forms. Semifinalist. I put MIT down, just for consistency, but didn't expect anything to happen. As I said, nobody in my high school got those kinds of things. But then I unexpectedly got both of them. That meant I had to choose one or the other, so I chose the General Motors National Scholarship because its maximum award (which I got for both scholarships) gave me more money than the National Merit. So you won't see me as a National Merit scholar.

I arrived at MIT never having been in the state of Massachusetts. That's my background.

VANHEMEL: Backtracking a little bit, when you saw MIT, when you thought "engineering," were you thinking just of MIT? Were there other schools?

NELSEN: I applied to Queens College (one of the New York City colleges) and also applied to Rice because at the time it was tuition-free. My father was originally from Texas, which is probably where I heard about it. And I didn't know anything about how I would then get living expenses, but well, what did I know? Obviously, nothing. Very little career guidance. Nice people, but they didn't

know this stuff. I did have one teacher who thought I was absolutely crazy to apply to MIT, given my talent in English and writing and the like, but I didn't see myself myself earning a living in the humanities. And the rest was just the local city schools.

VANHEMEL: Did anyone think you were crazy for even looking at it? Looking at it with only 60 other—

NELSEN: Well, I actually kept it quiet from my friends, because it was so nerdy. I didn't talk to anybody about it. Different time.

VANHEMEL: Different, yeah. We celebrate! My nerd friends, we'll celebrate the nerdiness!

NELSEN: No, no. It was, "Keep it quiet." Ultimately, after I got scholarships and got accepted to MIT, there I was.

VANHEMEL: Do you remember when you got accepted?

NELSEN: Yes, I remember it rather strangely, because I've always had a bit of exam phobia. That, my father wanted me to take an exam for Cooper Union. I didn't really want to go to Cooper Union (seemed very light on the humanities), and I certainly didn't want to take the exam, so if I got the acceptance from MIT that day, then I wouldn't have to take the exam for Cooper Union the next day.

VANHEMEL: [LAUGHING] Oh, I love it. I love it.

NELSEN: These are the kind of stories you can't make up. So I got the acceptance, and then it was a matter of, "Go. Get on a train." One of my new classmates picked me up at Back Bay Station and brought me to 120 Bay State Road. You've heard about 120 by now?

VANHEMEL: 120?

NELSEN: OK. This was where the women's freshmen dorm. You couldn't do co-ed living, heavens, in those days. 120 was a brownstone right across from where the Betas still are, also on Bay State Road, way down where Boston University is.

120 could house only 17 freshman women in an entering class. In my class, there were another two who were local commuters and another three stayed at, I think, Berklee School of Music dorms. The limited capacity to house freshman women limited how many freshmen [women] MIT could take, just because of housing. And although this was an era where women in other

schools had curfews and the like through their senior year, after freshman year the women were on their own for housing.

There were a few rentable suites at Bexley Hall on campus (which has now just been torn down) Others of us stayed in apartment houses around Cambridge. In my junior year, McCormack [Hall] was built. This greatly increased the capacity of MIT to accept women. If you look at the number per class, you'll start to see it go up. It still grew slowly, but it grew a lot faster than it would have.

VANHEMEL: Was there a name for 120 Bay State?

NELSEN: No. 120 Bay State is what it was referred to. If you talk to other women, my year of before, you'd hear that phrase.

VANHEMEL: There were how many people in your class?

NELSEN: It varies by year, depending on who dropped or transferred out out and who transferred in, plus one woman who was originally class of 1963, but graduated with our class. I'd guess, averaged, for the four years, 23 women. Slightly over 2% of the class of 1964 were women.

VANHEMEL: Two percent.

NELSEN: We made up a ditty: "Outnumbered one in fifty, it's kind of nifty, with 49 fellas and me." So none of us nerdy girls had a problem getting dates.

VANHEMEL: I'd hope not! Did you live at 120 Bay State Road all the whole time you were at the Institute?

NELSEN: No, that was only as a freshman. Sophomore year I lived in with an apartment across from the firehouse in Central Square, but then I got married. People married very young then. I got married, and continued in school. The marriage lasted four years. There were no children. It would be the equivalent of living together now, but that would not have been respectable at the time.

VANHEMEL: Got it.

NELSEN: We split. It was perfectly amicable. "You take the hi-fi set, I'll take furniture." In fact, at that time, birth control was illegal in Massachusetts, although everybody knew doctors and the pill had just come out.

More on entering MIT: Kind of a shock. I had not had PSSC physics [Physical Science Study Committee, which was inaugurated at a 1956 conference at the Institute to review introductory physics education]. And I hadn't had any advanced math, that is anything beyond high school early, early calculus, so I was starting off a little behind.

VANHEMEL: Just out of curiosity, did you find that the other women were in a similar situation, as far as being prepared was concerned?

NELSEN: Most of them had better background.

VANHEMEL: Okay.

NELSEN: Not all, but most. My first semester, I got a 4.0, which, since class average was a C, wasn't bad at all. But, of course, I'd never got Bs before in my life.

VANHEMEL: It affects you, I'm telling you.

NELSEN: I muddled through. It was difficult. As I said, I've always been somewhat exam-phobic, so that was difficult. I thought I was flunking out during semesters when I got a 5.0 – which I did for three semesters. At the end, I graduated with – remember, the class average was a C – but in the end, I graduated with a 4.7, which would be respectable even with grade inflation.

VANHEMEL: Yes!

NELSEN: One thing that will maybe not so much entertain you is that I was first in my class in chemical engineering – but I'm not a member of either the chemistry nor the engineering honors societies, because they didn't accept women.

VANHEMEL: Was it a known fact that they didn't accept women, or did you try to apply?

NELSEN: It was a known fact. I remember with the Chemistry I, one of my classmates said, "I'm going to fight this for you!" But I was so acculturated to: "Don't make waves. Don't protest. Just be better that. Just do your work."

VANHEMEL: Just do your work.

NELSEN: I said, "No, no. It doesn't bother me." This was before the women's revolution, before we became conscious of the wrongness of discrimination, what it was like.

VANHEMEL: Now why course 10? How did you get there?

NELSEN: As I say to everybody, I thought I was good in chem and math, and I thought I liked chemistry. I really didn't know anything about it. I switched majors back and forth. People telling me you couldn't get a job in chemical engineering if you were a woman. [There were] a lot of insecurities. Finally, I just stuck it through. it's a very logical kind of thinking, so I like that aspect of it. Never had much love of lab work. I'm impatient. I'm great with data, terrible with wet stuff.

VANHEMEL: Yeah!

NELSEN: It takes a certain kind of patience and optimism, because experiments go wrong, and you have to say, "Experiments go wrong," not "What's wrong with me?" I wasn't very good at that.

VANHEMEL: And you had to do them again and again.

NELSEN: Well, but you have to do them again and again and again, and not take it out on yourself.

VANHEMEL: Yes. And not be too hard on yourself. What was course 10 like at the time? What were the faculty like?

NELSEN: The faculty were very good to me. In fact, it was very interesting that I said to my freshman advisor, "You know, they tell me I'll never get a job as a woman in chemical engineering. What am I doing?" And he was nice enough to introduce me to one of the very few chemical engineering women grads at the time. It was a small department at the time. In fact, I think she was the last course grad before me. That was Liz Drake [Elisabeth Drake, SB '58 and ScD '66 Chemical Engineering '58]. She took me out to dinner, and we discussed things. She was obviously doing well in her career, and that gave me confidence.

So I finished, stayed on for my master's, got accepted for both for the Ph.D. Chemical Engineering program at MIT and for the Ph.D. chemical physics program at Harvard. But I didn't go on to a PhD, because the exam phobia was really getting to me.

VANHEMEL: OK, I've got it.

You mentioned your freshmen advisor. Were there other supportive faculty, especially when you're transitioning or deciding to continue your education, or was it something you knew you wanted to do?

NELSEN: No. There really wasn't anybody I confided in.

VANHEMEL: Wow.

NELSEN: Then I went out to work, and interviewing for a job was interesting. If you're from MIT, you get to the top of the application pile even if you have the difficulty of being female. So, there were, indeed, the "I'm sorry. We didn't have a woman in line for the job" kind of comments, because they were perfectly legal then.

VANHEMEL: Yeah, now you can't say that.

NELSEN: Can't say that now, but all I can say is: it can go backwards.

VANHEMEL: Yes, it can.

NELSEN: And women your age, you have to make sure it doesn't.

VANHEMEL: Yes. Yes.

NELSEN: I'm preaching to the choir, but what people forget is it can go backwards. I remember one interview when I was asked: "Well, can you travel?" "Yeah, I can travel." "You're married?" "Yeah, I can travel." "With a man?" I could have said: "Why not?" Except you couldn't be sassy.

VANHEMEL: Oh, gosh. I don't want to backtrack, though. I want to learn more. Tell me more about your undergrad at MIT. What was your social life like?

NELSEN: Well as I said, I got married. On extracurricular activities, I'm not a particularly coordinated athlete but we did have some friends who knew the White Mountains [in New Hampshire], and we started hiking through the White Mountains, which is why I know one trail from another. We did a lot of that. In fact, I became a member of the 4,000-Footer Club, which means you sat on top of all 47 of them or 49 of them, or whatever.

VANHEMEL: Yes. My friend has the pass for it, and he stamps it.

NELSEN: Well, I haven't stamped mine. It's just in those days, they took your word for it. But I've been there. We did a lot of that kind of stuff. And there were things like All Tech Sing, where we did silly stuff.

VANHEMEL: What is that?

NELSEN: Each living group would put on either a serious or not-so-serious skit, or dance, or song, or whatever. There's a whole songbook of Tech coed songs. Most of them made fun of things, so they wouldn't be considered proper now. "My mother was Tech coed. Her mother dropped her on her head. She dyed her nails with Cresol red. And used T-squares to make her bed." Things like that.

VANHEMEL: Oh, my gosh. No, no, I have not heard of this. That's funny.

NELSEN: Okay. So some of that. And I had friends. There was the [Margaret] Cheney Room – you probably know what it is. [The Women's Community Center at MIT, in 3-310.]

VANHEMEL: Yes.

NELSEN: You don't realize how important it was, when there were so few women and we weren't living on campus. It became a refuge. I made very good friendships there.

VANHEMEL: Now it's kind of transformed into this "If you need to take a nap--"

NELSEN: Well, we used it--

VANHEMEL: It's a quiet place on campus.

NELSEN: --for that, too. It was also a refuge. Friends--

VANHEMEL: --meet up.

Was MIT also very collaborative with problem sets?

NELSEN: Generally, MIT was collaborative. But people didn't usually get together on problems sets. We all suffered on our own, I think. We had labs together with some of the guys. Particularly junior and senior years, there were labs. Again, as I told you, I'm not very good on the bench, but boy, am I good at writing things up. So I got the guys to do the work and I wrote them up. We got A's.

VANHEMEL: There you go. It's about playing to everyone's strengths, right?

NELSEN: Absolutely.

VANHEMEL: Picking it out, picking it out.

NELSEN: Anyway, I went out in real world, working first for a startup company that my master's degree supervisor, Professor Alan Michaels, had formed, named Amicon. "Joining your professor's startup" sounds very ordinary now, right?

VANHEMEL: Yeah – it's the start-up way.

NELSEN: Well, what I joined it wasn't quite a startup, but it was a small company a year or two old. Many of the employees became friends and kept in touch after some of us left the company. A few of us are in touch – it was 50 years ago.

Continuing about my life: I remarried and had two children by 1972, which made things get interesting, because they hadn't really invented daycare centers yet. But I was able to find a neighborhood lady who was wonderful [and] took care of my kids. Then there was a daycare center that opened up. Then, I remember, kindergarten was a disaster, because they were half days, and how was I going to do that?

So I went into the local school and I asked the neighborhood principal. "What are the downsides if I don't send my daughter to kindergarten?" And they said, "Well, for one, kindergarten prepares kids to be away from their Mommies." Well, I've worked since she was six weeks old, so I guess we've done that.

VANHEMEL: There you go.

NELSEN: He also mentioned that kindergarten prepared them to play with other kids. Well, the babysitting and day care arrangements, they've got that. And [he said, it] prepares them to start reading. But my daughter had already taught herself to read. She was reading by age four, so we decided she didn't need to go to kindergarten. She kept going to this daycare center that by then, was building up and had interesting cognitive things. Then there was a second baby, and we managed somehow.

It was unusual then. The neighborhood ladies did not approve of me going out to work. That isn't what you did in the upper-middle-class suburb at the time. But I felt, really, that I had no choice. Not for economic reasons, but psychologically. First of all, I'd probably get bored out of my mind. And second of all, I never wanted to be fully dependent – I'd already gotten divorced and remarried.

VANHEMEL: Yes.

NELSEN: I just never wanted to be economically dependent on anybody. It was too scary, because my family had been economically fragile, and that scares you.

VANHEMEL: Was your husband supportive of--

NELSEN: Yes, fully. We used to have these panels, because we were women who were doing it. "Now [they asked], how do you do it? How can you combine it?" Marry the right guy who thinks your career is as important as his.

VANHEMEL: One way to do it.

NELSEN: I still do those panels occasionally.

VANHEMEL: That's still important advice to hear.

NELSEN: Pretty awful to try to do it alone, or to do it without help. A few of my friends did it, but--

Anyway, I worked in industry. Whatever your style is as a woman was wrong. You're either too aggressive or too passive. Because what's wrong with your style? It's not male.

VANHEMEL: Yeah.

NELSEN: That gave me a lot of hard times.

Another thing is that although I did pretty well in my engineering world, I was much more interested in things that involved people and communications, and stuff like that. When I was about 34, I decided I had to do the MBA thing, not so much for the education as for the credential. If I was going to take two years off from school and I was going to live around here, there were really only two places worth going to. I had the credentials and the grades and the tests and whatever, but my friends told me that Harvard was probably the wrong place – that I was probably too old.

I realized that [MIT's] Sloan [School of Management] at that time had an accelerated MBA one-year program, and I thought, "Well, it'd be a one-year loss of income, not two." So I went to talk to a couple of professors, because by then, you're older. And the dean at the time – well, not the dean of the Sloan School, the associate dean – somebody sent me to him, and he said “You’re really a good candidate for the Sloan Fellows program – if you are who you say

you are. And I said, "Yeah, I am who I say I am." But no, again, I didn't say it quite so snarkily! "Yes, I can show you I am who I say I am."

In those days, 90% of the class of Fellows was chosen from the very large corporations; they were all from very big corporations. I didn't know that at the time. But I was one of the very few self-funded people. I think there were three women who were self-funded.

I was a fish out of water. I mean, this was a large-corporation thing.

VANHEMEL: Yes.

NELSEN: Large-corporation socializing. So for the summer, I was very unhappy. And then I thought, "Oh, to hell with it. I'll just go back to my own social life and I'll go to school." So that's what I did. And you didn't have to work very hard.

VANHEMEL: What was the ratio of women to men?

NELSEN: Five [women] to 45 [men].

I went on with my regular life, more or less. Still socialized with the class at gatherings, did the proper things, but mostly, did the work and got back to my own life. I got a 5.0, so it turned out all right. But that's hardly something to boast about, because it turns out one of the reasons that I was invited into the program by the dean is that the few women in the previous classes had gotten a reputation of not being good at math. They couldn't do math.

VANHEMEL: And yet, you could do the math--

NELSEN: I didn't need to do any math past high school algebra in the program – don't tell anyone! A lot of the guys couldn't do the math, but they wanted a woman in there who clearly was not a token woman, but fully qualified mathematically.

VANHEMEL: Got it.

What were some of the biggest differences you saw, besides the coursework, between Sloan and MIT undergrad?

NELSEN: The math wasn't very hard. There was a lot of soft stuff – psychology, market writing, whatever – which many of the guys found foreign. I had read all this stuff, so that wasn't very hard.

There were some useful things, but some of it was easy, simply because if you've done stoichiometry, accounting's not hard. I learned a lot, I guess. I'm not sure. And went back to work at Millipore, where I had been working before, but wasn't very happy. Switched to a little company, which wasn't the right thing, and then made another bad bounce to a company that was really a wrong choice, but I didn't feel I could leave. Then somebody told me about this job at MIT.

VANHEMEL: Was this friend at MIT?

NELSEN: She was working, I think, at ILP at the time.

VANHEMEL: What is ILP?

NELSEN: The Industrial Liaison Program.

I applied, and it was strange. It was a complete restart of the office [the Technology Licensing Office, or TLO]. They had asked someone from Stanford to take a sabbatical year here, the person who ran the Stanford Office of Technology Licensing, and do the restart, so he was the person I applied to.

He said, "Can you write?" I said, "Yeah, I can write." He said "Engineers can't write" I assured him that I can write, so I sent him some writing samples. Then he goes and he brings my resume to the Vice President of Research, who was Ken Smith [Kenneth A. Smith, SB '58, SM '59, ScD '62 Chemical Engineering; MIT Professor of Chemical Engineering, Emeritus Associate Provost; Vice President for Research; Smith's interview for MIT's Infinite History series is available online]. And this Stanford guy comes back to me and says, "Do you know who my boss is?" "No." "Ken Smith." Well, Ken Smith had been my advisor for at least one year in my chemical engineering career, and he sort of kept track of me through the years.

VANHEMEL: Wow – it really came full circle.

NELSEN: I was not hired as the director [of the TLO] then. In fact, I had gone through some tough career times and I never wanted to see a budget, or a personnel problem, or a whatever, again. I came in as an individual contributor. I figured, "Oh, it'll be four years. About every four years, I get bored, or depressed, or whatever and change jobs. So it'll be four years."

Well, I really liked the work. And the guy who'd been hired also same day to be thee new director, my boss, was an excellent publicist but didn't really care

what was going on inside the office, so I ended up more or less running the office without a title. Then I became the associate director, and then I became the director in 1993.

VANHEMEL: Besides knowing how to write when you first started out, did you know anything about technology transfer?

NELSEN: Almost nothing. Again, I had been involved in a little start-up biotech company that had taken a license from MIT. I'd been somewhat involved in the negotiation, so I knew what a license agreement was, and more or less what a patent was. But other than that, no, I learned on the job.

Ken Smith was a great “senior boss” because I got some sense of MIT's priorities and principles – very much its principles. And I learned from other people in the profession. It's a profession that in those days was much smaller. I was lucky enough to have colleagues at Harvard and at Mass General and at Stanford who I could learn from and admire and work with. So I went from there.

It's a funny little profession. I said to my husband, "What kind of a profession is it when they're asking me to speak at an annual meeting and I've only been in this business for two years?" But I'm pretty good at articulating things. I've now given talks on tech transferring – it must be, I tried to add it up, 25 different countries, maybe?

VANHEMEL: Oh, wow.

NELSEN: Maybe not 25, but 20, certainly. So it's been a very interesting profession, and it had enough variety--

VANHEMEL: To keep it interesting?

NELSEN: To keep it interesting. When I get bored, I get depressed.

The profession was growing, and the thing about working for MIT is it's a bully pulpit. You've got a brand behind you, so you can speak to the world. And if you're good at what you do, you get to participate in all sorts of things, such as meeting with congressmen and asking them, "Please don't fix this or that law." (It ain't broke, don't fix it). Meeting with people around the world who want to know how MIT does things – and how did MIT turn its backyard into Kendall Square? I don't know if you've heard stories of what Kendall Square was like 50 years ago.

VANHEMEL: I have not.

NELSEN: Well, you should see the pictures. This was an industrial sector. Go back 75 years, and Cambridge was one of the great industrial cities of the country. (A hundred years, anyway). But it was dying by 1960. Kendall Square was a bunch of old rubber factories, candy factories, stuff like that.

VANHEMEL: Oh, I remember something about the [Necco] candy factory. Because supposedly, you can still smell the scent as you walk by.

NELSEN: Well, my husband sailed on the MIT team, at the sailing pavilion, and he claimed that you could tell which way the wind was blowing, whether you were smelling chocolate or soap!

VANHEMEL: Whatever was being produced-- Oh, my gosh. At least it's chocolate and soap, and not like sewage, or something!

NELSEN: Oh, no. It included old rubber, all sorts of things. In Kendall Square, it was just grubby old buildings. The Marriott went up in '87, so that seems like a long time ago. But for us, there was one grubby, greasy spoon diner.

VANHEMEL: What was the name of it?

NELSEN: The F&T. It actually had two locations on the river side of Main Street one down where the post office is and one approximately where the T stop is. There's a plaque to the F&T diner right in front of the Kendall Square T stop.

VANHEMEL: I'm going to look for it next time I'm over there.

NELSEN: If they haven't torn it down with what they're doing now.

VANHEMEL: With all the construction.

NELSEN: So ultimately going worked out well. Also, my daughter Katrina [now Katrina Nelsen Saba] came here, class of '91, in preparation for medical school. She did Course IX.

I had not been happy at MIT. If you're not self-confident, it can be very depressing and scary.

VANHEMEL: I once heard an alumnus say, "You can tell if people who are meant to be here, and then sometimes, if people aren't meant to be here. And if you can't handle MIT, it's easy to get caught in a cycle, a vicious cycle."

NELSEN: I wasn't meant to be here, but I survived it. I was of the, "No kid of mine will go through this" group. But people pointed out that my daughter's personality type was much more like my husband's – that is, self-confident, knows she can do it, doesn't measure herself by it.

VANHEMEL: Got it.

NELSEN: And she had a grand time.

Now, I should have gotten Katrina's tuition free because by the time she came here, I was an MIT employee. MIT paid tuition for employees' children for many years before she came and still to this day. But there was a brief period of time (that coincided with Katrina's time here) where if you were an employee but not a faculty member you paid your kid's MIT tuition with a small discount. So MIT owes me!

VANHEMEL: How did she know she wanted to come to MIT?

NELSEN: Well, she applied a number of places, but she was always interested in medicine from the time she was three.

In fact, it's another one of those stories: I was home with her one evening after work reading something. She's sitting on the floor and says, "Mommy, when I grow up, I want to be a nurse." I said, "Great. Nurses make people better, et cetera, et cetera." And then she said, "What about a doctor? Can ladies be doctors?" How did that get in her head? Daughter of a feminist! So I said, "Sure. Lots of ladies are doctors." And she said, "Then I'm going to be a doctor." And she never changed her mind. I would write her notes toward the end of high school and the middle of college that said, "You know, medicine's a good profession, but you're allowed to change your mind." This is a decision made by a three-year-old. But she didn't. She really enjoys medicine.

No, she had a really grand time here at MIT. Lived in Number Six, the fraternity [Delta Psi].

VANHEMEL: Yes, I've had friends there.

What would you say were some of the biggest differences between her experience and your experience?

NELSEN: What's the difference? I don't know.

VANHEMEL: Just personalities, who you were?

NELSEN: Personalities, self-confidence.

VANHEMEL: Well, to go back a bit, at the TLO, how long were you director?

NELSEN: I was director for 25 of the 30 years.

VANHEMEL: Being back at MIT, how did you--

NELSEN: I felt comfortable. I spoke the language. And I started off with a really good senior boss, as I said, Ken Smith, so when something not so nice happened, we felt it together. I had understanding VP's of Research throughout my time, so I felt backed up. I felt that I belonged here, which is a very different story from anywhere else I've worked, and I was able to hire some really great people. When I got there, there were eight people in the office. When I left there, there were 45.

VANHEMEL: So it grew a lot.

NELSEN: I built a great team and had some wonderful friends, both in the office and faculty, but also in the profession.

VANHEMEL: While you there, how did you see the greater MIT community evolve?

NELSEN: What we saw evolve was this whole thing you'd think of as 'the entrepreneurial ecosystem' now, which hadn't been there.

So many of the people I hired for senior positions in the office had had industrial and startup experience, so we did a lot of advising and that kind of thing. But then, gradually over time, these different elements of the MIT entrepreneurial ecosystem, such as the Entrepreneurship Center and the Venture Mentoring Service, and things like that grew up around us.

We became pretty well known the the university technology community worldwide, so we were always getting visitors and participating in national and international dialogues. MIT was a leader; the two schools that are always

mentioned are MIT and Stanford. Stanford helped us get restarted, and our systems were very similar and very successful. We were the “bookends” from both sides of the country. Now my colleague at Stanford, Kathy Ku, who was at Stanford all the years I was at the MIT TLO, has just retired, too.

VANHEMEL: What are you up to now?

NELSEN: In the year and a half since I retired I've had a lot of incidental stuff – speaking engagements, for example. I've been in China, Chile, Barcelona. I'm also doing some volunteer work: I'm on the board of the New England Wildflower Society, which is a big New England conservation. They have a beautiful Garden in the Woods [Framingham, Massachusetts], but they also do conservation throughout New England of native plants.

What else am I doing? I'm involved in a little biotech company. I'm a little involved with the venture capital group. And I try to get a little more exercise. Plus, I am volunteering in the IMPACT and Sandbox programs at MIT, and also doing some consulting work in licensing with a couple of companies. So it's fragmented right now. I hope I'm going to be able to find some activities that have more continuity to them. But I don't have any major hobbies, so it's not as though, "Oh, I'm going to retire and finally do the weaving, or pottery, or painting."

VANHEMEL: Whatever it is--

NELSEN: Whatever it is that people do. That's what scared me, and it's probably why I retired as late as I did, kept putting it off.

VANHEMEL: When you were at MIT, was there any particular extracurricular or hobby that you were drawn to?

NELSEN: As I said, mostly hiking. I spent the weekends doing that. Plus, just having dinner with friends and stuff.

VANHEMEL: I know that you and Chris Jansen [Christina Huk Jansen, SB ’63, SM ’66 and PhD ‘71, Materials Science and Engineering] taught an IAP class for women students at MIT.

NELSEN: Oh, yes. The Guerrilla Guide.

VANHEMEL: What was the name of it?

NELSEN: It was called The Gorilla Guide to the Pinstriped World. It started out as a how-to-get-a-job seminar for undergraduate women.

VANHEMEL: When did you start it?

NELSEN: Probably the late '70s – and then it went on and on and on. Four evenings, four Wednesday nights in a row is what we used to do. The course explained (somewhat irreverently) what the job-hunting process is like, what an interview is like, what the interviewer is thinking, and how to deal with the "woman questions." We made them all write resumes and we edited them "mercilessly" (but with tact). We did all that stuff. It was funny and it was fun.

At first, the course was aimed at undergraduate women. Then some graduate students showed up. Then the Chemistry Department asked us to do it for graduate students, male and female, and postdocs. Anyway, this went on and on for almost two decades. For years and years and years we'd meet people who said "I was in your seminar—and it worked!"

VANHEMEL: That's cool!

NELSEN: It really made a difference, and we felt very good about that.

VANHEMEL: I guess I did something similar, but not just for undergrad women. There's a UROP now through Graduate Practice Opportunities Program. That was over IAP, but it was something like a week. Resume building, workshops, mentors and speakers from industry--

NELSEN: Yes: What is the guy on the other side of the table thinking, and that sort of thing.

VANHEMEL: Yes.

NELSEN: What are they looking for? What happens when you send your resume in cold and it's in a pile of a hundred others. You know, find somebody to bring your resume personally to the guy, even if the only person you know in the company is your cousin, the janitor. Right to the top of the pile!

VANHEMEL: When you were at MIT, or even when you were starting to work, did you feel like you faced discrimination for being a woman?

NELSEN: Most of the time, yeah.

VANHEMEL: Was there any particular--

NELSEN: Other than what I mentioned earlier, no. It just was always there. And the sad thing is it's not completely gone, either. But one thing that's changed is it's no longer weird to have a man working for a woman. That was really weird when I started out.

VANHEMEL: Really?

NELSEN: Yeah. I worked for a large consulting company at one point, Arthur D. Little. With one possible exception, in the entire company there was no woman who was supervising a man. This was the early '70s. So that has changed. And there is no problem for entry-level women in engineering or anything like that. That does not, of course, apply to higher up.

VANHEMEL: Higher up?

NELSEN: Yeah, the glass ceilings.

VANHEMEL: I was doing a project on looking at statistics of male CEOs versus female CEOs. We're not there yet.

NELSEN: MIT's done some really good things, particularly when Chuck Vest [Charles M. Vest, MIT President, 1990-2004; President of the National Academy of Engineering, 2007-2013] was president. It really had been pretty awful. People would say, "Well, there's fewer women to choose from. There's no pipeline." But you take the chemistry department here. For a while, more than half the Ph.D.s were women – but they somehow couldn't find any women faculty. It's gotten better, it's gotten much better.

VANHEMEL: Environmental Course 1, Environmental Engineering, we're 70% women, I believe.

NELSEN: Is that faculty or students?

VANHEMEL: Students. I think it's undergrad.

NELSEN: The women are doing the environmental engineering. They're doing chemical-slash-biomedical engineering because I assume, they're more socially important careers. We're still seeing that self-selection toward socially important stuff. Now, I don't think that's bad. Be nice to have more men interested, but--

VANHEMEL: I was talking to someone the other day, and in Course 1, Civil and Environmental Engineering, something like all but two men in the major are more civil versus environmental engineering.

NELSEN: You got it; it's still there, but it has changed a lot. And certainly, I think MIT has been one of the leaders. The fact that they go after women and minorities in high school and encourage them to apply – that's why when a percentage of women in engineering schools was starting to drop all over the country, but it wasn't dropping here; because MIT was making a conscious effort.

VANHEMEL: If you were to give a piece of advice to young women undergrads today, or even women grads right out of college, what would you tell them?

NELSEN: You can do it. It's going to be harder [for you than for your male counterparts], but what choice do you have? Establish relationships with people who support you, including who you choose as a life partner. People who build you up, not take you down. Be kind, and be kind to yourself. It pays off. I really don't have any great words of wisdom!

VANHEMEL: I think all of those were pretty great words of wisdom.

NELSEN: We're all in this together, and we can try to help each other out. It builds you, and it builds the person you're helping.

VANHEMEL: Do you feel like your time at MIT, whether studying or working in TLO, changed you or made you realize things about yourself?

NELSEN: Well, somebody asked me what I was proudest of in my career. I think I'm proudest of creating a work environment where people respected each other at each level, where people trusted each other, where they were collaborative, rather than competitive. And you could see it when life tragedies happened to people, they didn't have to hide it from work. They shared it with their friends. And it was, I think – I hope – nondiscriminatory, and helped people build themselves. When you get to be the boss, you get to run the place the way you want!

VANHEMEL: That's true!

NELSEN: I was very proud of that. And obviously, it wasn't just soft and nothing, because we were the best in the world by reputation, ao we must have done something right – while being kind.

VANHEMEL: I definitely think that's one of the things about MIT: it's a tough place. But one of the things that get you through it is the people. It really is.

NELSEN: At least in the days I knew, and I hope is still true, we compete against ourselves, rather than against other people--

VANHEMEL: Yes, yes.

NELSEN: --which makes it hard on ourselves. We don't feel he has to lose for me to win. Also, no matter how good you are – and everybody was pretty good to get into the place – you're always going to meet someone better than you.

VANHEMEL: Yes, that is true.

NELSEN: You're at the top, but you suddenly meet one of those math geniuses and you realize--

VANHEMEL: That's what happens when you take the top 2% from everywhere and put them all in the same place.

NELSEN: And 50% of the kids at MIT are in the bottom half of the class. That's an identity problem for people. You have to define yourself differently.

VANHEMEL: It's true. A lot of times, you were oh, the smart kid. Well, everyone's here smart, so much so, you don't even acknowledge it, you know?

NELSEN: You just take it for granted.

VANHEMEL: You take it. Everyone around me is like a humble genius, is how I describe it. Oh, MIT must be so cutthroat.

NELSEN: No, it's not at all.

VANHEMEL: It's not. It's not.

Is there anything that even at MIT, for, I guess this long, is there anything you would change about MIT?

NELSEN: I don't know. My guess is that there is much more tolerance now for, or even reaching out to, kids who are having a hard time. And I don't mean just academically, but emotionally. Yes. I haven't had any experience with it, but everything I read says there is much more concentration on that. In our

sophomore year, people were so depressed. They really needed help, but there was no way to get it. And I think that has changed.

VANHEMEL: Mental Health has walk-in hours. Student Support Services has walk-in hours, and you can also make appointments. There are almost too many resources to keep track of. You hear about them everywhere.

NELSEN: I hope that if you go into one, and you discover that you'd be better somewhere else, that they tell you that and help you get connected. That's an important part of the entrepreneurial ecosystem. I have some slides about it.

You know, when I explain in a presentation all these different activities that MIT has for people starting companies or wanting to start companies, or wanting to learn entrepreneurship, I have a slide that says: How is it organized? And my next slide says that, actually, it's not; that the ecosystem grew up organically – but because everybody works together quite well and doesn't get too turfy. If you find your way in the door, you'll get pushed to the right place.

VANHEMEL: Got it.

NELSEN: I think that part of it is good.

VANHEMEL: I know you've been interviewed a lot of times. Are there questions that you wish you'd have been asked, or that I should ask?

NELSEN: Well, I think I might say one thing is that life's a random walk. And when someone asks you what your career is going to look like 20 years from now, realize that those kinds of questions are kind of dumb! Get good preparation, close as few doors as possible and keep your eyes open – because to a large extent, it's a random walk. A lot of success, of course, is preparation and ability, but an awful lot of success is also luck. The idea is to keep your eyes open and have enough confidence that you can fall down and get back up again.

They say – and I think it's true – that MIT students have never failed before, so they don't know how to get back up again. So they – particularly the women – are less likely to take risks for fear of failure. I'm not one of the risk-takers, but I've got a brother who is. The people who are not afraid of failure do much more interesting things. And by not afraid, meaning, "So I failed, so what? I can always get up again." I wish MIT taught more of that.

VANHEMEL: I wish I knew how to fail better than I do; to recover, to be more resilient.

NELSEN: Or recognize when you're trying something that it's the fear of failure that's holding you back, and make yourself do it.

VANHEMEL: Yes. I ran into that a little bit with careers, looking at internships. I think part of it was just that I didn't want to apply to such a large, competitive pool of people.

NELSEN: If you don't apply, then you have rejected yourself.

VANHEMEL: Yes, you miss 100% of the shots you don't take.

NELSEN: And it's that fear of failure, as though as if you fall off the ladder, you can't climb up it again. Don't risk your life, please, but the rest of it, try it.

VANHEMEL: Yeah, go for it.

NELSEN: Go for it. People do recover. Don't do anything stupid, if you can help it. You know, really stupid or terribly irreversible. Having a child is terribly irreversible, so wait to do it at the right time.

VANHEMEL: That's fair.

NELSEN: It's the one thing you can't say, "Sorry. Do over."

VANHEMEL: You can't say, "So what?"

NELSEN: I would say to people, particularly to the women, take more chances.

VANHEMEL: Thank you for doing this.

NELSEN: You're welcome!

Second interview, February 9, 2019

VANHEMEL: I'd like to return to some of the topics we touched on last time as well as a few others. First, for those who don't know, can you explain in greater detail what the TLO [MIT Technology Licensing Office] is and what it does?

NELSEN: People working in research at MIT make inventions at times that have a possibility of being useful in the real world. Now, that could be a new circuit on

a semiconductor or it could be a new pharmaceutical based on some mechanism in brain research, to cite two extremes. These inventions are interesting, but they're very, very, very early. So, to get either established companies or venture capitalists to invest in taking the risk of trying to make it real, they need intellectual property protection, which means you've got to file patents on them. What a patent does, if you're not familiar with it, is it legally excludes other people from practicing your invention.

The idea is that if you have a patent, and either you own the patent or you're granted an exclusive license to it (which means you can use it, but nobody else can), then, if you spend millions of dollars – or in the case of drugs, tens of millions or hundreds of millions – and it works, then you're protected in the marketplace for a period of time, so that you don't have competition. And you can sell to the whole market and recoup your investment. That's a long explanation of why you file a patent.

People come 800 times a year to the TLO filing an invention disclosure saying, "I think I have an invention and I think it might be useful." If the TLO agrees with them, then the TLO hires attorneys to file a patent. That's the first thing: the TLO patents inventions.

The next thing the TLO does is try to find somebody who wants to take a license to that patent and try to develop the product. And there aren't a whole lot of companies lined up to do that because it's so risky and so new, and will take such a long time to come to market. But if there is such a company, we would grant a license to them.

Or, if the inventor's interested, they might form a new company, raise money and be an MIT startup. The whole entrepreneurship thing that MIT does: it's not just by the TLO, but it is often with the TLO. That's what we do.

"We" – I keep saying "we" after 30 years there! What *they* do. They evaluate inventions, pay for patents, license the technology to companies to develop it. Also, get royalties from the product sales. The companies who develop it will pay the TLO. So that's what they do. At this point, the patenting the licensing activity are a byproduct of research, but an important mechanism for getting the results of MIT's basic research into the real world.

VANHEMEL: It definitely aligns with the spirit of innovation. And there's logic behind it.

NELSEN: But yes, that's indeed what we do: we enable the innovations to be attractive for investment by protecting them with patents and licensing them. Because for

much of this kind of stuff, if you didn't patent it and just publish. Of course, MIT researchers publish it, too. But with no patent, everybody could invest in it. But nobody would want to be first, because once somebody makes a large investment which shows the way – "This one works, and here's how it works – everybody would pile in at lower cost. So, basically, you couldn't recoup your investment. If everybody owns something, nobody invests in it.

VANHEMEL: That makes sense! [LAUGHS]

You talked briefly before about how you found yourself at the TLO. Could you elaborate? How did you progress from your initial position to becoming the TLO's director? Also, what was it like to learn about licensing and the law?

NELSEN: Well, I worked in industry in mostly research and development and a little bit new ventures. And I must say, I didn't fit very well. Because I mean, I'm smart, and they all knew I was smart, but money isn't a terribly important motivator for me. But it isn't only that. I'm good at science, but it's really verbal and written communication that is natural for me. And I like doing something what has a social purpose. In industry, I used to say to myself, "Why am I working so hard to make that guy rich?" Anyway, I had bounced around a few places, and by then I was very unhappy.

A friend of mine – also a Tech coed – said, "There's this opening because MIT has completely reorganized its patent licensing office. And I said, "Well, they don't want me, they want a lawyer." (It used to be all lawyers.) And she said, "No. It's a new model. A re-start based, really, on how Stanford does things. Go talk to them." So I said, "Yeah, sure."

They gave me the job, partly because I had done very well academically for my bachelor's and master's in chemical engineering. And there weren't many women in the business, so the professors all knew me – even though we're now talking about almost 20 years later.

To my surprise, the guy they had borrowed from Stanford for two semesters to help do the re-start reported to the vice president of research, who turned out to be Ken Smith, who had been my undergraduate advisor for part of my undergraduate years. He took my resume, which looked like I had not much to do with patents and licensing, but he knew who I was. As I mentioned last time, I wasn't hired as the director; I was hired as a sort of individual contributor. A new director was hired at the same time I was.

And now what happened? Well, first of all, I had a vague idea of what the patents and licenses were because in a little biotech company that I was part of for a little while – before they replaced me with a man, of course (or didn't replace me, hired someone over me) – I had helped the lawyers negotiate a license to the company that I was part of. I had dealt with the MIT Technology Licensing Office.

I sort of knew the vocabulary, but not much else. But learning about patents – to the extent that you have to be able to work with them, and understand what they dom and understand what the rules are – isn't very hard for an engineer. It's the kind of stuff you do. And although I had worked in R&D, I'd also worked in ventures. And I had the MBA from Sloan, so I could 'speak business.' And I could 'speak technology.' And I could learn to speak patents better than I did. So that wasn't really the difficult part of it. I mean, I can't write a patent, but I can certainly hire lawyers who do.

What happened over the next two to five years, or even earlier-- I really liked the job, because I liked the variety.

Then I realized that nobody was running the office, and that we were going to be in trouble, and reported that to a committee. My immediate boss didn't care because he was mostly externally oriented. He was a great publicist, partly for the office and a great deal for himself. He didn't care that I kind of took over and started doing things. Getting people organized, helping with hiring, helping out with, in one case, getting rid of somebody. Working with the clerical office manager. I started doing all those things.

About the third year I was there, I said, "Isn't it time you made me an associate director officially?" So they did. And then after about 10 years, it became more obvious that I was really doing the directors' job. Then I got offered another job by Harvard for a lot more money, and MIT had to do something to keep me, so I was named director at about year five, or maybe year six, and my immediate boss was promoted to a grander title. Then he was asked to leave at about my 10-year point and they asked me if I wanted his fancy title. I said, "No thanks. I'll live with this one, because I don't even know what the other one means." [LAUGHS] Seriously, I did that. So I stayed director.

Meanwhile, I guess I had become by then quite well known in the tech transfer industry. I was a president of the Association of University Technology Managers. I was giving lectures around the country, so it grew from there. Meanwhile, the office grew from, I guess it was eight people, including clerical

staff, et cetera, at the time I took the job, and it was 40-odd people by the time I left. So that's how I got there.

VANHEMEL: I'm curious: What was the conversation like when you had essentially taken over the office and asked for a promotion?

NELSEN: Well, two things happened. The first stage, on becoming the associate director, I just went to the vice president of research and said, “Isn't it time? I'm doing all this stuff.” Also, to my immediate boss. I think I said that at the two-year point. And the VP said, “Well, wait a year.” And at the three-year point, it was time. So that wasn't a big one. It wasn't a big up in salary or anything like that.

Then a few more years went by, and Harvard tried very hard to recruit me – Harvard Medical School. It would have been a lot more money, et cetera. So I spent maybe a month going back and forth: “I don't really want to leave, but this is an opportunity. Now what do I do?”

I asked my boss, my immediate boss, about a salary change, and he said, “I can't do that, because your salary is too close to mine.”

VANHEMEL: Oh my gosh!

NELSEN: I thought about it a little while longer and then went to the vice president of research and said – finally, I went to the VP of research and said – “Look, I want to stay here, because I like MIT and I fit here. I sort of fit the culture. I'm really being tugged, and I have to make a decision soon because I've been stalling Harvard for weeks and weeks. My immediate boss has said he can't give me a promotion because my salary is too close to his. He's always telling people because of his own investments that he is one of the richest people around.”

And I said, “In contrast, my husband and I are engineers. We've got a kid in college. We've got another kid going to be in college.” And instead of having parents who are wealthy, which my immediate boss also had, my husband and I we help support my mother-in-law in a nursing home. “So although I'm not really usually concerned to get maximum salary, it's really hard to turn this offer down.” That's what I said.

The VP responded to me: “Can you wait a week until MIT's President, Chuck Vest, gets back from a trip? I said, “OK, I'll wait that long. Harvard is going to kill me.”

I waited a week. And then I got informed that I had been promoted to director. They didn't give me as much money as Harvard would have, but they gave me a very substantial raise. They kicked my immediate boss up to a very important title, which was fine with me. I just kept doing what I had been doing, which was running the office by then.

VANHEMEL: Great!

NELSEN: It sounds like what women should do, except what women should do it without going through the agony that I had to. I finally had to do it.

VANHEMEL: Aside from you, what was the status of women at the TLO over the years?

NELSEN: It was pretty equal, male and female, in the hiring I did. I hired the best people, not because they were male or female. However, at one time fairly early on, I we had a slight imbalance by then of more women than men in the senior part of the office." And the VP said, "Lita, why are there so many women in this thing?" And I looked him in the eye and I said, "Well, look—" I mean, straight in the eye, but very politely, I said, "Look at what's needed in this job. You need somebody with good science background, smart, understands business and outstanding communication skills. If they're male at that age, they're senior vice presidents somewhere and we can't afford them. But there got a whole bunch of very qualified women who have broken their head trying to get through the glass ceiling, and this is a nice job that uses their talents."

VANHEMEL: For sure.

NELSEN: I think maybe that answers your question?

VANHEMEL: Yes.

NELSEN: It's changed over time. There are more men in business because it's gotten sexier. But anyway.

VANHEMEL: Yes, that is fair. [LAUGHS]

NELSEN: At one point, the head of Harvard's office, the head of MIT's office, and the head of Stanford's office were all women, and we were close friends. We used to go back and forth and benchmark against each other, meet once a year. We were good enough friends that nobody was showing off. They were talking real, so I named it the 'Big Girls Club' and threatened to build a treehouse as a clubhouse. I wish I had.

VANHEMEL: Oh my gosh.

NELSEN: Everybody knew us as the Big Girls Club.

VANHEMEL: Are you president?

NELSEN: Oh, no, no, no, no, no. The president of the club – I don't think there was ever a president. All three of us had at one time or another been president of the Association of University Technology Managers, so we really were the big girls. It sounds like eighth grade. It probably was [LAUGHS]. Anyway.

VANHEMEL: Since you were at MIT as a student and then in a long career as well, what are your reflections on changes for women at MIT? Huge successes?

NELSEN: Yes, now the changes are very substantial. I mean, when you're the only girl in the class, which I was in a lot of my classrooms, when people weren't used to you-- I don't know whether I told you this in the first interview, but I graduated first in my class in chemical engineering. Still, I'm not a member of either the Engineering Honors Society nor the Chemistry Honors Society, because they didn't let women in then.

VANHEMEL: I remember that.

NELSEN: I mean, that's just ridiculous.

VANHEMEL: Yes.

NELSEN: And when I did get hired at my first job, which was a professor's startup, they very kindly told me two things. First: they'd had a woman being engineer before, and she hadn't worked out. We've all heard that one. The other was that they were paying me only 10% less than the men. All that stuff was legal. Not counting the job interviews that said, “Well, you're married. Can you travel?” I said, “Yeah, sure. With a man?”

A lot of that has changed. One thing that's changed rather dramatically when I was a freshman coming in – that was before the dorm. Girls in other schools had curfews. We had curfews in the freshman year, which we ignored. But in those days, women were not quite chaperoned, but they had curfews.

I don't know whether you know that in 1960, when I started, contraception was illegal in Massachusetts. Hang on to your hat! So the cultural aspect was very

different. But it was about to change. I think the pill was introduced in just about 1960, '61, '62 – something like that. I think '61. Maybe plus or minus. The whole sense of … not only that if you took a job you might get pregnant, but they didn't assume that the pregnancy was under your control, that you got pregnant when you wanted to, not when it was inconvenient for your career.

And of course, moving on in the personal, as I think I might have mentioned-- When I got the job at a larger corporation, Arthur D. Little, which was a consulting company, and a pretty big one, I looked around and I realized – this was early '70s. Although there were a fair number of women – not a lot, but a fair number; not the 2% at MIT – but there was not a single man reporting to a woman to the whole corporation. Maybe there was a library assistant, I'm not sure, but there certainly wasn't anywhere else. That itself tells you something. It tells you that promoting a woman to a job in which men would work for her was considered a big deal, because, after all, men might not like it.

And then I had children. I seemed to always be on the cusp of when things were changing. Again, they hadn't quite invented daycare centers yet. But by the time my eldest was about three, they started to do that. Certainly in Winchester [Massachusetts], which is an upper middle class suburb, it was considered negligent to work when you had children.

VANHEMEL: Yes, yes, the expectations of a mother.

NELSEN: Fortunately, I had some friends a year or two older than me, particularly one who had done it – so I knew it wasn't impossible. Their kids didn't seem to be falling apart. And I had a husband who understood that we were in it together.

So a lot of things have changed. Of course, what was different then is that salaries could support a decent house. Nowadays, you need two, until one partner is earning a whole lot of money. Working was considered voluntary, which in my case it was because we were fairly frugal and could have been. But we bought a house that we said we could afford on one salary. Either one of us could tell our boss to go to hell.

VANHEMEL: Got to have the option open--

NELSEN: We didn't feel trapped by a mortgage. Freedom's always been very important to me, even though I always worked. But I needed the freedom to-- If I could find a job that fit me, to do that, or whatever I needed to do, and try to keep your finances such that you aren't completely strapped. I mean, we couldn't both lose our jobs; that would have been a problem.

VANHEMEL: But having the option in the back of your mind, and having the feeling of the flexibility, and knowing that you have it.

NELSEN: Right. Exactly. And I took a year off to go to the Sloan School.

VANHEMEL: It's always interesting for me to hear about alumnae experiences. I can't imagine a world other than the one that I've experienced and lived in. It is always really interesting.

NELSEN: I mean, it wasn't 1919 when women were just-- I guess they got the vote then, or maybe it was a little later.

VANHEMEL: But it's the little things, like the recollections of when contraception was illegal: not just not accessible, illegal.

NELSEN: It doesn't mean contraception wasn't available. Everybody knew a doctor. Or men could go to the drugstore and get condoms under the counter. (People weren't worried about HIV then; they hadn't discovered it yet.) People could get it, but it wasn't legal at that time. But it was on the cusp of changing.

VANHEMEL: Do you think there are things in regard to gender roles, or having to do with the role of women at MIT, that still need improvement?

NELSEN: Well, just having more of them helps a lot. One of the big-step changes was having McCormick Hall [the all-women's dorm funded by Katharine Dexter McCormick – SB Biology 1904, suffragist, and funder of research that contributed significantly to the development of the pill], so that you could house more of the freshman class and then, later, classes. That allowed a big uptick in the number of women admitted.

In fact, we used to find it entertaining. There was all-women's average, all-men's average. That was before grade inflation. An average was about C-plus. When women's average cumulative grades were matched against the men, they were always higher. Because if you're only admitting 20-odd women in a class you really have to be very picky. So when MIT then started admitting a lot of women, the average grades came down to the same as the men's, meaning they could be admitted against the same academic standards. That's actually a victory, though it may not sound like one.

VANHEMEL: One other thing: The period when you were at the TLO corresponds with the revolutions in both computing and biotech. Can you speak to that a bit? It's such an incredible time to have been doing what you were doing.

NELSEN: Well, in fact, when I was offered the job at the TLO, initially as an individual contributor, I said I would take it if they let me handle the biology portfolio, even though I'd never had a biology course. I had become very interested in the biotech industry and had been part of a startup biotech company. I saw it as where the future was.

Plus, it was just plain interesting to learn about how the body worked. And I'd always admired startups since my time at Amicon.

At the time I joined the TLO, there had been only about a dozen or so biotech companies formed in the region, a few growing substantially, such as Biogen, Genetics Institute, Genzyme and Repligen. Then things started accelerating. Things start small, and if they're successful, then they become visible, then people do more of them. That holds for starting biotech companies from universities. It holds for venture capitalist who began finding biotech interesting. That leads to more venture capitalists who understand biotech – and on, and on and on. That's how that started.

VANHEMEL: It sounds like a snowball effect, almost. It just kind of grows.

NELSEN: Also, what was happening simultaneously is that the people really didn't understand much about biology, but knowledge was accelerating. They had figured out what DNA was. They hadn't sequenced the human genome yet, because that was the early '90s, but they were developing tools for sequencing DNA, tools for understanding proteins, et cetera.

Biology is an area where you can see technology building on itself within a relatively short period of time because the new knowledge enabled new things. It was a true exponential growth in knowledge, so that's another reason it got going. Everything went together.

VANHEMEL: What was it like being director of the TLO during such an important time?

NELSEN: By the late 1990's, we were starting more biotech companies than almost any university, except probably Stanford – far more than most universities. That was partly the biotech revolution, and it was partly the fact that MIT had always been a place where professors started companies. They didn't take licenses in those days, they just started companies. Doing so and remaining a faculty

member – there was a model for it. Once there's a model for something that sort of works, then other professors aren't starting from a blank slate. “How would I start a company?” They'd ask the guy who started the last company, and he'd say, “You want to meet my friend, the venture capitalist.” Once you have a few successes of something new, it often accelerates, if the overall opportunity is there.

VANHEMEL: Got it.

NELSEN: Our office did its first licensed biotech company in 1987. Other biotech companies had started, but they hadn't started with licenses, at least at MIT. Maybe there was one, but it wasn't customary the way we did it. We had to invent new rules. In fact, the conflict avoidance statement that the professors signed, and still sign – I wrote them in – I think it was 1987 – and I wrote them real simple. Three sentences, and it hasn't changed.

I worked with the vice president of research to set what the conflict rules should be and put them down clearly and simply. They were very conservative, because this was relatively new stuff, with universities taking equity in companies and things like that. It was very new stuff for MIT.

So we said, “What are we afraid of?” We put in very strict, conservative rules, such as you can't do work for your company in MIT's labs. Other schools consider that, as this thing grew, to be too conservative. About 10 years later, I was at some meeting, and I said, “Yeah, I can see why it would be easier to start a company without that rule, and that the company might get started faster. But look, we've got the strictest rules. And we do the most startups. So maybe we don't have to change them.”

VANHEMEL: That makes sense.

NELSEN: It was conservative because we understood that, if MIT makes a mistake, they're on the front page. An ethical mistake, they're on the front page of The New York Times. You can't hide it.

VANHEMEL: Which is MIT.

NELSEN: Ken Smith, the VP of Research, used to call it ‘the New York Times test.’ If you end up on the front page of the New York Times, make sure you're proud of what you did.

So when I ended up on the front page of the Wall Street Journal with a fight with a professor, and the president of MIT backed me up because I was proud of what I'd done, we were OK.

VANHEMEL: What was that about? What was on the cover of the Wall Street Journal?

NELSEN: Oh, it was because I didn't give a sweetheart deal to the professor's son.

VANHEMEL: Well, you got backed by the president of MIT, so it sounds like it was the right choice.

NELSEN: I think it was.

VANHEMEL: Awesome.

NELSEN: Do the right thing for the right reason. Don't get close to breaking the rules. If you have a scheme to go around the rules but makes you itch, don't do it.

VANHEMEL: Trust your gut.

NELSEN: Not only trust your gut, don't try to get away with it, even if your gut says you can. Because you don't want to. If you're close, and you're feeling squeamish, then my view is – and people knew this in my office – don't even try. Because if you think you're clever, and you think, “Well, it'll make you look good,” don't even try. Because if you want try, you're probably not working in the right place.

VANHEMEL: Good advice.

NELSEN: We tried to be truly ethical without getting caught up in nitpicking nonsense. I called it pragmatic Puritanism.

VANHEMEL: That’s great: Pragmatic Puritanism!

NELSEN: Thank you. I appreciate your being part of this [oral history] project. It's an important part of MIT's history, and I hope you've enjoyed it.

VANHEMEL: I have! Thank you so much, once again.