

Interviews of the Margaret MacVicar Memorial AMITA Oral History Project, MC 356
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Susan Lippman Kannenberg — class of 1961

Interviewed by Anne Kim, class of 2016

September 1, 2019

Margaret MacVicar Memorial AMITA Oral History Project

Dr. Susan Lippman Kannenberg (SB in Physics 1961) was interviewed on September 1, 2019 by alumna Anne Y. Kim in Cambridge, Massachusetts. (Kim, SB Computer Science and Molecular Biology 2016, and MNG Computer Science and Molecular Biology 2019, is co-founder and CEO of Secure AI Labs, a secure analytics startup in Kendall Square.) Susan completed an MS in Physics at the University of Pennsylvania and a PhD in Molecular Physics at Northeastern University.

Susan Kannenberg grew up in Queens, New York. Although she excelled in STEM and other subjects in school, she chose a small, independent school instead of one of the city's public tech high schools. Later, Kannenberg was accepted to MIT but went to Smith instead. Two year later, she transferred to MIT, where she took a heavy course load in physics and other classes in the hard sciences to ensure her graduation "on time" in 1961.

Over the subsequent decades, Kannenberg demonstrated an extensive commitment to MIT. She was especially active in promoting greater recognition of the accomplishments of women students and alumnae. For example, she served as president of the Association of MIT Alumnae (AMITA, the organization that funds this oral history project) from 1976-1980. She also served on the AMITA committee that organized the 1998 exhibit at MIT that honored the 125th anniversary of the graduation of Ellen Swallow Richards [SB Chemistry 1873], the first woman admitted to the Institute. As AMITA president in 1976, Kannenberg created the High School Visiting Program with admissions Dean Peter Richardson, to encourage high school girls to pursue advanced math and science courses. Teams of MIT alumnae served as examples of successful women in these fields. For her efforts, Kannenberg earned the Lobdell Distinguished Service Award in 1982 and the Bronze Beaver Award in 1987.

Kannenberg was also active in the women's movement more broadly beginning in the early 1970s, as is described below.

KIM: My name is Anne Kim, MIT class of 2016, Course 6-7 [Computer Science and Molecular Biology]. I'm interviewing Susan Kannenberg, class of 1961, Course 8 [Physics].

Susan, today I wanted to talk about what shaped your path to MIT, your life at MIT, and then how MIT shaped your influential role in the women's movement of the 1970s.

To start, I wanted to ask you about your youth. What were the circumstances of your home life? What was your family like?

KANNENBERG: I would say that the most important factor in my childhood was the fact that my father was very strong personality and very, not only supportive, but expected a great deal by way of academic performance. Not unusual for Jewish people, it's kind of well-known. But nevertheless, in the fabulous '50s, when this all happened, the extent of his support was complete, or I should say, far-reaching.

And my mother is not to be scorned. A dedicated schoolteacher, she supported herself and my dad during the Depression. Although she had the more typical attitude that you don't want to be wandering off in areas that are not going to be helpful to your eventual life as a homemaker and mother, I don't mean to sell her short. She was very good in math, and she used to help my friends with math in school, in their schoolwork. So clearly the notion that women can be good in math was never an issue, because she was good in math. I'm sure that helped, although my mother's leadership in my education was a little bit different. She pushed strongly for the private school I went to, which was absolutely critical. But I'll get back to that in a second.

KIM: How did she get you to balance not only an emphasis on your academic performance but also a home life?

KANNENBERG: Well, the best way to sum it up, I guess, is-- My aunt, who was much more outspoken than my mother, and I don't think my mother would ever have said this-- But when I was in graduate school getting a PhD in physics, my aunt said, "Why do you need a PhD to change a baby's diaper?" which was kind of the thinking of the day.

So all that means is that it's just a reflection of the general attitude of most people; that a woman getting a PhD in physics is just strange. I discounted my aunt's opinion because I didn't regard her stay-at-home life as anything to admire.

KIM: Is that an opinion that you had yourself, or was it influenced heavily by the opinions of your mom?

KANNENBERG: No, I guess the simplest way to put it is that my parents were much more open-minded than this aunt. And over the years, I mean, it's difficult when you do an interview like this, a lot of my views are what they have become now, today, in 2019. I might have thought somewhat differently back when.

But in any event, the critical effect was that my father in particular-- I mean, he's paying the bills. You know, when I went to graduate school, which will come up later, he just paid the bills, because I didn't get an assistantship. Most students don't go to graduate school if they don't get paid, in science anyway.

So my father had high expectations academically. And I don't think he ever thought about, "If you have too high an expectation, she might actually get a PhD and never marry, and go off in some dusty lab somewhere." I'm sure he never thought about that. I'm sure the idea was, "Do the best you can for your own future and reflect well on me." And one of the ideas that I've come to in recent times is that he liked the reflected glory of having a daughter who went to MIT, which was pretty rare in those days. And I don't see anything wrong with that. I don't see anything wrong with a parent enjoying reflected glory of their kids' accomplishments, as long as the kid is not abused in the process. And my dad didn't complete college himself.

KIM: Right. Can you tell me about your sibling as well?

KANNENBERG: I had a younger brother, and an interesting thing about him was that he went to Stuyvesant High School [in Manhattan]. This is a reflection on my obliviousness to its exclusion of girls. Some of my women friends at MIT from New York are still angry that Stuyvesant, a public school, was closed to girls, whose parents were paying the same damn real estate tax as anybody else. But I was, for some reason, utterly insensitive to that, partly because I went to a private school after the seventh grade, which was my mother's doing.

I think this is very typical: My father was a public-school man. He was a Democrat, all those good values. But my mother was, "Yeah, yeah, yeah, I agree with all that. But I've got to worry about my kids." Very typical women's attitude, I think. They focus on the particular, and the guys are out there with their abstract principles. So anyway, so the critical step to private school, which I wanted to just mention--

KIM: Right.

KANNENBERG: --was that when I was in the seventh grade or so, getting ready to go to the eighth grade, my mother, apparently -- this is the best I can remember -- thought that the local high school that I would go to was a "factory," and I would get lost

in the shuffle. Because believe it or not in those days, I was kind of a shy, retiring type.

KIM: What?

KANNENBERG: Sorry! Anyway, here's the thing I remember now. This may be somewhat of a constructed memory, but I have this very strong memory of seventh-grade math, public school. There were these two boys in my class, actually three, but two in particular, they were friends. I even remember their names, not relevant here. But the teacher would discuss something, ask a question, turn around, and call on those two boys every time. That's my memory. It is probably exaggerated. But from that experience, I came away with the idea that I was pretty mediocre. I certainly was not a math hotshot, by any means, because these guys were so great. Now I realize in retrospect--

KIM: "So great." Air quotes--

KANNENBERG: Yeah, I realize in retrospect that, you know, the women of the day were just as bad as the men. Why should they be any different? There were a few amazing pioneering women. But the run of the mill woman math teacher, even a good math teacher, is still-- I mean, even today, there is still a good deal of sex stereotyping in schools. I wouldn't be surprised if you did a content analysis of whom teachers call on in math class, you'd find they call on boys a lot more frequently than girls, and certainly in science class. But that's what I remember very well from seventh grade, because my change was so drastic.

So my mother said, "OK, I think we ought to--" I guess this is what she said, to my father, who was, as I say, you know, a public school-principled person. And she said, "Here's this school, Kew Forest School, a small private school. Not a great famous school, like Brearley or any of the other New York fancy private schools."

KIM: Or Exeter or something.

KANNENBERG: Or Exeter. Well, that was a boys' school. All those places were boys' schools anyway. Most well-known prep schools were single sex.

KIM: Oh, right.

KANNENBERG: But even the schools that were-- I mean, in a way, now that you mention it, probably the girls' schools would have been kisses of death. Because they would emphasize what they thought girls were all about, which would be the kiss of death. So I went to Kew Forest School [in Queens, New York], starting in the eighth grade. I remember very well in the eighth grade taking a class called General Math, and it was really difficult. I remember thinking to myself, "This is

a great opportunity. I've got to figure this out." So I figured it out eventually. As I remember, it was calculating square roots by long division. I don't know if anybody even knows how to do that anymore.

But that was my experience when I first started at Kew Forest in the eighth grade. Well, by the time I got to be a senior, I was the queen of the show. It was a small school. I believe that it wasn't highly selective. I just don't know. I never saw their admissions data or anything. But by the time I graduated, when I graduated, I was number two in the class. Because I might have had one A that I could have had an A plus in. But I didn't care about that, because my college board scores were better than the number-one person. And I won best [in my class] in four years of English, best in four years of math. These are money prizes by the way.

KIM: Nice.

KANNENBERG: Best in physics, best in economics. I mean, I just got everything. It was just amazing. And the person who was number one, who's actually a friend of mine, very nice girl. There was never any animosity between us, particularly. And, certainly, in my case, I thought I was smarter, because my college boards were better than hers. So anyway, that was the story.

The one other thing that's of interest from this youth thing-- Well, a couple of things. One is my general attitude toward the world was pretty conservative. I didn't have any ambitions to be unusual or different. There was no feminist awareness whatsoever. This was the '50s, try to remember that. If you don't know what the '50s was like – whoever's reading this – read “The Feminine Mystique” [by Betty Friedan] or at least read part of the beginning part of “The Feminine Mystique” to try to get an idea of how just horrible it was.

Actually, even better is try reading some of the women's magazines of the day. All the fiction stories were about women who tried professional life, and then, somewhere along the way, they realized their true nature and got married, and gave up anything to do with their brain. I read those stories, and how I survived them is one of the great mysteries of the world.

KIM: What about [Louisa May Alcott's] “Little Women”? Wasn't that a popular book at the time?

KANNENBERG: Yes, but, I mean, this is the Civil War, and they weren't scientists. They were running around trying to put food on the table. I mean, if that's what you have to do, because there's only a bunch of women, because dad's off ministering to these soldiers--

KIM: Right.

KANNENBERG: They were not what I would call feminists. They certainly did not appear to be feminist leaders to me at that time.

KIM: Interesting. I was a big fan of Jo [March].

KANNENBERG: You know, I had never heard of “The Second Sex.” That was seen as a dirty book anyway, rather than a political one.

KIM: Really?

KANNENBERG: Well, there's too much details--

KIM: Simone de Beauvoir?

KANNENBERG: --about sexuality and everything. But I'm just saying. So that book was of that era. But it was--

KIM: Right.

KANNENBERG: --way off into the radical world, and nobody read that.

Anyway, two things I wanted to mention. (One, I just mentioned.) Which was that I was not a radical, by any means. There was no feminist leadership that I was aware of, which is not completely true. This woman who was the number one in my class told me, only recently, at our 50th reunion, how important the woman dean of that little bitty high school was for her leadership of girls' sports. And how when she herself got to Wellesley College and found out that the women's colleges, in those days – oh, it wasn't polite to engage in interscholastic sports, so maybe they did a little fooling around with field hockey or something, with intramurals. But the idea of doing anything that's really competitive might build up a muscle, and that wouldn't be good. So women's colleges were absolute hotbeds of reactionary stuff, period. OK. I just want to give the character, that there was no feminist influence at the time. And I was just lucky, I guess, that my family was so supportive of any academic achievement. For various reasons, which are not worth going into, I ran out of math courses to take at the school. I took all the courses they were offering--

KIM: At your high school.

KANNENBERG: Yes, at the high school. So my father hired a tutor to teach me calculus. It was not common in those days for people to have calculus in high school – very different from today. He hired this tutor. And the guy was very traditional. But my family told him my choice of colleges to apply to and he said that it was a pretty bad list. Because, he said, MIT was “inappropriate.” That was his word.

MIT was an inappropriate choice, number one. Radcliffe was the only school on the list that he thought was reasonable, but I wouldn't get in, being a Jew from New York. Which is true, of course. And thank god. Thank god.

KIM: You didn't get in to Radcliffe.

KANNENBERG: That I didn't get in.

KIM: What would have happened?

KANNENBERG: Harvard's gesture to women was viewed by many as not supportive of professional ambition for women. When Radcliffe was absorbed into Harvard, eventually a Harvard Dean stated there could not be a single standard of admission for both men and women because it would result in a significant overpopulation of women students.

So thanks to this guy's nefarious influence, I didn't take MIT off the list but I added Smith College to the list. I got accepted everywhere, to this assortment of schools, except Radcliffe. And so, I was accepted to MIT. My recollection is, and there's something wrong with this, but I've tried very hard to understand it and haven't succeeded-- My father did not approve of the living arrangements. That's the best I can say.

KIM: At MIT.

KANNENBERG: Yes. The story is that at that time, MIT admitted women only if either they lived at home in Boston or there was room in the 17-person dorm [for women students] on Bay State Road. Now, my understanding, from speaking to people who lived there, was that there was no room [for more women students], because the people who lived there were allowed to stay there as long as they wanted.

KIM: Right.

KANNENBERG: If MIT said "We were admitting her, but we have no space for her," that flies in the face of the supposed official policy. Anybody that reads this who can shed some light on this, it's unfortunate that it's over 50 years since. Anybody who really knew is likely long gone. But in any event, so for whatever reason, he said, "No, you're not going there."

KIM: Right.

KANNENBERG: So I went to Smith instead.

KIM: So your father did not approve of you going to MIT and so you went to Smith. Can you tell me about your time at Smith?

KANNENBERG: Well, he approved of my going to MIT, but not the living arrangements that were offered. That's my memory, and that's a mystery yet to be solved.

So I went to Smith because I didn't get into Radcliffe, thank god. That's only one word. I can't resist saying that. Because I think if you look back, you'll find that Radcliffe graduates, in spite of being more highly selected, probably, than any of the other Seven Sisters-- At least when I got to Smith, nearly everybody I met didn't get into Radcliffe, and they were all moaning and groaning about it. But I think it's just as well, because the Harvard mystique of putting women down was in great form in those days.

So here I am at Smith College, and I immediately signed up for a math advisor, which was a brilliant move. And I signed up for physics, so I was taking math and physics classes. Most of the freshmen had randomly chosen advisors, who didn't match their interests. But I had this math guy who was an absolute dear, just a great guy and a great professional, in my opinion. And he says, "The worst thing you can do to a student is to under-challenge her. So since you confessed that you had a tutor in calculus, I'm putting you in sophomore math." And I'm going, "OUCH!"

So that's what he did. I was in sophomore math my freshman year, and then I did something over the summer. So my sophomore year, I was in senior math. The handwriting was starting to appear on the wall. My freshman year, I worked hard. The physics course I took had about five or eight people in it, all upperclassmen, and I had to work. And by the time I became a sophomore, I got A no matter what I did, and everybody else graded accordingly.

And at that time, I was very keenly aware, I remember, that my competition at MIT – because remember, I got in, but I didn't go, so it was still on my mind-- My competition at MIT are just, you know, learning with leaps and bounds, and I'm sitting here treading water. (I hope the women's colleges have become more professionally oriented since then.)

Although, you know, between posture pictures [nude "posture" photos were taken at some Ivy League and Seven Sisters colleges from the 1930s through the 1970s] – which I won't go into, but you can find it out if you look it up – and the fact that Smith, except for the founding president, always had a male president and many other awful, awful anti-female, to say nothing of anti-feminist, characteristics, they do bear responsibility for lack of encouraging professional ambition among its students. I should say that a few women did go to medical, law or business school, but I was not "ready for MIT"!

I mean, it's the '50s, OK? Which is not an excuse. The higher education community, especially the Ivies, for women, were the elite schools for women, and therefore had a responsibility, in my opinion. They had an obligation to do better by the women than they did, especially Radcliffe.

By the end of my sophomore year, it was clear to me that I was really falling behind, so I thought about transferring to MIT, because by accident, I met a woman student walking across the campus. These serendipitous things have way too much influence in our lives in general, I'm sorry to say, because we all like to think that we're planning our way in and out of everything. But I met this woman, and she says-- She was actually an intellectual, which was pretty rare, because she thought it was important to take science if you want to consider yourself an educated person. Well, no kidding. And most of these people did not. I don't know what they considered science, but they were busy writing poetry and doing art and all this great stuff. But they were not properly educated, because they didn't do science at what I consider minimum level for an educated person.

So anyway, she informs me that her freshman year roommate came to Smith and hated it from day one [LAUGHS], which is pretty funny. So she spent her freshman year trying to get out of there. How she got there, I never understood (that friend of hers), but she ended up transferring to MIT. So she gave me this woman's information, and I contacted her. And she said that she would be more than happy to set up--

KIM: Your escape.

KANNENBERG: --a day for me to come to MIT and get a tour around the place, etc. But she was by no means going to promote MIT as a thing that I should do or anything like that. I said, "That sounds good to me." So that's what I did: I came to MIT on this day trip that she arranged, and I was terrified and overwhelmed, completely. I thought, "Oh, my god. I'm going to flunk out before I even set foot in the place" -- and almost did.

So that was that. I applied to MIT. In my juvenile view, I thought, "Well, I applied from high school. I got in, didn't go." So they're going to say, "Too bad, too bad. You didn't—" Which is utterly ridiculous, because the admissions view is actually, "Oh, here we hear from this chick again. Let's see if there's something that happened in her life that would make us make a different decision." That's how they actually do it. And they looked, and they saw that I was getting straight A's at Smith, and they probably also noticed that I was running out of stuff to do. So they said, "Oh, we can be the great savior, you know, and we'll give her another chance." So that was how come I got to transfer to MIT.

KIM: Why do you think the transfer student's roommate didn't promote MIT? That seems pretty curious to me.

KANNENBERG: Oh, I would do the very same thing, because she says, "I will give you everything I can to show you what you're going to get. And then you have to decide. I'm not going to tell you it's really wonderful, in spite of the bodies you see lying in the hall." I mean, that makes perfect sense to me. She didn't say it was bad. She didn't say it was good. She had a much harder time than I did, I think; I can't be sure. She ended up being in my class, because she wanted to be an engineer, which means that she had much greater deficiency in her courses when she came to MIT, even though she came after freshman year. She had much greater deficiency because, you know, you want to major in Course 6, it's the most demanding one. And they were looking at her record, and what is this? Too many engineering deficiencies, so she had a much harder time. Anyway, her name was Barbara Wertz. She's dead now, I was sorry to learn.

OK, so I came to MIT. And again, without going into too much hard detail, I met my husband [Lloyd Chambers Kannenberg, SB Physics '61] at our common registration officer's office at Registration Day, September 1959. No, I came to MIT the summer before my junior year, and I took three courses so that I could enter as a full junior. I was really dead set-- I mean, this is the New York mentality, as far as I'm concerned. You know, I graduated high school in '57, and I'll be damned if I wasn't going to graduate college in '61, however ill-advised that idea was. I had actually considered staying at Smith one more year. And my father said, "Well, why don't you just go to MIT and repeat a year there?" Which made a whole lot more sense. But I said, "I don't want to repeat a year anywhere."

So in the summer before I entered MIT-- First of all, MIT gave me buckets of credits for all kinds of things, which I later learned, many years later, is typical of high-quality places. Crummy places nickel and dime you. "Oh, is this really equivalent? Yeah, it's the same basket weaving you have, you know?"

For example, the senior math I took as a sophomore at Smith used this book by Buck [R. Creighton Buck] called Advanced Calculus. And that is the book for math MIT majors as juniors. I deserve credit for that course as much as my cat does, you know? I had no idea. It was ridiculous. "We'll give you some more credit. Give you this, give you that." They gave me lots of transfer credit.

Anyway, in the summertime I took three courses, which is pretty much a full load. I took 6.10 [with a] fabulous instructor. He got a prize for teaching that probably didn't help him in those days, because being a teacher was not rewarded much at MIT. So I took 6.10, I took 8.04, and I took M22, now 18.04.

And I got a C in every one of them. Kind of a little surprised that I didn't do better in one of them, but hey, it was my first time taking courses at MIT. I didn't realize that even though it was a full load in the summer, it was a lot easier than the fall. Come the fall term, and I'm thrown into 8.05 with nothing but physics majors. I mean, that is the express train to death.

KIM: But in the summer, were you shocked by your grades? And did it inform what the fall would be like? You said you had straight A's at Smith, and in high school as well.

KANNENBERG: No, I certainly was fearing and expecting the worst, because I really felt like I was behind the eight ball significantly.

KIM: Mm-hmm.

KANNENBERG: What I didn't understand was in 8.04, for example, in the summer, there were four women in the class: me, my friend Barbara Adams [SB Physics '61; SM Mathematics '61], and two other women whose names are better left unmentioned. The two other women had each flunked the course, respectively, two and three times already – or three and four times; I don't remember. They had an amazing record of flunking 8.04. I figure, if you can't pass 8.04, you don't deserve an MIT degree. 8.04 is just not a hard course. 8.04, not 8.041, the physics major course, but 8.04. That's the course for everybody else: second semester sophomore physics. If you can't do that, you don't belong here.

These two other girls who had flunked the course previously flunked again, while we unprepared first-timers passed!

KIM: Wow!

KANNENBERG: Barbara had finished freshman year, so she had no 8.03 or 8.031. She was seriously deficient in her background for 8.04. She was just madly trying to finish MIT in three years.

KIM: That's insane.

KANNENBERG: She was 16. Yes, insane.

KIM: Whoa.

KANNENBERG: OK, so she was 16. And then here's me. So we have the lame and the blind, right? So here's me coming from Smith with just, you know, not comparable preparation. I mean, I already said that when I was a sophomore at Smith, I got easy A's. I had no serious competition there. (There were too few physics students at Smith to create the needed community of scholars.)

There were seven or nine women in my class at MIT. We're never sure, because--

KIM: In the year? Or do you mean in Course 8?

KANNENBERG: No, no. In the class of '61.

KIM: There were nine women in--

KANNENBERG: Seven or nine; some number like that. We're never sure, because many people were of "uncertain" class membership. When Barbara Wertz came to MIT from Smith – the one who I followed – she was officially the class of '60. But because she studied engineering at MIT, but had mostly humanities at Smith, she had a lot to make up upon transfer to MIT.

KIM: Right.

KANNENBERG: --she ended up getting her degree in '61. She may have considered herself still class of '60. Anyway, stuff like that makes the number of women in the class uncertain. But in any case, it was single digits (the female population). It turns out that's a little bit odd, because I had the opportunity to count up the number of women simply referred to in the class of '60 in *Technology Review* alumni notes, and there were more than 10 just referred to in the column, so it was just a local low. But again, they're statistically not significant, these numbers.

Anyway, here I am at MIT, and I'm in 8.05 with all these physics majors. If you were a math major and maybe a Course 6 major, you were supposed to take 8.05, but I didn't see any evidence of any of those people. And it was a ball buster, completely. Francis Low [MIT Provost from 1980-1985 and Institute Professor] was the teacher – this amazing guy from another world. He's a very famous theoretical physicist, and he took great pride in his lectures. You would go in the class and you would sit there, and it was all so completely clear and obvious. He was just amazing. You would leave saying, "Oh, yeah," you know? And I had no idea. No idea. And then the first exam comes along and I immediately get an F. That was my career first semester. I was one of two people that got F in that class, and that was not good. I got put on probation as a result of that.

Luckily, among MIT's various characteristics, one of them is, they don't bother you, you don't bother them. So nobody stopped me from-- Well, I guess my registration officer could have stopped me from taking 8.06. But no registration officer ever stopped anybody from doing what they want to do, as far as I know. Should we talk about this?

KIM: The probationary period?

KANNENBERG: Yes.

KIM: I think it's important, because you transferred--

KANNENBERG: Oh, right. This is my struggle.

KIM: --from Smith to MIT. It's part of your struggle and your triumph.

KANNENBERG: Thank you for reminding me of the triumph part!

KIM: Mm-hmm.

KANNENBERG: So I signed up for 8.06. I'm sorry; I had it all wrong. It's not 8.051 and 8.06; it's 8.05 and 8.06 for physics majors. This is more serendipity and magic of the unknown world. There was a rumor that a woman who was a year ahead of me had taken 8.06 after flunking 8.05. So I thought, "OK, I'll do the same thing." Turns out that rumor was completely false; she never did any such thing. She may have taken 8.06 without 8.05, which is a whole different story. Maybe she was smart, and that's why she took 8.06 and did OK without 8.05 as opposed to having flunked 8.05. That's a very different story.

But anyway, fat, dumb and happy, I waddled along. And I did a great move: I went to the smartest guy in the class, and I said-- I mean, this is after one semester, but summer was not relevant. I mean, the summer had all these people who were, let's say, not leaders! Me, my friend Barbara, had no business in the Summer School 8.04 class. We had no business in the class, but we managed to get through.

Summer is-- People that flunk out, they have to-- This guy that I was going out with, he was in summer school also. He had to take three courses in the summer; that was a requirement. He had to get a B or better in any course he had flunked, and a C or better in any new course. That is not easy. He did not make those criteria. He did not get back in!

KIM: What?

KANNENBERG: Yes, I'm telling you, it was tough. In those days, they did not fool around.

KIM: Oh, my gosh.

KANNENBERG: Too bad. Well, it's a good thing, because he was kind of a jerk.

So here we are in the second semester. There's this guy in my class, Bob Logan-- [Robert Logan, SB Physics '61; PhD Physics '65].

KIM: In the spring.

KANNENBERG: The smartest guy in my class. And I go to him, and I say, "OK."

First, I should say we had a required course. One of the great things about MIT that always cracked me up was registration was so easy. You didn't do anything. You just sat at home, and your registration came in the mail. Nothing to do. My courses were all required courses. (Most people had one elective; the rest were required courses.)

And that was the other thing: My first semester at MIT, in the fall, I took 8.05, 18.08 (Methods of Applied Math), 8.08 (Physical Electronics), and 8.09 (Atomic Physics Lab). And the one course I was missing from sophomore year, 5.60 (Physical Chemistry), was so thoroughly hated by everybody. Teacher was terrible. Book was terrible. Everything was terrible, which is too bad, because physical chemistry is almost interesting. Moore's Physical Chemistry – great book. We all bought it, and it helped us with--

KIM: I like P Chem.

KANNENBERG: --physics.

Anyway, I'm just starting MIT in the fall, right? I'm taking four physics courses, four junior physics courses junior year, right? This is after all the wackos have been dropped out, all the people who think they're majoring in physics and just can't do it. And this has just got these, you know, supermen and me. And I've got four physics courses and one chemistry. Everybody else has got four physics courses and a humanities course. But I had more humanities than I needed to graduate, because I had come from Smith. A transfer student to Physics, a Junior, taking five science courses. A death wish!

So here I am second semester. I had found out about Bob Logan being the smartest guy. He always asked questions that were off the subject because he understood all the normal stuff, and he just asked other questions.

So I went to him and I said, "OK, Bob. Here's the deal." But this is how I saved my ass there. I went to him, and I said, "OK, Bob. Here's the deal. If you show me how to pass 8.06, having flunked 8.05, then I will be your lab partner in 8.10." Because he had a reputation already from 8.09. He was a theorist. He was super smart. The faculty loved him because he was super smart, but nobody would be his lab partner.

So I had a perfect opportunity. This is the beginning of my sales career, right? I said, "If you help me, if you tell me how to pass 8.06, if you tutor me or whatever it is that needs to be done, I will be your lab partner. Oh, and you have to do everything I say – nothing more or less." Then he agreed to that.

And so we would have lab. And at lab, I would say, “Go get ice for the experiment. Then sit down here and don't touch anything, and then you can be my lab partner.” And then he would come over to my place, and he would say, “This is what you have to do. When you come home from class, you have to take the notes, and you've got to reproduce them out of your head. You've got to derive the Bohr atom, and you've got to do blah, blah, blah, blah out of your head as if you're [Professor] Low up there teaching the thing. You can't just read it and say, “Yeah, yeah.” Because on the exam, they say, derive the Bohr atom, or derive the quantification of angular momentum.” What? That was the sort of stuff he told me. I remember this. He says, “And then after you do all that, if you really want to know some physics, you can do this and this and this.” So I said, “OK, sir.” And I saluted, and I got a B in the course—after flunking the prerequisite, 8.05!

KIM: Nice.

KANNENBERG: --because I did what he said. And he was cool and smart, and he did exactly what I asked of him. There was nothing fishy about it, absolutely. He basically taught me how to study. I had never had to do that before because in high school, it was all obvious. And at Smith, it was close enough to obvious, I guess. And then I shepherded him through lab. And then the faculty kept letting him out of these other lab courses.

KIM: Really?

KANNENBERG: Yes, yes. It was great. For 8.11, which is thesis, one of the things you have to do is you have to get up in front of the rest of your class and you've got to give a lecture about your thesis, whatever it is. One of the courses that we had to take was this EE lab class, which involved a multivibrator. You had to build a multivibrator, and blah, blah, blah, blah – whatever, you know? And he was allowed out of that because he told the physics faculty that he couldn't waste his time with that. And they let him out of it because he was so smart and so— “Why can we waste his time with that when we can have him doing some theoretical physics, which normally is not allowed to undergraduates?”

KIM: Where did he end up going?

KANNENBERG: I don't know. But he got a PhD, and he's someplace in Canada. [Logan is Professor Emeritus in the Department of Physics at the University of Toronto].

So then, in the space of one year that I get the B in Atomic Physics II, in 8.06, immediately I get brave--

Oh, I forgot to say this other thing that's important about my character, I guess, is I got this idea that it was MIT's fault that I flunked 8.05, because they admitted me from Smith College, and therefore they should have known what I was coming in with. And they should not have let me go into the wilderness all by myself without any support at all, which is true. Nowadays, if you have somebody who's lame in some way, you don't just step over the body and you walk down the hall. You get rid of him, or give him some help, or something like that. (Actually, MIT had a special office to look after the "boys" from the "3-2" program: three years at a liberal arts school and two years at MIT equals two bachelor's degrees. For a woman transfer—nada!)

So I had this idea that this was not my fault; It was the Institute's fault. And that was very important, because if I thought it was my fault, then we would have had what you referred to as the imposter syndrome, which is, "I don't belong here." I flunked this course, so what more do you want? It's an absolutely objective course. One other person flunked it. I don't know who that person was. They probably just didn't do anything. But I mean, what more do you want? I flunked the major course that selects physics majors. Either I should become a humanities major, which is not going to happen, because I left Smith, so why would I want to major in that? So I got this idea, and that's very therapeutic, because it allows you to pretend that you didn't do anything wrong. And therefore, you are recoverable, I think. That was the idea.

KIM: That was the mentality that MIT gave you, or you just developed it yourself?

KANNENBERG: I don't know where I got it.

KIM: I just want to know the secret, Susan!

KANNENBERG: I don't know where I got it from. But then, a while later – and I don't remember how long later – I learned things like the culture at MIT. The culture at MIT, I learned eventually, was, "Don't scare the horses in the street, so keep to the right, so you don't scare them, so you don't bump into people." MIT does not have any rules except rules that are necessary to keep them from scaring horses in the street, OK? Unlike Harvard, where they have rules just so that someone can feel like they have power, MIT doesn't do that. They don't have rules, because it just sits in the way of people's fulfilling themselves and doing clever and creative things. The culture is so oriented toward getting stuff done— learning, achieving, discovering that they have no time for silly rules for the sake of status.

A son of a friend of mine came to MIT. He went right to his registration officer, and he said, "These courses are trash. I don't want to take them. This is my plan." And he tells the guy his plan. The guy says, "OK." He wasn't going to, you

know, go study belly dancing in some other school and try to get MIT credit. He had a whole program of what he wanted to do. And he ran it past his registration officer, and as long as it was academically sound, they were not going to stand in his way.

KIM: Really?

KANNENBERG: That's the way MIT is. I mean, it's like, "Why would we stand in your way? And besides, I'm busy. I have to do research. Get out of the way." This is the ethic. This is the culture. There are no rules except those necessary to avoid scaring the horses in the street.

KIM: How would you summarize the objective to having no rules?

KANNENBERG: The point is that this allows for the greatest variety of weird, really smart people. I mean, somebody like Alan Turing [the renowned British mathematician who was known for his influence in the early development of computer science and artificial intelligence] got major grief for his homosexuality. I like to think that if he were at MIT, he would have the best time of anyplace. So you have other people like that who have something about them that other people don't like, and if they have an opportunity to make a rule, they pound him. At MIT, I'm just guessing, that's the reason for the lack of rules. Another reason is faculty want to get back to their research. "You're in the way. Get out of the way. Go do what you want, you know?"

KIM: Right.

KANNENBERG: Obviously, this can run into problems when you have these occasional students that are found living in an air conditioning duct and things like that. There ought to be a squad for that. But the educational aspect of it is generally pretty good, I would say, because it protects the philistines from their own evil.

KIM: Expand on that.

KANNENBERG: Well, the philistines are the people that want to make rules just so they can feel powerful, so they make rules. And the rules invariably will run interference with somebody who's really, really smart and has some great idea and might do something great. And they get in the way.

KIM: Can you tell me more about your fellow students? Whether any of your peers were radical at this point?

KANNENBERG: No, no, no, no, no. First of all, I didn't know any women, as I said. Barbara Adams, then Barbara Levine, my classmate, who came from Bronx Science [New York's Bronx High School of Science]-- You know what's funny? At our 50th

reunion, she showed up, and I said, "Well, we're 72, or, 71. I was 71 and most were 72 because they graduated at age 22. And she whispers, "Sixty-eight." She's four years younger, but she was my friend because we were both Jewish and we got along – she was from New York. We were just friends. I saw her several times after I graduated – I visited her and so on. (She came from junior year in high school and did MIT in three years.)

I met my husband there, yes, in the fall. I remember this. I was coming home from a date about 6:00 in the morning – black stockings, high heels, the whole routine. And I went to the registration officer's office, because my date said, "You might as well be first there." And here's this guy, my [future] husband, waiting there. And he puts on this amazing act. He didn't say hello or anything like that. I don't even remember what he said, but he was an original with his own story! But then, later on in the day, I ran into him in the hall and he said, "How are you doing? Are you finding everything you need?" And all this stuff. Because he knew right away when he saw me, this is something new. Not seen that before.

KIM: What, a woman?

KANNENBERG: No, somebody that looked like me. I was good looking – high heeled shoes, black stockings, you know? And the rest of these people were MIT people. That's one of the reasons that I often have a hard time wondering whether I should have gone to MIT from the beginning. I mean, being in a society of women as ill-advised as many of them were, had its value.

I'm not sure that the benefits were worth two years of my life and being on probation. And it cost me in graduate school, of course. You have an F in a major course, and you apply to graduate school, they think you're insane. Why are you applying to graduate school? You have an F in your major course. It's insane. That black mark stayed forever.

Anyway. But I met him, and he always tells everybody "We were Course 8, year three, our names began with H through L. It was destiny. MIT destiny. MIT-type destiny." You know, all the quantum numbers lined up kind of thing. That's what he likes to say.

Anyway, about radicalism amongst my peers. They were radical in what respect? There was no feminist consciousness whatsoever. None. I have to say, I knew another woman student who was a year after me who got into Radcliffe and didn't go. I'll never get over it. She was great, and she was a physics major. I actually got her a thesis advisor because of the way I do things – getting around and knowing lots of people and making connections, and stuff like that. She was

nice. She's married and has kids, and very normal and everything. But she said that when she went to class, people wouldn't sit next to her.

KIM: At MIT.

KANNENBERG: Right. And I never heard of that. Now, when I went to my classes-- Now, maybe if I started as a freshman, they would have been jerks. I don't know. I just don't know. But I went to my classes. It may be that they weren't enough seats. I mean, we didn't have great big-- You know, 6-120 was the place where we had 8.08. The Francis Low class was in that Building 1, first-floor room. And I don't remember anybody being bad to me in my classes.

There was a guy who didn't think women should be at MIT. And I remember I was in Pritchett Lounge [in Walker Memorial] having lunch with my husband-to-be, and Logan, and a few other people. And this guy, this particularly obnoxious guy, I don't even know who he was. Not in my class or anything. He comes over, and he starts ranting and raving a lot of swear words. And Logan says, "Why don't you bug off? Why don't you leave? And the guy says, "Well, if she wants to be here, she can hear that stuff." And Logan says, "I don't want to hear it." So there was very small amount of harassment like that. I remember one time, that guy went through the door, the exit to the Infinite Corridor – the other end, onto--

KIM: Into the Green?

KANNENBERG: The Alumni Pool. He saw me coming and he waited for me to be just in the right place. He swung the door back so it would swing in my face. And I remember thinking, "You are so sad. You're so sad. First of all, why are you wasting time with me? I'm not in any of your classes. My existence should have no impact on you, number one. Number two, there's such a tiny number of women here. Why are you worried? Number three, if women don't belong here, why don't you let them flunk out? There's nobody watching them and taking care of them. There's nobody making sure women don't flunk out. That's for damn sure."

In fact, when I interviewed from high school, the interviewing admissions director, which they did in those days, said, "We only do one thing for women. One. We make sure that freshmen women have one other woman in their classes, period. That's it. After freshman year, they're on their own." And apparently, they don't do anything about living arrangements. No. And there's no athletic program for them. Nothing. Nothing. So that is their official position. If that's what their admissions officer is telling a high school applicant, that was their official position. So this guy is getting himself all worked up over "women don't belong at MIT," so he's going to harass them out of the place. And I'm like, "Why don't you let them flunk out by themselves if they don't belong?" Anyway,

I went to my classes and it may be that they weren't enough seats. Room 6-120 was the place where we had 8.08. I don't remember anybody being bad to me in my class.

Anyway. I met my husband, and we were friends. But most of the time that I was in my undergraduate years, I went out with graduate students, because they had money. I went out with one guy who is still a major donor. He's very wealthy. He had his own plane then.

KIM: What?

KANNENBERG: And he took me various places – oh yes!

KIM: As a grad student?

KANNENBERG: Yes. Course 6. I didn't mess around with undergraduates because they didn't have any money. I even had real good values in those days.

KIM: I'm wondering if you can say more about what the political climate was like at MIT – maybe beyond women's rights. Activism in general.

KANNENBERG: The best way I could describe it is, when we were students, was that MIT raised the tuition every other year. When my husband started, I think the tuition was \$1,100. And then they raised it to \$1,300, and then \$1,500.

KIM: A year?

KANNENBERG: A year.

KIM: Whoa!

KANNENBERG: Yes, it was different. And when they raised it to \$1,700, the students hung banners out their windows; that was the extent of activism. There weren't marches or demonstrations, to my memory. I wouldn't put money on it; I just didn't notice it. I was too busy trying to survive. They would hang banners out of their dorm windows reading, "\$1,700: Too Damn Much." And there was some kind of a comic figure on campus and that was his rallying cry: "\$1,700: too damn much" (like Shazam) and became Wonder Wart-Hog [an underground comic book figure]. Pretty funny.

Another thing: The place was very sexist, in the sense that VooDoo was extremely sexist – and I bought all that.

KIM: Really?

KANNENBERG: Oh, sure.

KIM: That magazine is quite fun.

KANNENBERG: Well, it's not what it was. And women are involved; they weren't then. And of course, Tech Show. Tech Show was all men if I remember right. I don't think they had any women in the show. I don't remember if they had men dressed up as women. At Harvard, it's an official thing – at the Hasty Pudding – where men dress up as women. Apparently, as of now, 2019, they've joined the 19th (yes) century, and now they have real women in the show. Wow. The MIT Tech Show went by the boards, too, sadly. A lot of stuff went by the boards, interestingly.

Anyway, but I bought all that stuff. I was a 'loophole woman.' I had said, "I'm better than most women – me and these other extremely unusual women. Don't forget, in those days, there were a few women who flunked out for reasons that if they'd had support, they would've survived.

There was one woman who was just a very disorganized person; she had no idea how to organize her life. I'm sure she was smart enough. But you can be really smart in high school and look terrific. Then you come here, and they dump this stuff on you, and you have to have other skills to manage that. And if you don't, they don't help you. Sure, it's different now.

That was the other thing the admissions guy said to us in addition to "This is what we do for women: one additional woman in every class." He said, "As far as admissions goes, all women applicants have to be as good as men. Plus, they have to be judged by us to be able to manage in this environment, meaning there are no other women around, and they have to be somebody who's not going to be scared or put off. They have to be able to get to their classes and do their thing. So those are the criteria."

There was absolutely nothing that I can remember – absolutely nothing – that ever said that women had an easier time at MIT, or women had an easier standard to meet to get in, or anything like that. That is something that happened many years later, and I wouldn't want to address it, because it's all such poppycock – nonsense and poppycock.

The other women in my class, I think they all graduated. There were a couple who were just outstanding. They'd just get A in everything. These are physics majors I'm talking about. But most of the women in my class were physics majors, one or two math majors. That was it. I don't even remember an engineering major. There might have been a double-E major, but I don't remember. There wasn't a computer science major in those days; it didn't exist. Computer science didn't exist.

Oh, yeah – this is a great story. The summer after my junior year, I went back home to New York and I found a graduate level course at Columbia University in atomic physics, which looked like exactly 8.05, which they give to juniors at MIT. But it's a graduate course at Columbia – a well-known, easy school for girls with basket making, right? (That was a joke.)

KIM: From what I remember, a lot of people from the Manhattan Project came out of Columbia.

KANNENBERG: Well, I signed up for this course and I took the class. And as I recall, the Long Island Rail Road was on strike that summer, so I got my mother's car and I drove from out on Long Island, in Suffolk County. I drove in every day so early. I got in at about 6:00 in the morning, and I got a parking place right in front on 125th Street. I went every single day. And then when I came home at the end of the class, there was always this guy waiting for me to get my space. And then I came home, and I went back to sleep. But I got an A in the course. And I mean, let's face it: the help that I got from Logan for 8.06 clearly did not go to waste, you know?

So I come back to school in the senior year in the fall and I go to Francis Low to get approval for that course to be credited to my physics major course that I flunked – 8.05, right? He looks at me suspiciously, and he says, “You transferred from Wellesley, didn't you?” He kept on saying that every time I saw him. “No, I did not transfer from Wellesley. I transferred from Smith.” I mean, if it matters, you know?

So he looks at this, right? – I'm bringing him my registrar records from Columbia. This is lesson number 75 of my experience: I had taken the trouble to investigate, and found out that he got his PhD at Columbia, so I was ready. He looks at it, and he says, “Do you think this course was equivalent?” And I said, “Well, it was Columbia graduate school. I hope so.” And then I shut up. I could see the wheels turning in his head. And he's saying to himself something like, “There's no point in arguing with her. This is not going to end well, and it's not my problem anymore. She got a B in 8.06 by some magic.” Maybe he thought I cheated. I don't know. I never thought to ask him. I never thought to say, “You know what, sir?” I mean, he was a professor, and you didn't speak to him as a colleague. It never occurred to me to say, “You know how I got a B in 8.06? This is what I did. It was absolutely legitimate. I'm not going to have a fake degree from MIT. What the hell is that worth?” That's bullshit, you know?

Probably the reason I didn't do that was because maybe, like most people, he thought, “Girls don't belong here.” I mean, this is all just some kind of joke. You're just a statistical accident down there in the noise. That's what women

were in those days. It's very interesting. In the Alumni Association point of view, for example, there were no women at MIT, period, because the total number of women was so small. "We don't have to address them as women." My father used to get letters from MIT: "Dear sir, your son, blah, blah, blah." And I said, "Don't give them a frickin' penny if they don't acknowledge that there are women that got a wonderful education that they're trying to help you unload your money for. Don't give them a penny as long as they—" I mean, this is after I became a radical feminist and everything.

KIM: What about your senior year?

KANNENBERG: So, my senior year. It was great. This is kind of not that important in the big picture here, but my senior year, I actually said, "I'm going to take a technical elective." That's how far from the brink I'd come. I want to show myself that I can actually do it, that I'm not just still hanging on by my teeth in this place. So I took Partial Differential Equations. I don't remember anything--

KIM: Whoo!

KANNENBERG: --at all.

KIM: 18.03?

KANNENBERG: No, no, no, no. That's a required course (18.03).

KIM: Right. 18.03 is advanced--

KIM: Differential Equations.

KANNENBERG: No, no. 18.02-- I'm sorry, you're right. 18.02 is Calculus II. Then--

KIM: Right.

KANNENBERG: --18.03 is Intermediate Calculus, and 18.04 was Differential Equations. And 18.05 was Advanced Calculus, also required for physics majors.

KIM: Right. 18.06 is Linear Algebra.

KANNENBERG: Anyway, the second semester junior year, I took 18.08, Methods of Applied Math. The guy who wrote the book taught it, and he was OK. The book was OK. I took all that stuff when I was supposed to. But here I am a senior, and there are no more math courses you're supposed to take. And I thought, "Partial Differential Equations. Hmm, I wonder if I can do that." I took that course, and I passed it, so that was really pretty cool.

Just to give you an idea of the flavor of the place, 8.07 sounds like an innocent low number. Phil Morse, teacher of 8.07 [Professor Philip M. Morse, a physicist

who was considered to be the founder of operations research, having pioneered that work during WWII and founded the Institute's Operations Research Center] was fantastic – another fantastic showman. He talked about how they used statistics to figure out whether German V rockets, during the war [WWII], were actually aimed, or whether they were accidentally floating all over the place. This is very cool. It's the real thing. Flunking 8.07 kept a lot of physics majors from graduating, and they just laughed at you as they flunked you. That's how it was in those days.

So my husband, he's now a confident, retired full professor! That's all there is to it. He just is. I look at him and I say, "Do you even remember how you were when you were an innocent, naïve, scared MIT student?" He sat through 8.07 as a junior in order to make sure he passed it when he took it as a senior, because he was so terrified of flunking it. He's writing his notes on his electromagnetic theory in his graduate courses he taught and all this stuff. But I mean, he's 80 years old, and he's been a professor, and he's been all the things he's been. So he's forgotten about those scary days

KIM: So you passed 8.07, right?

KANNENBERG: Yes, I did. I was duly afraid, so I did whatever I had to do, which doesn't mean anything illegal. I didn't do anything illegal. But I'm sure I went over the notes, and I'm sure I used Bob Logan's instruction in everything I took after 8.06, since I learned how to survive. So yes, and I graduated.

But I did have another MIT experience which is hilarious, which is when I came to MIT as a junior in 1959. My class was the last class which was required to take ROTC as a freshman. The girls were exempt, because, of course the girls were exempt; there was no such thing as girls in the military (ROTC). I mean, there were a few, but they were all unusual, you know? So here I am, and I'm looking to make sure that I have all my credits to graduate. So I go to Dean Svenson, Dean of Academic Performance, and I say, "Dean Svenson, I came to MIT in 1959, but my class came in '57. Are you going to count me as someone who entered effectively in '57, and therefore was exempt from ROTC? Or are you going to count me as someone who came to MIT in '59 – albeit as a junior – and therefore had to take something else for those credits, which applied the year after my class were freshmen?" Starting in the fall of '58, if you didn't take ROTC, if you were a boy, you had to take ROTC, and if you weren't, or, if you didn't take ROTC for some reason, whatever the reason was – you're not a citizen, or whatever—you had to take something else for that credit. And the guy was such a bonehead. He said, "You're a woman. You couldn't take ROTC." I said, "I understand that."

KIM: "But do I need to take something else?"

KANNENBERG: He never could understand it. He never could understand enough to say, "You do not have to make up those credits. You only have to have this many credits, like every other girl in your class, or not." He could not give me an answer, because he kept saying girls are exempt, and I kept asking. Finally, I said, "Murphy's law," which I had learned about, "is going to apply. I'm going to take something else to make sure I have enough credits."

I forgot to say that the second semester of my junior year after I flunked 8.05, I took only four courses because I wanted to try to make sure I didn't flunk anymore. This place was just too much. It was just such an incredible experience. I was so overwhelmed. And I remember feeling guilty, if you can believe it. This is how bad this variant of the imposter syndrome is: I didn't think I didn't deserve it. I just said, "For whatever reason, I'm not cutting the mustard here." I said, "If I were a boy, I would not be allowed to have only four courses. Because if you only have four courses, you don't get a 2-S deferment, and I'd be over there in Vietnam." I remember feeling guilty. Eventually, I realized that if I were a boy, I wouldn't be in this spot in the first place. I would have come here as a freshman. I would be taking my courses. So why am I wasting all this energy—

KIM: Worrying. Feeling guilty.

KANNENBERG: Feeling guilty. Because as a woman, I don't have to have a draft deferment. That was the least they should give me.

KIM: You're fighting your own war, Susan.

KANNENBERG: Yes, exactly. I'm only saying these things because they shed light on what the atmosphere was like.

In fact, in my classes – for example, 8.09 and 8.10, which is Atomic Physics lab – we had to do these amazing things. One thing we had to do was we had to build a ball-peen hammer out of stainless steel. And the guy who was the technician in that lab, everybody loved. He was really a nice guy, and he did everything for me, so I never got to make the goddamn thing. He would do it for me. I don't think I asked for help, but he was always helping me, and in the '50s, you didn't realize how damaging that was.

I'd have to machine this. You had three blocks of steel, and you had to use a lathe to machine this. And then you had to use some other tool to do this and do that, and all this crap that somebody thought was relevant to being a physics major. I have it in my house still. It has my initials embossed in it. And my

husband has his somewhere in the house. So I have my ball-peen hammer, but it was largely done by the technician because he was always helping me. That was sort of sad, but I didn't have the consciousness at the time to realize that you can be helped into incompetence, you know? And that's not a good thing. But I didn't know any better.

And then by contrast, when I was doing my senior thesis project, I had this rig someplace in the basement of Building 20. There was a technician there, and he was not very helpful, and he had an attitude. I complained to my thesis advisor, my physics professor, and he said-- You have to understand, he comes from the old country. He's a Czech guy, and he made some very subtle suggestions about the guy's attitude about women. I remember thinking at the time, even though I was not a feminist, I remember thinking at the time, "I have my own problems. I have my own problems. This is his job. It's his job to support me, and fix stuff, and build stuff, and do whatever it is that I need for this project. And I shouldn't have to come to you, my thesis advisor, every time I need something done for this experiment, because he won't listen to me because of a prejudice that you're telling me that I have to understand. I have enough on my plate to understand getting along here as a woman."

KIM: But you prevailed, eventually, and you made it to grad school. Can you talk about that experience, after MIT?

KANNENBERG: Well, obviously, with one big fat F on my undergraduate record at MIT, that was not a good omen for getting into graduate school [to continue studying physics]. Sure enough, I only got admitted to one, to Penn. It's a good school, and I went there for two years.

The first year, I had nothing new. It was the same stuff I got at MIT, same academic stuff, but they had very good people there, good faculty, and I came back for a second year. But during the second year, we were asked to find a research position to give up our TAs for incoming first-year students. The one person I talked to said that women aren't good in the lab, so I should stay as a teaching assistant. I guess I thought that he was speaking for all the experimentalists, and so I kind of gave up at that point. I don't remember the details of that. I thought he was way out of line. He didn't have a PhD. But you know, it was 1962, and if I complained to anybody in the department, would they care that some woman is discriminated against?

In those days, it's very important to remember that discrimination against women was legal and common. The few women that stuck out were like a photon breaking up into an electron and positron temporarily and then reuniting so nobody could observe it. It's just how it went.

Interestingly, Fay Ajzenberg-Selove [Nuclear physicist known for experimental work in nuclear spectroscopy of light elements; recipient of the National Medal of Science] was married to Walter Selove [Experimental high-energy physicist and expert in electronic detection systems], who was on the faculty at Penn. Fay was not on the faculty at Penn; she was at Haverford. I don't know that she would have had any influence either way.

KIM: Can you tell me what it meant – the lack of awareness of discrimination prior to this?

KANNENBERG: Oh, exactly. And as I just suggested, and some of what happened to me at MIT, not with respect to discrimination, but in answer to your question, just confronting problems-- “OK, this happened, so you just do your best.” As Dorothy Weeks [SM Physics 1923 and PhD Cognitive Science 1930], a very well-known MIT woman graduate and a personal friend, [would say], “If you can't get there going straight, you got to go around.”

But if you're aware of discrimination, it kind of puts an external barrier in your way. And not being aware of it, you don't just think of it as a barrier. You just think of a way to get around it. If you're aware that it's discrimination against women, you might just give up because you know they won't let you in.

In fact, as I mentioned earlier, before we were recording, when that guy turned me away, I remember thinking to myself, “How many additional, extra barriers do women have to face getting into MIT?” Women have to face extra barriers. They have to be better than the men. Graduating, you have to be better. Getting into graduate school, you certainly have to get-- And on and on and on. And I kept thinking to myself, “When is this going to end? When have I finished with all the extra barriers?” And then I suddenly realized, it's going to end when the last woman is finally kept out. That's how it works.

In any event, during my second year at Penn, my husband-to-be, who [as I've mentioned] was a guy that I met as a junior at MIT when I first came there, called and informed me that if I wanted to get married. He was willing, having figured out that he needed a life partner who knew about physics. I think that's a great idea. That was my qualification, which is pretty funny. I had plenty of other offers, but I think his was the most humorous.

KIM: His criteria.

KANNENBERG: So here we are. He was at University of Florida, and I guess he had realized that he had recovered from his experience of being downtrodden at MIT, which he deserved. He just didn't like it, so he went to a graduate school where he could be king of the road again. And at that point, he was ready to take on some more

serious challenges, which meant coming back to the Northeast. So we both applied to Northeastern, where we knew some faculty; some MIT people had come over there. We both got in, and that's where we both finished PhDs. He finished in '66 in Theoretical Physics, and I finished in '68 doing an experiment in nuclear physics at the Harvard cyclotron.

I don't know how important this was, but my job applications reflected a sexist (if unwitting) attitude on my part. I'd sign them 'Mrs. Lloyd Kannenberg.' Maybe they didn't notice that, or maybe that didn't matter. Maybe they weren't going to hire me anyway.

The only job I was able to get was at this really, really crummy college down the street. But I enjoyed it, because the students are always fun. Also, you get this messianic view – that because the place is so bad, you're lending a rescuing hand to these people. In fact, I had a few students who I actually placed in good graduate schools, and that was a reward by itself.

Meanwhile, the women's movement had started in around 1970 in the Boston area. My first reaction was pretty negative: that 'I am an exceptional woman and the rest of these women deserve what they have' – a typical 'queen bee' attitude, as the literature of the time described it. But eventually, I realized when my consciousness was raised, that the National Organization for Women was into activism.

And I did do a lot of things. I testified at the Mass Food and Drug Commission. It was on TV, on the safety of feminine hygiene products. I testified on the basis that this was a product that was developed to take advantage of women's negative feelings about their bodies. That was definitely true. And of course, being a somewhat scatological reference, the TV lights went on for me instead of for all the neonatologists' challenges and all the other technical pros who were testifying against this stuff. So that was pretty funny. My students loved it.

I did a lot of public speaking on women's rights and the significance of the Equal Rights Amendment, the Civil Rights Act of '64 and other legislative and legal things. So I would say I had a leadership role in the women's movement because of the public speaking. I just did a lot of public speaking, which was fundraising for NOW [the National Organization for Women].

I spoke at Curry College. I went to a Westinghouse manufacturing plant. I went to a lot of places, and that was very interesting. It was quite a challenge at Westinghouse: it was all men. They were all drunk, and I figured I would get pelted with tomatoes, but I figured the fee would pay for a cleaning bill. So that was definitely very challenging and very interesting and important.

NOW did a lot of really, really important things. I was in a demonstration outside the Copley Plaza over the inclusion of women in Order Number 4, which was an executive order of the Department of Labor that required federal contractors to not discriminate on the basis of race. We were there to ask them to make sure to include women, too, which they probably never did. There were cops everywhere, as if the women marching in Copley Square were dangerous!

Every step of the way was groundbreaking. I often think now that my involvement in the women's movement might have been the most important thing I've done, because it made the most changes that affected so many people.

For example, I bought my first car in 1968, and I wanted to finance it myself. I shouldn't have had to finance it myself, but, well, I couldn't get credit in my own name because in those days, as late as 1968--

KIM: Whoa!

KANNENBERG: --even though my husband and I had exactly the same salary, we had the same position, we had the same degree of accomplishment, but he got all the unwanted credit cards in the mail and I got none.

When I went to the bank and asked to apply for a loan, I said, "Don't expect my husband to sign this, because if he does, then the credit goes to him, and I don't want the credit to go to him. I'm wasting my money even borrowing money to buy this car because I'm only doing it because your industry won't give me credit that I deserve on my own, just like my husband has."

The whole credit issue was really quite amazing. On the issue of public accommodations, the Colonnade Hotel [in Boston], which I will never patronize, wouldn't let unescorted women in their bar in the evening. But N.O.W. confronted management with a recently passed anti-discrimination law in Massachusetts—

KIM: Really?

KANNENBERG: And, of course, we know that Locke-Ober's [an upscale Boston restaurant], which is deservedly dead, had a men's-only lunch restaurant. It was not a private club. It was open to the public, but only to men. And all these things were just accepted and taken for granted all over the place.

KIM: Wow.

KANNENBERG: In fact, somebody wrote about Locke-Ober in their MIT alumni notes without stopping to remark how outrageous that was. I mean, I don't care if it was long

ago. It was outrageous then, and we don't have such things now. Even some of the anti-discrimination laws in the State of Massachusetts apply to country clubs which are private. That's another whole story.

I was very, very committed to the women's movement and I did a lot of activism. I also did a lot of letter writing, which turned out to be not trivial at all. It's very effective when you do it. It's laziness that stops people from doing a lot of things that they could do. It's not that hard to write a letter. But if you have 10 other people also writing letters, then you have a chance of actually making a difference.

KIM: Right.

KANNENBERG: And that's what we did. We wrote to the advertisers, and I developed a slide show, which consisted of slides of advertisements which depicted women in an unfavorable light. The advertisers never thought of it that way because they didn't care, and they didn't think – or even care to think.

Like, for example, in one ad, the caption was "Dumb Blonde," and the text in the ad was, "Even your secretary can understand this system." It was some sort of clerical system. We called these guys up and we said, "This is not a nice way to refer to women." And they said, "Oh, we're just kidding, and wait until you see the next one. You'll see that it's so much better."

KIM: Oh my god.

KANNENBERG: Well, the next one was a pair of lips, but it didn't say "Dumb Blonde." It said something else that wasn't manifestly offensive, but, I mean, this is the kind of stuff that we had to fight for years. We wrote letters. You know, a full-page ad in The New York Times that showed a woman with a leash around her neck, obviously naked under a fur coat, talking about everything she would have to do to get this fur coat. It just went on and on and on. Most of that stuff is not around anymore, but--

KIM: Thank goodness.

KANNENBERG: --I can do my slide show for a suitable payment!

KIM: [LAUGHS]

KANNENBERG: Some of that stuff is still around, but it's not too common. People have just gotten used to it. And I would say, sadly, that an awful lot of people just have no idea of what it was like just a few years ago, 30 years ago. It's not that long ago.

KIM: That's true.

Meanwhile, while you were part of the women's movement, it seems like you were very involved in MIT alumni/alumnae associations. I mean, that's how we met, at an AMITA event, right?

KANNENBERG: Right. Yes, that was one of the interesting things. In 1976, I was elected president of AMITA, the Association of MIT Alumnae [which supported funding for this oral history project], and that was the heyday of the women's movement.

I was not in a leadership position in the sense of, I wasn't an officer, president, or anything like that of NOW [the National Organization for Women], but I was active, as I say, doing a lot of public speaking, letter writing – a lot of other activities. And I was constantly made aware of how different the consciousness of my MIT female colleagues [was]. They were not NOW fans. They were largely – I hate to say this – they were largely 'queen bees' or 'loophole women,' or just plain not feminists. Some of them were people who graduated MIT, and they didn't work. They never worked. Or some of them worked somewhat, and then stopped working.

But none of the women in AMITA that I can remember-- I shouldn't say none; there was a handful – my vice president, for sure – who were activist feminists. But most of them were not. Our job was to promote the well-being of MIT women, also for the benefit of MIT. AMITA's mission statement refers to all this. So I tried to focus as much as I could on the feminist aspect, having programs having to do with women's careers.

We had a number of other activities and events that addressed the kinds of problems that women professionals would face. One of the things that we started, for example, is the "Guerrilla Guide for Women in Business and Industry."

[The "Guerrilla Guide" was an IAP [Independent Activities Period] class designed to help women students at MIT understand and get practical guidance for dealing with attitudes about women in the workplace that they might encounter after graduation. It was co-taught by alumnae Lita Nelsen [SB '64; SM '66 Chemical Engineering; Sloan Fellow '79; and director of MIT's Technology Licensing Office for 23 years] and Dr. Christina Huk Jansen [SB '63, SM '66 and PhD '71 Materials Science and Engineering, one of the Institute's first then-recent graduates selected to serve on the MIT Corporation].

KIM: Oh, Lita is one of my mentors.

KANNENBERG: That's great. That program went for many years. I mean, it just went on and on and on and on. I tried several times to have somebody record them. They had

written up this program that they gave during the IAP, and I knew that if that could be converted into a book, it would sell like crazy. One of the ways that things are successful at MIT is if you identify a problem and then give the solution. This is a very practical problem that students care about, and I thought that it would have sold like wildfire. But the big stumbling block was we needed to record all the sessions. That wasn't a stumbling block. That was easy; what we needed to do was Lita and/or Chris would have to go through it and remove all the actionable comments they made, legally actionable.

KIM: Oh, I see.

KANNENBERG: For example, one of the pieces of advice would be, if you are a parent, bring it up. It's illegal for the interviewer to bring that up, but you could bring it up. You could say, "I have two children, and I've never missed a day of work." Anyway, that Guerrilla Guide program, sadly, is lost to history, except for those who remember it. (Maybe there is some record of it?)

As I say, the example I gave was this one that, you know, you can bring that up because the interviewer is not allowed to. But you know the interviewer is thinking this stuff, even if he – likely, he – can't bring it up. It's illegal for him to bring it up.

ANNE KIM: [LAUGHS] Right.

KANNENBERG: So if you say, "I have two kids, and I've never missed a day of work for any reason."

KIM: You're not allowed to also ask how old someone is, but an interviewer asked my friend, are your parents still alive? – to try to get her age out of her. Or, "Have you ever had children?" You can't ask any of these questions! It's ridiculous.

KANNENBERG: Yes, that's really ridiculous.

KIM: I was wondering whether you could reflect on the importance of the projects you helped create, including the oral history project we're doing this interview for right now.

KANNENBERG: Sure, let me do my best. As for the Guerrilla Guide, I did ask Chris and Lita to do that. And I did stimulate or encourage a lot of the different programs we had, and many of them were just tremendously successful year after year.

Unfortunately, the old saying in industry is, "What have you done for me lately?" Whatever you did 10 years ago, or 20 years ago, or 30 years ago isn't worth anything unless you continue to do it. So I'm really, really hoping that the

young women graduating from MIT today will understand from these oral histories that there is a place for MIT women graduates to get together, that there's a reason for it. That there's room for it. That there's a place for it.

And it doesn't reflect discrimination – activism against discrimination, overt discrimination, like what I faced or what Chris and Lita referred to when they talked about questions that weren't allowed to be asked [of women applying for jobs] during interviews and how you should deal with the fact that they're thinking of the question anyway.

But even with all that, there's still a good deal of discrimination. Until the last one of these old fogey males – and, unfortunately, some women – die off, and they are not replaced by people who think the same way, we're still going to face it.

There still are special considerations that apply to women. For whatever reason, no matter how nice and friendly your husband is, and no matter how much paternity leave companies give, that's just such a bunch of baloney, in my book. It's the maternity leave and what you do that allows women to combine motherhood and the job, because guys seem to have done it just beautifully up to now.

So as far as I know, guys have not had to pay any price for having kids at home. I'm sure there are some, the few guys who've sadly been widowed or for whatever reason. But generally speaking, they have the ability to compartmentalize. When they're at work, they're at work. And if they're told they have to travel to Singapore for a week, they just make the reservations.

ANNE KIM: Right.

KANNENBERG: I guess for myself, all I can do is look around, and say that my consolation for being very old now – 79 and a half – is that I was there when a majority of these changes were brought into being – brought into being, not just happened. I have played a part, and it was really fantastic.

It's nice to be able to reflect on that, what can I say? I would hate to see a reversal of any of this. And I worry if there's a contingent of the electorate that doesn't think that equality for women is high priority, and vote, and the electorate starts to act in a way that's not so-- That's not a good thing.

Women have to become politically active. Not just women, right-thinking men [too]. And I've said many times, a right-thinking man is better than a bad-thinking woman, although not everybody agrees with that. There are some

people who think even a bad-thinking woman is better. That's just wrong. That's just wrong. Right-thinking people is what you need.

That means you got to go out there and proselytize all the time. You've got to find a nice way to do it. You don't want to piss anybody off. Ideally, you want to get to that young girl right now who's in middle school and who's very good in math and science.

I was lucky. Nobody gave me any crap for being a stellar math and science person. I never, ever had that experience. But I have friends who are MIT women who were--

ANNE KIM: Harassed?

KANNENBERG: Maybe not harassed, but one [as I said earlier], nobody would sit next to her in lecture halls. I can't even imagine. And she was nice. She wasn't even obnoxious or anything. A lovely girl. I don't understand that.

I guess the message, if that's what you're after, is that everybody's got to take this seriously. None of these hard-won victories are permanent.

The mere fact that we have a president like Trump shows how fragile democracy in general is. So certainly, you know, if we had a serious recession, does anybody imagine that there would be a real opposition, a really significant widespread, more-than-majority opposition to discrimination being brought in place?

Anybody who doesn't know what happened after World War II, when all these women were in these jobs in the munition business and so forth to support the war, and they were unceremoniously booted from their jobs. Does anybody not know about that? They didn't want to lose their job by the end. At the beginning of their conscription as war workers, they thought they're doing what they have to as loyal patriots. But by the end of the war, they were enjoying being paid properly, which they never were in women's jobs. Well, they still lost all their jobs because the men came back from the war, and [it was thought that] there was only one way to resolve the problem of too many people and too few good jobs: just kick the women out. If anybody thinks that's too far from reality, they ought to get a reality check.

ANNE KIM: Well, thank you for that call to action, Susan, and thank you for this interview.

KANNENBERG: Well, thank you. You're a great lady to be doing this.