

Interviews of the Margaret MacVicar Memorial AMITA Oral History Project, MC 356
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Judith Selvidge – class of 1962

Interviewed by Sharon Lin, class of 2021

August 3, 2019

Margaret MacVicar Memorial AMITA Oral History Project

Judith Selvidge (SB Mathematics and Literature, 1962) was interviewed by Sharon Lin (SB Electrical Engineering and Computer Science, 2021) at her home in San Carlos, California on August 3, 2019.

Dr. Selvidge matriculated as an undergraduate at MIT after spending her freshman and sophomore years at Mills College. She later earned a Doctorate of Business Administration from the Harvard Business School and a Diploma in Statistics and Operational Research from Imperial College London.

After working as a technical editor at the Jet Propulsion Laboratory and heading up a statistics programming group at Harvard, Dr. Selvidge taught business administration at the University of Colorado and the University of Montreal. She also worked as a consultant at Dow Chemical and Marsh & McLennan, where her focus was on risk management for power utilities. She had previously worked on radar technology at NASA, developing computer programs to aid in the use of radio astronomy techniques for strategizing unmanned missions.

In addition to her academic publications on radiation monitoring and decision sciences, Dr. Selvidge published *I Didn't Know They Had Girls at MIT, A Diary*, which is available as an ebook on Amazon. The diary recalls her experiences as an MIT undergraduate at a time when women were greatly outnumbered by men, as well as other aspects of her life before and after her time at the Institute.

LIN: You mentioned to me earlier that you applied to MIT partially because your father had gone before. Could you tell me a little bit about your childhood and how your family played a role in your developing interests in both science and the humanities?

SELVIDGE: Actually, I don't think I had an appreciation for different categories of schoolwork. In any case, I was the second child in a family of four children. I was born during the Second World War, in Kansas. My father was teaching at the University of Kansas, but he was hired by the government to work on a secret program which was developing a proximity fuse. Not too many people are familiar with this device, but along with the atomic bomb and radar, the proximity fuse was the third thing that helped us win the war. It's placed in the front of a shell or a bomb and sends out and receives signals. You can program it for when you want the device to go off. But it's only this big [small]. And it has a

radio sender and receiver. Radios in those days had glass tubes, not transistors. You had to make something that could withstand being shot out of a gun or dropped from an aircraft. Anyway, he was doing that, so we moved to Washington. And on the day of Pearl Harbor, I was about 15 months old or something. My older brother, Bob, and my parents and I were just driving home in the car with the radio on from visiting Mount Vernon, George Washington's home.

LIN: In Virginia.

SELVIDGE: In Virginia. So that was the start—a bit about my childhood.

We were in the D.C. area during the war, and then we moved. My father took a job in aerospace, and we moved to New Jersey. We lived there, outside New York, for years. Then we moved to Michigan, and then to California when I was about to be a sophomore in high school. I had one older sibling and I had two younger siblings.

LIN: Did you do well in school?

SELVIDGE: I did fine in high school. In grade school, I got into math. When I was fifth or sixth grade, I had one older female cousin who I saw very rarely because they lived in Missouri and we lived other places. Her name was Sharon. And the story was that I told my parents that arithmetic was so boring, I really just couldn't stand it. And my mother said, "Well, I know you think arithmetic is boring, but your cousin Sharon thought arithmetic was boring, but when she got to junior high school, she got to do algebra, and she loved it." So I thought, "OK, well, when I get to high school, or junior high, I'm going to love algebra." That's what got me on the right track in mathematics.

LIN: I guess having that family member helped a little bit, in terms of kind of imagining yourself doing well in mathematics later on.

SELVIDGE: Exactly.

As for my father, though, he had started out at University of Missouri and then he transferred to MIT. They had a five-year program where you could come and do your last three years at the Institute. It was partly doing some off-site working, so you could make some money and then start taking your classes.

As as you'll find in my book [*I Didn't Know They Had Girls at MIT, A Diary*], I started out at Mills College, which is a girls' college. I had always favored single-

sex schools, and I was thinking of going to Radcliffe or Smith; that was what I was going to apply for. At that time, my family was living in Michigan, but my father moved the family to Southern California when I was just going to be starting my junior year of high school, so I transferred from suburban Michigan schools – essentially small, and also very uniform. We didn't have a lot of outliers. I had a friend who was Catholic, but no African Americans in that part of town.

I went from that very uniform kind of place to Southern California. We were living in North Hollywood. I went to my junior year at Hollywood High. It was a great experience, because it was completely different. Lots and lots of different people, but also a very strong interest in show business, movie making and that kind of thing. They also had debate teams and a lot of good things. I took my college boards, the way we did then, in my junior year, as a practice run.

The counselor called my parents and said, "You know, Judy," (as I was then) "shouldn't be wasting her time doing her senior year at Hollywood High. I have just gotten this thing from Mills College [in Oakland, California] saying they are having a special where you could get early admission if your grades were high or your tests were high enough." I was invited up for a weekend and I did that. Mills was fine with me. I could go away early for college – that sounded like a great idea. And although it wasn't the caliber, necessarily, of Smith or Radcliffe, it was close. And if I was going to go away a year early, my parents liked the idea of me being closer to home.

LIN: Do you know what you were planning on studying when you went to Mills?

SELVIDGE: Everything.

LIN: Everything?

SELVIDGE: Yes, I've always been interested in pretty much everything. "Take something, learn it. OK now, let's have the next thing" – rather than just continuing on in one thing. When I went to Mills, I got excused from freshman English because my English score had been so good on my college boards, apparently. That was fun. You like being sort of unique. I was already unique because I was there a year early.

Anyway, I did English, and I liked languages. I'd done two years, I guess, of French already at Birmingham High School, a high school in Michigan. My mother had done French and Latin. She had done three years of Latin, so I wanted to start Latin. I took one year of Latin my junior year at Hollywood High,

but that was before I realized I'd be moving on to Mills or somewhere else, as I was finishing up Hollywood High. Anyway, when I got to Mills, I took languages: French and German. I was at Mills for two years, so I did two more years of French and I did one year of German.

I also liked math, so I did all the math Mills offered. That was three semesters, plus an independent study in math my sophomore year. Whoop! That way, I had four semesters of math. And I did international relations, because I liked the idea of going to foreign countries and working there.

I also liked art. It turned out that the head of the art department at Mills was a ceramicist. He actually became very famous. He was one of the first people to do modern ceramics, so he was very autocratic. If you wanted to do art, you had to start out doing this basic design class. Everyone had to take the design class first. He was famous for not encouraging people to continue. I did the design class my first semester, and the second semester, I asked, "Can I take the ceramics?" Well, it was the second semester of ceramics, but I had gone to a summer camp in high school in Michigan where they did ceramics. He said, "OK. Special case. You can come to ceramics." I really enjoyed that. I think by my second year, he actually took me aside and said, "I think you should consider majoring in art."

LIN: In art, not in math.

SELVIDGE: In ceramics. He was Spanish, and he told me, "My wife does ceramics. She's very good, and she makes enough money every year so she can pay to come with me when I go back to Spain for the summer." So that was it – I did not pursue it. I took another ceramics class, but I mentioned this to my parents, and my mother said, "You could do that, but I don't think you'd find it intellectually challenging enough."

I had thought about the Smith junior year abroad. Someone from Smith came around and was up and down California and the other Western states, recruiting people to come on their junior year abroad. Smith was famous for starting [the year] in Paris. They also had one program in Florence, and they had started one in Geneva. That sounded great, so I signed up and got admitted.

LIN: Did you need to apply to Smith College?

SELVIDGE: Yes, you applied to Smith College. And they took maybe 10 percent of their students from schools other than Smith. They actually admitted a young woman

who was not from a women's college; she was at Stanford. Stanford was not such huge a thing at that time. She was very nice.

In Europe, the college classes usually started in October, so we started out with six weeks in Paris, where we took frenetic French classes. You needed to know some French before doing this. I had had two years, I guess. Then we went to Geneva. Since I was going to be doing that, I asked my parents, "Well, can I go early and do the summer school before?" I guess another person had come down looking for customers, from London, and she was saying, "Well, we have these different courses. There's one in Scotland, so you can do a summer school in Scotland." The topic was history of Europe, since 13-something to the beginning of the First World War. I did that program. It was mainly foreign students and a lot of fun.

LIN: Was this what a college or university program?

SELVIDGE: It was at the University of Edinburgh, in Scotland. Six or eight weeks, I forget how many. It was mainly foreign students, some American students. That far north, in the middle of the summer, the sun sets around 10:30 or 11:00 p.m. The dormitory, which was quite nice, was in a country house, just on the edge of Edinburgh. I don't remember too much about the classes, but they were fine. I remember one young professor who was good.

Meantime, I had chosen Geneva as my place for junior abroad, because I wanted to do international relations and be a diplomat. I got to Geneva, and we had a few seminars that were just for Smith students. I took the minimum of the required ones. I was getting kind of tired of international relations. But I also took mathematics and astronomy classes with local students.

LIN: So, pretty different from your initial plan of study.

SELVIDGE: Right. But I also wanted to perfect my French. I had a strategy that was not very popular with my fellow Smith students at the beginning. When I got to Geneva, I said, "OK, I'm not going to speak or write in English while I'm here." I would answer in broken French if you were talking to me in English, and I wrote all my letters home in French. My parents could read French, so that was OK, and I did thoroughly learn French.

I would be in these classes with the local Swiss students for mathematics and astronomy. These tended to be amphitheater type rooms: steep, lots of boards across the front, and a professor giving a talk. If I couldn't understand something, and I'd ask a student, "Can you ask the professor about this—" in my French, which was getting less broken. "No, no, no, we never ask questions, we

don't want them to know what we don't know." The way that the European system worked then was you didn't get quizzes. That was sort of interesting.

The other thing I remember was that in the Smith program, we stayed one semester with a family, and one semester we stayed in a very nicely located but not luxurious hotel right on Lake Geneva.

As things went along, I said that I didn't want to go do international relations – I wanted to do mathematics and astronomy. I couldn't do that at Mills, because I'd taken all the math classes, including the independent study. We had one or two astronomy classes, and that was it.

Anyway, I'd always wanted to go to Radcliffe or Smith, so I applied to Radcliffe.

LIN: Why did you particularly like the idea of single-sex education?

SELVIDGE: Because I thought you can concentrate better. There's not all this social life going on; you're there to learn things. I'm not quite sure how I got that feeling, because I'd always gone to public schools that were co-ed and really liked it. I liked Mills, too. I liked being in single sex classes with women. It was kind of like choose the school and then decide what you're going to study.

Anyway, I wrote Radcliffe and said, "I did my junior year at Mills. I'm halfway through my junior year abroad in Geneva, and I would like to transfer to Radcliffe as a junior majoring in mathematics and astronomy." I had also in mind a couple of other schools, but Radcliffe was the first. I got a letter back from them that wasn't actually cold; it was just not warm and sympathetic. They said something like: "Dear Ms. Selvidge. Because you're finishing your junior year, you're not eligible to come to Radcliffe as a junior, and we don't take senior transfers."

LIN: That's unfortunate.

SELVIDGE: So, if Radcliffe won't take me [I thought], better schools will. That's when I thought about applying to MIT. My father had gone to MIT. My mother's brother had gone. (They were not there at the same time.) And my older brother, Bob, had just finished a year at MIT.

Also, my father had been working with major aerospace companies for a long time and doing a lot of traveling. He had joined another guy and started a smaller company in Pasadena doing meteorology research. During the early part

of the Vietnam War, they were doing military projects that had to do with the weather.

Anyway, Radcliffe said no, so I applied to MIT. As a fallback, I thought, "If I don't get in, I'll go back to California. I could apply to Berkeley or Stanford." To give you an idea of the difference between MIT and Stanford in those times, MIT's deadline to apply was sometime in April, I think. They would let you know in the early part of May whether you'd been accepted it or not. At Stanford, you didn't have to get your application in before August. And at Berkeley, you didn't have to apply in advance at all. You just turned up on the first day of class – you know, "I'd like to be here."

In any case, I applied to MIT and put those others on the side for the moment. Then I had a nice time my last semester. In my astronomy class, the professor had said, "We have an observatory and we're looking for a research assistant to work during the Easter vacation. Would you like to do that?" I said yes: it sounded good. As it turned out, after a week or two, they withdrew the offer. I discovered later it was because they were apparently doing some defense-related stuff up there, Swiss defense-related. They didn't want a foreigner--

LIN: You didn't have Swiss citizenship or whatever it was they were looking for?

SELVIDGE: Right. They didn't want a foreigner looking at what they were doing.

Back in Geneva, and I got a phone call from my father. This is almost the middle of May. I was wondering what was happening, because I hadn't heard back from MIT. He said, "Well, what are you going to do next year?" I said, "Well, I can't go back to Mills because I want to do math and astronomy, and I've applied to MIT. I'm waiting to hear from them. If they don't accept me, I'm going to apply to Stanford and to Berkeley." He said, "Well, they'll accept you." I said, "How do you know? And he said, "I have the letter right here."

LIN: So you already had been accepted?

SELVIDGE: Yes. They had sent the letter to my home address, and, of course, he opened it.

LIN: Did your father talk a lot about MIT when you were growing up?

SELVIDGE: No, not really. Of course, there were four children and he was traveling a lot for business. But of course, I knew MIT was good. He had the big MIT ring. But I just knew of it as a place. I knew it was an important school.

LIN: He studied aerospace engineering?

SELVIDGE: He did electrical engineering. Aerospace was not much the vogue yet. It was aero, it wasn't space yet. He spent two years at the University of Missouri and then went to this three-year program, which is where you do some work and some studies. But it was nice to know that someone had been there before. In fact, there was a dean of students at that time who had been a classmate of my father's whom I went to see. My father had told me about this guy. He turned out to be very nice.

Once at MIT, I had to take certain classes. I took freshman chemistry; I'd never had a chemistry class before.

LIN: So MIT still had the GIRs back then [the General Institute Requirements], where you have to bio chemistry, physics, math?

SELVIDGE: Right. At that time, the freshman year was chemistry and some other things. You also had one liberal arts class every semester. I don't know if they still do that.

LIN: Yes, they still do that.

SELVIDGE: That's good. I didn't have any trouble with those. In fact, I didn't have to take most of them. I could just take more advanced courses. I do remember my first chemistry class.

LIN: Was it in one of the middle buildings near the dome [MIT's Great Dome]?

SELVIDGE: Yes, it was near the dome.

LIN: [Classroom] 26-100?

SELVIDGE: Maybe. I remember sitting next to a very sweet guy from Georgia. As I sat down, he said, "Sure is nice sitting next to somebody wearing perfume for a change," which I thought was sweet.

I asked, "Why is hydrogen H instead of H₂?" Everyone looked around; they all took chemistry in high school and got A's. You know: "Who is this person?" That's what I remember from the chemistry class.

I took freshman chemistry and sophomore physics. Then I could take the math and other things I wanted to take. I decided I should see after the first semester

that I would do a combination engineering and humanities degree, which you could do at that time.

LIN: Were you technically under the math department or humanities?

SELVIDGE: I came as part of the humanities department. The way it worked was you had to take as many math credits, but you could choose the classes you took. There were certain classes for math majors, and there some for non-math majors, which were easier. I took the latter. Also, they had physics for mathematicians, even in your sophomore year – and they had physics for everybody else. I took the physics for everybody else class. That was one of my accommodations to the program.

LIN: How many girls were in your class at MIT overall at the time, since you mentioned the perfume comment?

SELVIDGE: The ratio was 50 to 1.

LIN: Wow.

SELVIDGE: That was the whole undergraduate school; I don't know in my class what the ratio was. At that time, women who were in the freshman class lived in the house in Boston [a townhouse on Bay State Road]. They also had rules about how late you could be out at night and so on, for women students. That was general in all of the universities.

LIN: That the male students didn't have?

SELVIDGE: Right, the male students didn't have that. But the women students at MIT, just a year or two before I got there, lobbied about it, saying "You can't do this. We're living way over in Boston, and we've got to take taxis back and forth."

LIN: They didn't have buses for you back then?

SELVIDGE: Well, they did have buses, but they weren't always convenient.

These women students also said they couldn't come and meet study groups on campus if they had to get back to Boston. At some point, upper class women could live in Bexley.

LIN: Oh, Bexley Hall.

SELVIDGE: Yes, which couldn't be more handy. At that time, two of the wings were for married graduate students. One wing was women: sophomores, juniors, and seniors and graduate students – so that's where I lived during three of the semesters I was there during the two years that I was at MIT. Later, with a friend who was doing geology and was working on her masters, and I got a place down by Porter Square [in North Cambridge]. We had our own place. It took longer than we expected to get to MIT on the bus, so we bought a motorcycle.

LIN: Oh, wow.

SELVIDGE: That worked out very well.

LIN: Were there any other accommodations that were different for women and men at MIT at the time? Like bathrooms, or--

SELVIDGE: I didn't notice a shortage of bathrooms. But one of the great things was we didn't have to take PE.

LIN: Oh, OK.

SELVIDGE: They didn't have special women's PE.

LIN: No women's locker rooms at the time?

SELVIDGE: Probably not. In fact, when I was doing my graduate degree at Harvard five years later, I was visiting the law school, doing rare events in math. It was a special program. If you wanted to play squash, they didn't even have a women's bathroom. We had to change in the back of the squash court. Anyway, it was nice to not have to take PE at MIT.

LIN: How did the social life at MIT compare from the single-sex schools, since you were no longer just among women?

SELVIDGE: Well, for the women it was fantastic. You could have all the dates you wanted. A good friend of mine, Alan Bell, was a sophomore when I arrived, so he was one year behind me. He's asked me, "What do you remember most from MIT?" I said, "Being hunched over my desk every night doing problem sets." He said "Problem sets? You went out every night!" I said I could have if I wanted to, but I didn't actually do that. So obviously, women had a wide choice. If you liked going steady, you could find somebody to go steady with your first year and go steady till you got married or after you graduated.

A lot of my friends were foreign students because we had some things in common, having been abroad. Also, they tended to be more mature. Quite a few of them had more money, because their parents were sending them there, and when we'd go out. For example, there was a Latino club that was extremely active and nice.

LIN: Were there living groups that were vibrant? Was Bexley Hall one such group?

SELVIDGE: Well, it had four stories and most of the upper-class women lived there. That was nice. We had a live-in couple, husband and wife – sort of the chaperones – but we didn't see much of them. They would have an afternoon tea twice a year or something like that. As I mentioned in my diary, the rule was: no pets. One or two people did have cats that they smuggled in and kept hidden. They had to take the labels off the cat food cans when they threw them out, to make it look like it might have been tuna fish.

LIN: Very stealthy!

SELVIDGE: It was fun. It was interesting. I also got to know the people in the architecture department who were more interesting. They were a combination of technical and artistic. They worked late on all of these projects.

LIN: Yes, the studio classes.

SELVIDGE: Right, and since Bexley's right across the street, I could go in and wander around at night. I could visit them sometimes and we'd talk.

LIN: On the topic of classes, I believe you were able to take a class with Marvin Minsky. [Professor Minsky co-founded MIT's Computer Science and Artificial Intelligence Laboratory and was a world-renowned trailblazer in that field.]

SELVIDGE: Yes, I was. I liked the idea of artificial intelligence, and he was one of the founders. This was almost 60 years ago. It was the very beginning.

LIN: Right in its infancy.

SELVIDGE: Right. I loved the idea. I thought it was really neat. There was a graduate student from Harvard who was also taking the class. We had to do a project with a partner, so he and I did a project together. I liked Minsky a lot. One of the classes I'd taken in Switzerland in the math department was symbolic logic. That was good preparation.

By the way, when I got home after my first year at MIT, I applied for a couple of jobs. Some of the aerospace companies recruited at MIT and were interested in students who might come back to work for them later. I didn't get any offers. I think it was probably a sexist thing.

In my final year I thought, "I may actually graduate. I should start thinking about what I'm going to do for a living. This is the opposite of what happened at that point in my first semester at MIT. My parents had sent me a letter then saying, "Look, you've been away now for 15 months – I went directly from Europe to New England – so we want you to come home for Christmas. And I thought, "Well, do I go home or do I tell them, "No need for me to come home, I'll be flunking out in January."

LIN: Was the class really difficult?

SELVIDGE: I think I got one D. But I didn't flunk out, I wasn't even put on probation.

LIN: That's good.

SELVIDGE: But then I thought I might actually graduate, and I should think about what I'm going to do for a living. It's perfect, the way these things turned out. My mother had four children, so she was not working for money after she got married, at least not after my father got his doctorate. What she did was volunteer work as a nurse's aide at blood banks. The blood banks in Los Angeles were mostly at the aerospace companies. She told me that she'd just met a very nice young girl at Lockheed, at the blood bank. She said, "That girl's got a really interesting job in a new area that's really interesting and where there are lots of opportunities; it's called computer programming."

LIN: Oh, wow.

SELVIDGE: This was 58 years ago. I checked the MIT catalog, and there were two computer classes. I signed up for Minsky's class, an introduction to computer programming. I did that in my last semester. We were using paper tape or punch cards and I really enjoyed it. So when I was graduating, I interviewed with different companies in the L.A. area.

I asked my father what I should base my decision on, because I got offers. He said to join the best company, never mind what the offer is. I saw that JPL, the Jet Propulsion Lab, was interviewing. It was only 10 or 15 minutes from where my parents lived, so I applied. I ended up with an offer from JPL to come as a technical editor.

LIN: That sounds great. You had both the math and literature background.

SELVIDGE: Yes. So I thought, "Well, OK, I'll consider that." It was definitely the best company, so I ended up taking that class. But I was talking to somebody, not Professor Minsky himself, but somebody else, a faculty member who said, "Look up so and so, he's at JPL." I don't remember who it was. So I looked up so and so. I just called him. I don't know if I mentioned him that I'm doing technical editing rather than programming or anything. But it turned out the technical editors weren't even on-site. They were 10 minutes away in another building.

LIN: Not at the JPL facility.

SELVIDGE: Well, it's part of JPL, but it's not been the main facility, right.

One of the things I said was, "Is anyone here doing anything interesting in artificial intelligence?" And he said, "If you could find any real intelligence around here, let me know!" He was a cynic. So that was my brush with artificial intelligence. If I signed up for something in artificial intelligence with one of these companies, I would have been 50 years too early. But I did like Minsky and I liked his class.

I worked at technical editing at JPL for three months. Then I wanted to transfer into programming. I had some contacts. This was my first time making money in my life, and it was the summer after MIT graduation.

LIN: Did you transfer to a different job within JPL?

SELVIDGE: Yes, it was a very good place to work, but after I'd been there three years, I decided it was time to try something new. But I had a great time in my group there: lunar and planetary sciences. We were not the human-landings-on-the-moon kind of people. We were doing just unmanned fly-bys, some satellite, and probes to Venus and other places. It happened to be a time that Venus was very close to the earth. And one of the projects that was going on was they were doing both a satellite around Venus or a probe around Venus. I don't remember if it continued to circle. But the work also involved radar astronomy on Venus: listening, sending out radar and then listening to how it came back.

The head of that was Frank Drake [founder of the Scientific Search for Extra-Terrestrial Intelligence, SETI]. He's one of these astronomers who's interested in extraterrestrial stuff. He's getting on in years, but he's still very prominent in this, looking for life elsewhere. Anyhow, he stopped by my office and said,

“Look, I’ve got a project going. I’ve two Harvard students who are working on it for the summer. It’s out in Goldstone, which is in the Southern California desert, where we have some great antennas, including radar and radio antennas both. They’re working on this project and they need a little break, or they need to see another face.” It was one of these things where you sit at a machine and you listen for stuff. These two guys were getting tired of just talking to each other and looking at the computer. So I said, “Sure.” But the thing that was so great about it, that I remember, is at that time, at this Goldstone [Goldstone Deep Space Communications Complex], they had us in this kind of a dormitory for men where there was also a single room for VIPs. They hadn’t had a girl there before, so I was staying in a motel about 20 minutes away, in the desert.

LIN: Was that still convenient?

SELVIDGE: It was convenient, but there was nothing between the motel really and Goldstone. But when I had graduated, one of my grandmothers left money for her grandchildren, so I got this chunk of money and I bought a Porsche.

What was so memorable about this particular weekend-- It was only four or five days to give these guys a break, and just to let them hear a different voice. Venus was very close. So I would get up, hit the road in my car at 5:00 or 5:30 a.m., because I had to be there by 6:00. And here, about this far above the horizon [POINTS], was brilliant star Venus, saying, “Come, come, come.”

LIN: Wow.

SELVIDGE: That was really lovely. That was one of the things I remember most about that experience.

LIN: Were you working as a programmer at that point?

SELVIDGE: I was working as a programmer, yes, at JPL’s lunar and planetary sciences group. I was doing all the programming.

LIN: How much of it did you have to pick up on the job, versus that you learned back at MIT?

SELVIDGE: Well, half and half. You’d write a program and you’d submit the cards. Then you’d wait for 20 or 30 minutes, or you’d turn it in overnight. And they’d run. You came back to them and see is there an error, and then you’d have to change it. So it was more step by step.

LIN: Right, a longer process.

SELVIDGE: Yes, but after three years I wrote a publication with one of the other women who was in the group. She had a doctorate, and we did a paper related to the Venus project together – my first publication!. Generally, I was doing all the programming for the group. I noticed after three years that I'm the only one that doesn't have an advanced degree.

LIN: Everyone else had graduate degrees.

SELVIDGE: Absolutely. They were serious scientists.

LIN: That's true, I guess you'd have to be.

SELVIDGE: I was this passerby who was going to do their programming for them. So I said, "OK. I need to get another degree." I looked at UCLA and USC and places like that, but I realized that for the price of tuition at USC I could fly to Europe and back, pay for my living expenses and tuition in school in Europe. It wouldn't cost me more and it sounded more fun.

LIN: And you'd be going back to Europe.

SELVIDGE: I'd be going back to Europe, so I looked into that. That's how I ended up going to Imperial College [in London].

LIN: So you applied during your time at JPL.

SELVIDGE: That's when I applied.

I've always liked to do something until I feel I've exhausted the possibilities. I want to go do something else, be in a different place, so this time, I left JPL. I did stay in touch with Frank Drake for a while. I think I probably sent him an announcement about the book [about my experience getting to and going to MIT].

LIN: Can tell me a little bit about what you studied at Imperial?

SELVIDGE: By the way, I sold the Porsche to get the money to go to London.

LIN: I guess you didn't need it anymore, since you were in Europe.

SELVIDGE: I didn't need it in London, right.

It was a small group at Imperial. It was basically statistics and operational research. The English, in the 1920s and 30s, did all the basic work in statistics. They were the founders of modern statistics, particularly as applied to actual problems. I'm not sure exactly how I chose them. But London was very fashionable then; the Beatles and all of that. And of course, not as expensive as here.

One of the things about being a woman and a foreign student was I could get into a room in a dormitory right next to Imperial College. Student living conditions in Europe at that time were not great. There were some dorms, but otherwise, if you didn't get into a dorm, you were going to be in a hovel somewhere, or living with a family, or a bed sit. But Imperial College, like MIT, was almost entirely men. And the dormitory was a four-story building. I guess, three stories with basic men's rooms and a little top annex that had seven or eight rooms for women students. It had its own little kitchen, and a little bathroom. Because I satisfied the graduate student and women student categories, I could get into that. Otherwise, I would have been out of luck. I had a single room. By the way, they had maids; someone made your bed for you.

LIN: That's convenient. So you were at Imperial for one year?

SELVIDGE: Yes, in a master's program. It was important, because they were the founders of this thing. No subjective probability. That wasn't even considered, not kosher. Probability is a probability, not somebody's idea of what it might be. But they were very good.

I did the equivalent of a master's thesis on some data. One of the professors said, "Analyze this data, do this, such and such." I learned later it was actually some military data that they weren't announcing it as that. They just wanted to see what you can get, what can you figure out. So that was kind of fascinating.

Also, at that time, I had a boyfriend from Switzerland who was studying law. One of the reasons I went to London after the Smith program in Geneva was because I thought I could continue getting to know Peter Gibson, his name was (or Simon, as I call him in my book).

LIN: What was the process of completing your thesis like?

SELVIDGE: That was actually an issue. I had been working hard at MIT. I'd been working hard at JPL, so although this was a nine-month program, I stretched it out to

about a year. My degree reads: "The Diploma of Membership of the Imperial College in Mathematical Statistics and Operational Research." I didn't quite finish the calculations I was working on that in the summer. I came home because I wanted to start looking for a job, and I then mailed the completed work to London in the fall. My advisor didn't get around to reading it for nine or 10 months.

LIN: That's a while.

SELVIDGE: I didn't do anything for nine months. I thought, "Well, OK, I could just pretend I got the degree. No one will ever know." I was tempted by that, but I resisted. Anyhow, I thought at least when he'd read it, then he's not going to ask me to change anything, because that would be ridiculous. Well, he did ask me to make changes, so I did. Then I sent it back, and finally after 12 months, I did get the degree.

LIN: That's good.

SELVIDGE: So instead of it being a nine-month degree, it was essentially 12 months of work, including an extra two or three weeks after this interlude, when he finally decided to read it.

LIN: Apart from the thesis, did you also have to take classes?

SELVIDGE: Yes, we took classes. Basic statistics.

LIN: Were they difficult?

SELVIDGE: Probably not. I mean after MIT, most things were not difficult.

LIN: Did you find MIT competitive in any way? Did you feel like the student atmosphere in the classes was more like cooperative and students were helping each other? Or was it more like competing for grades?

SELVIDGE: Well, I don't know about that. The thing I remember is there was a kind of elite, if I might call it that, of students who, in the math area and so on, if you would ask them about something, if you said, "I couldn't figure this out," they'd say, "Well, let's go back to first principles, da, da, da, da, da, got that?"

LIN: That's how the other students would explain it?

SELVIDGE: They were nice. They were helpful. But there was a bit of an elite, yes, which I was not part of. But I did make dean's list but my last semester.

LIN: Oh, so you must have done well.

SELVIDGE: Well, it was a nice upward curve for me!

LIN: Going back to your time at Imperial, what was your plan after finishing the master's degree?

SELVIDGE: Well, again, my rationale for going was that I needed an advanced degree.

LIN: Right.

SELVIDGE: When I came back, I started interviewing. I interviewed at IBM, and I got an offer from them in New York State. I also interviewed with the Harvard Computer Center, which was very small then. I got an offer, and I took that offer. I moved back to Cambridge and started working. I eventually became head of the statistics programming group. I enjoyed that.

They were just starting to do kidney and liver transplants then, and there was a tie between researchers at Massachusetts General Hospital and our computer group at Harvard. We did some interesting thing. The first involved what data was needed on these transplants. At this point, I was not the head of that group. Some other guy was the head of it. We were having this meeting with these two doctors who were very prominent, and all their minions were standing around. We got introduced and then my boss was doing a presentation. They started asking questions, so my boss said, "Oh, well, Judith will be handling that." Then they started calling me Dr. Selvidge. Well, that sounded nice, I thought. Maybe I should think about a doctorate. I really liked that.

After three years, I started thinking it was time to look on. I'd exhausted what I wanted to learn there. But one thing I was concerned about was that I was shy in front of groups. So I thought, "I need to do something to get over that." Well, my boss had mentioned to me that he was teaching a non-credit class for Harvard students and faculty. This was a two and a half or three-hour class in the evening, for five days, and it was about computers and programming. He'd start at 5:30 or something, maybe once a month for faculty and then once a month for students. It was no tuition, no credit, none of that. He had mentioned what he was doing, and I said, "Well, could I teach it some time for you? And he said, "Sure, you could do that. That'd be fine." I thought, "I better go and sit in on one to see what's happening." But I didn't get around to it for several weeks.

Then, one Sunday night, I got a call from him. "I'm going to be in Philadelphia for the next two days on this project and my class, my computer class starts on Monday. I'd like you to take it for me."

LIN: To teach it?

SELVIDGE: To teach it.

LIN: Wow.

SELVIDGE: I said, "Oh, OK." He hadn't told this before, but now he explained that the whole program was on audio tape, the big reel-to-reel players and with slides. And there's an audio-visual guy who does all that. He said, "All you have to do is come, introduce the class, introduce yourself, explain how it will be held, how the format is, and then answer questions at the end."

LIN: Pretty convenient.

SELVIDGE: I said, "Well, I could do that." That didn't worry me much. Plus, it was a student class, not one for the faculty. I arrived at 5:10 or something, and met the audio-visual guy, and he was setting stuff up. That was great; he seemed very nice. Students came in. At this time, I was 24 or 25. I got up to start, and I thought, "These are all kids, who could possibly be nervous in front of these kids?" I realized I wasn't going to be nervous. But then the audio-visual guy said the reel to reel tape drive didn't work.

LIN: Oh, no. So the material wasn't available?

SELVIDGE: Right. So I gave my first lecture with slides that I hadn't seen before, to Harvard students. In a way, that wasn't so bad, because I had already taken this kind of a class. I actually had a good time. I answered questions at the end, and then, when I was packing up, the audio-visual guy said, "You're much better than the tape."

LIN: What a compliment!

SELVIDGE: Yes. That was nice. Then I just took it over from my boss. I enjoyed doing it with the students, and I enjoyed doing it with the faculty. I expanded the class from one week to two weeks. And after I'd done this for several months, I thought, "You know, I should be teaching." I'd never thought about teaching. Never wanted to be a teacher in elementary schools. Hadn't thought much about

being a teacher in a college. It hadn't crossed my mind that I could do this kind of teaching for a job. This was such fun that I thought, "OK."

It was May or so, and I thought, "Well, if I'm going to teach, if I want to get into a teaching doctoral program, say in September, it better be somewhere close by, because it's already probably past deadlines." I'd have to go to a college where I knew people, so I would look into MIT and Harvard. Just as I was getting my thoughts in order, I went to talk to a Harvard professor, an Englishman that I'd met because I took his course having to do with Kenya at the time of the Mau Mau. He was one of the few faculty members at Harvard that I had any contact with, except the ones who came to the Harvard Computer Center, which, again, I did computer projects for.

I went in and talked to him, and he pulled out this file and said, "I just got this from the Department of Defense. They have a new program called Decision and Control Systems. It's multidisciplinary. There are classes in statistics. It's a doctoral program in statistics, applied math, economics and business: those are the four areas. You specialize in one, but you take classes in all four. You get a doctorate in business administration, a DBA." He also said they had a lot of money and would pay my tuition; also, a certain salary for the first three years or something like that.

LIN: So, a very nice program.

SELVIDGE: Yes. What would I major in, though? Engineering and applied math, well, that sounded hard. You had to do some classes in each of those, but then you had to choose a specialty. You had requirements and then you decided on a specialty. And I'd already done statistics.

LIN: At Imperial.

SELVIDGE: At Imperial. Economics, well, I'd never take an economics course, and I was trying to maintain my economic purity by not doing that. Business, well that sounded boring. But you had to take seven classes. It's all case method, because it's at Harvard Business School – MBA program classes of 90 people. It was lectures and discussions. You had to take the seven classes, but it was just 30 doctoral students instead of 90 MBA students.

Of course, There were hardly any women then; there might have been one woman in an MBA class. But there was no sexism at the doctoral program level. We were all grad students in it together.

For the previous 10 or 20 years, if you were at Radcliffe, you could take business school classes, but you couldn't go to the business school. The professor would come to Radcliffe and teach a Radcliffe-only course. They were just moving away from that, admitting women to the MBA program and the doctoral program – but not very many.

So, there would be a class of 90 that would include one or two women.

LIN: Were you taking classes at Harvard during your time at the Harvard Computer Center?

SELVIDGE: No, not really. Well, I did take the class about Africa. That was because I counted as an officer of the college and could take anything I wanted for free.

LIN: That's a nice perk!

SELVIDGE: But you also had to work it into your schedule.

LIN: Right.

SELVIDGE: It was marketing and production, human behavior, organizations, and international, and so on. I would specialize in business, and that would only take me a year and a half. Then I'd have a half a year to write my dissertation. I'd be out of there in two years.

LIN: Fantastic.

SELVIDGE: That was my theory. I thought, "I'm not that interested in business, but I can stand a semester and a half of business school classes," so I applied. I talked to the dean of the business program, who knew about the Defense Department project I mentioned. I told him I'd applied. He said classes started the second week of July.

LIN: So, early.

SELVIDGE: In this doctoral program, you worked for the summer. At this point, it was May or June – too late for me to take the graduate boards. He said, "Classes are starting, and you won't have time to take your boards before we start. What we will do is we'll give you a conditional admission to the program and then, depending on how your boards turn out, you can then continue. Or if they're not at the level, you can finish the summer courses and we won't charge you tuition." I thought, "OK, I'll do that."

As for the boards, I hadn't taken anything like that for a while. But I thought I'd take the practice test and see how it went. Then I graded it: a 56. I stayed up for a day and took another practice test. Again, I got a 56.

LIN: Oh, no!

SELVIDGE: I have no idea what had happened, what was going on about why I got this incredibly low score. Maybe I just fouled up the scoring thing. When the actual test came up a couple weeks later, I took it. I'd started the classes and was enjoying them fine. I got a call from the dean of the admissions program, the doctoral program, saying, "Come in and see me." He had my results. He said, "Well, your score is one of the highest of our class." He said my humanities score (or whatever they called the part that wasn't math) was even higher than my math score.

LIN: That was unexpected!

SELVIDGE: That was good – I was in.

LIN: Great.

SELVIDGE: It was a great group. I had a great time. There was a little bit of chauvinism, though. I can't remember the details now; maybe the occasional tactless faculty member.

I should say that I ended up spending four years in the doctoral program, not two. I did a summer assignment in Milan with Citibank. I thought it would be nice to learn Italian. Citibank actually flew me there for an interview. The HR person said I would be there for eight weeks, that they paid for transportation back and forth, and that Citibank was considering computerizing its operations.

LIN: So, you were going back to programming.

SELVIDGE: They made me an offer, and I had a great time. I got to visit all their different branches in Europe to see how they were doing what they were doing, and that was fun.

LIN: As part of Citibank.

SELVIDGE: Right. And I had a boyfriend from Harvard Business School whose father was head of the National Bank of Belgium, so I got to visit him. That was interesting. His parents were nice and he was an interesting guy.

But back in the doctoral program, among the foreign students were a number of Frenchmen. At that time, France required military service for every male. But you recall that the French settled a lot of Canada. Also, the French then thought of Quebec as still being part of France, and that they would get it back eventually. Well, it turned out that as part of this keeping this tie to Quebec, if you taught at University of Quebec and were French, you could get credit for your military service for the time you spent teaching in Quebec.

LIN: That counted for military service.

SELVIDGE: You went to Quebec and taught at the University of Quebec or the University of Montreal.

You're getting to notice now from talking with me that life is a random walk: You just do things as they pop up.

What happened was that a professor from the University of Montreal had come and was recruiting students to teach in Montreal. French students, obviously. But it had been advertised, and I thought I'd go talk to him because I was starting my third year. And Harvard Business School did have a requirement that you had to have worked teaching business somewhere. I thought I would see if I could teach at University of Montreal. I'd talk to this dean of theirs, who had come to Harvard. I signed up and said I wanted a part-time job in teaching at the university.

When I was in Milan, I had overlapped slightly with an American who was teaching at the University of Utah but had been at Harvard. Anyway, he was heading back to the U.S. We met a few times, and he was great. Then he left. But before he did, he mentioned that he taught part-time at the University of Montreal, so all these things were meshing.

In any case, later, I was talking to the dean from Montreal and said I'd like to come and teach a class part time. He was looking for someone who could teach quantitative methods for business students, using the case method, and in French. And within 2,000 miles, I was probably the only one who satisfied all that. He said, "Well, come up. We'd like to do a three-hour seminar on Monday. So I went up and did a seminar, probably on rare events or something; I can't remember. But that went OK, and they made me an offer.

At some point in my final year, I was talking to my fellow doctoral students. We had to either teach or take a teaching seminar. Probably, I should have done both, because seminar was probably great. Anyway, people would say, "Well, Judith, are you taking the such and such teaching seminar?" I said, "No, I'm going to be teaching." "Where are you going? Babson (a local night school specializing in business classes)?" I said, "No, I'm going to be teaching at the University of Montreal." "Oh, you're moving to Montreal?" "No, I'm commuting." "Oh, you're commuting? Isn't that a long drive?" "No, they're flying me!"

I got to fly back and forth to Montreal once a week. I would fly up Sunday and teach Monday morning. They had two sections for this course. One I was teaching, and another, a local faculty member was teaching as well. We were collaborating and seeing how I was doing the case method. On Wednesday afternoon, I would fly back to Boston. They paid for it.

LIN: How luxurious!

SELVIDGE: That was a lot of fun. It was interesting to see Canada at that time. I don't know if you've read about the separatists in Montreal, Quebec back then. They had kidnapped a member of the government, this group. When I walked into the airport in Montreal, I saw what looked like teenagers. They were in military uniform with submachine guns.

LIN: What happened after you earned your doctorate?

SELVIDGE: I did one more year, after teaching in Montreal, to actually write my dissertation. Then I started interviewing. I wanted to go somewhere with good skiing, so I ended up interviewing at the University of Colorado, which was my first choice. I got offers from a few other places, too.

LIN: Were they all teaching positions?

SELVIDGE: Yes, teaching full time. And I chose Colorado because that was my favorite. Utah was OK. I hadn't been to Utah before. About that time, my parents from Arizona bought a ranch in Colorado with a partner. They put up cabins and that sort of thing. It was a weekend vacation place. My parents were both pilots, so they could fly themselves up and didn't have to worry about going to Denver and that kind of thing.

I was at University of Colorado for three years. I was in the statistics department. One of the people in the department said that he noticed I was working really hard. He said, "I just want you to know that in another year or two, it'll just be so automatic that it won't be--

LIN: It won't be as hard anymore?

SELVIDGE: Right. "You'll have it all down pat." It was very nice of him to say all that, but I was thinking, "I don't necessarily want to do that. I'd like to take a leave – go to Washington and help straighten out the government!" I had a theory that in the government there a lot of programs they have that are kind of not as efficient as they should be.

I called up one of my professors at Harvard and said, "I want to do something in the government for a year or so." He told me to contact someone he knew at the Office of Management and Budget. So I called this guy, who invited me to come to Washington. After he showed me around, he said, "We'll make you an offer, but we won't be able to finalize it right away because you have to wait to see." It turns out there's a civil service rule that if you offer someone a position, before they can take it, you have to demonstrate that there's not a military veteran who is qualified, equally qualified for it. Military veterans have a preference, which is understandable. It was a year before they could actually finalize an offer. So I took a job with another consulting firm in Washington for a year. And then I went on to work for the government as an analyst in the Office of Management during President Carter's administration. I later served on President Reagan's Private Sector Survey on Cost Control (The Grace Commission).

I next moved to New York City to work in risk management for Marsh & McLennan insurance brokers. In the 1990's, I joined a California-based management consulting firm, Strategic Decisions Group where, for example, I advised seven U.S. nuclear plant electric power producers on the repair/replacement of their steam generators.

LIN: When we spoke before, you mentioned dedicating your book about going to MIT to other women. Do you think that attitudes toward women have changed over the years? And if so, do you feel like there's still more room to grow? Or do you think we've reached a pretty good point now?

SELVIDGE: I think we're at a very good point. There's still some, obviously, certain categories of jobs or something where women have not advanced as quickly as men, though.

LIN: What about equal pay? Are things better now than they used to be?

SELVIDGE: I think it's probably pretty good now, compared with decades ago.

LIN: Did you want to say anything else about your time at MIT or your involvement with the Institute in the years since you graduated?

SELVIDGE: Well, I recommend this if you relocate: When I first came out here to California, which was in the 90s, I joined both the local Harvard Club and the MIT Club. It's a great way to meet kindred spirits. With the Harvard Business School Club, I worked with a team working pro bono with the Hiller Aviation Museum on their business strategy. I also went to meetings at the MIT Club. But I had cancer twice. I beat cancer twice, as I like to say. I haven't had it again for 10 years, so that's good.

LIN: That's really good!

SELVIDGE: At some point, the MIT Club of Northern California approached me because they knew I was doing something consulting independently, but I wasn't working full time. I served a period as the treasurer. And then three years ago, I was asked to join the board.

LIN: Well, it has been great to meet you. You've done so many interesting things in computing, statistics, higher education and consulting. Thank you so much for taking the time to do this interview.

SELVIDGE: It's been a pleasure.