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Interviews of the Margaret MacVicar Memorial AMITA Oral History Project

Cathleen S. Morawetz – Class of 1946

(interviewed by Tiffany K. Cheng)

July 8, 2009

Cover Sheet

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Interviewer: Tiffany K. Cheng

Interviewee: Cathleen S. Morawetz

Setting: I was sitting in the lounge on the 11th floor of the Courant building on the NYU campus. The floor mostly had offices for faculty members in the math department. When I had gone to knock on Professor Morawetz's door, no one answered so I decided to wait around before leaving. She arrived only a few minutes after wards. After a short introduction, we entered her office, where she had a desk, a couch, a wall full of books and photo frames, as well as a chalkboard covered in what looked like a very complex proof to a theorem. We then got settled in, and started the interview.

Tiffany K. Cheng
Cathleen S. Morawetz
Interview July 8th, 2009

TC: So, I guess you can just describe to me your childhood. What was it like, growing up?

CM: Well, the most important thing probably in the point of view of my professor was that my father was a mathematician, John L. Synge. He did mathematics, physics, with relativity, and he was Irish. My parents were both Anglo-Irish, they came from the south of Ireland but they were both Protestants. Except they both were not religious. And my father immigrated to Canada after his bachelor's degree in order to have a job and I was born in Canada. So was my older sister. We went back to Ireland, so I first went to school in Ireland when I was three years old. And we were there for five years, and then we came back to Canada. And then in 1948, no 1943, my parents moved to Columbus, Ohio but I left to work for the war effort in Quebec City. So I worked for a year in Quebec for an inspection board.

TC: How old were you then?

CM: Well, I turned twenty-one while I was there. And then I came back at the end of a year and I graduated from the University of Toronto in 1945.

TC: And you studied math there?

CM: Yes, I studied math there. In Toronto, the set up was that when you finished high school, you began to be eligible for scholarships and things. And the scholarship that I won required me to go into mathematics or chemistry. So I did that, and after three years, I got a little tired, and that's why I went to Quebec. But when I come back, I knew I had to finish up so I did that. So I majored in math but probably if I had been in America, I might have dropped out of math. You could change subjects which you could not do in Canada. So then, when I was graduating from Toronto, I ran into an old friend of my parents, who was professor in the math department, a woman. Cecilia Krieger, she never taught me, but she was a family friend. And when she found out that I had no plans, I was sitting here thinking going as a teacher to India, she got all excited and said I had to go to graduate school. I looked into going into Caltech, but they didn't take any women. So then I applied to MIT. And I was interested in moving over and doing electrical engineering and when I went to MIT, I got a Canadian fellowship, and that was enough for tuition at MIT. And there I took some engineering courses, electrical engineering, and all I found that you have to know - you have to do

the arithmetic correctly! And I preferred more theoretical things. So I went back and finished up a master's degree with Professor Weisner and it was in elasticity. But in the meanwhile, I had become engaged and I got married in the middle of the term. So I wanted to leave MIT and go where my husband was, which was what I did. So I was only at MIT from the June of 1945 to January of 1946.

TC: But while you were there, how did you feel about MIT? Was it very different?

CM: Well, I was just thinking about that and there was one very nice thing about MIT. First of all, they had always accepted women, as far as I know historically. But there were never very many of them. And sometime, some people had given money in the memory of their daughter to create a suite of rooms for the use of the women. There were no womens' dorms and certainly no undergraduate dorms at all. So we had a place where we could meet and it consisted of a living room, a bedroom with four beds, where you could take a snooze, a kitchen where you could eat or prepare food as you'd liked. So I met a lot of the girls there and the predominant field of study was architecture. There were a lot of girls in [architecture], and my sister studied architecture so we had a common bond. And that was very nice. That was a very positive thing that MIT had, this place that was just for women. But other than that, I was kind of lonely at MIT. I didn't make any friends in classes. When I came here, that was a big difference. The math group was very integrated with the faculty and that was a big change. But my experiences at MIT were, that I was a bit lonely and I think that the girls were too. As time went on, there were many girls, and I guess its' about more than 50 percent girls by now.

TC: I would say it's about 52-48.

CM: And the 52 is the women?

TC: No it's the boys.

CM: Ah I see. Well at any rate, I liked Boston, that was a very nice city then. I first lived in a boarding houses on ... it was a terrible place, the junction of Marlboro Street, across the bridge and whatever it is that comes across the bridge ... what is that?

TC: Are you talking about the Harvard Bridge?

CM: No, the bridge from MIT to Boston.

TC: Yes, that's the Harvard Bridge.

CM: So, the room that I had, you could hear out of the window the trains going into Back Bay. You could hear the subway there, and the trolley line. And it was terribly noisy. So I moved from there and I guess I went to International House and then somebody pointed out ...

TC: The International House?

CM: There was some kind of international student place at Harvard. And somebody pointed out to me that there was a sign that somebody was looking for - First I had a roommate and we lived at the corner of Beacon and Commonwealth St. and that was alright. But we were not really great roommates. We didn't fight or anything, we didn't become good friends. And then I saw this notice and I moved in with a woman, Mrs. Epstein, whose son became a history professor at Brown. She had a boarding house with just a few boarders. She was a refugee from Germany and she ran a very pleasant atmosphere. Lots of conversation ... so I was very happy there. And that made my time at MIT much better. And I guess I walked to MIT from there. It was on Memorial Drive, it's long gone. It's been changed into something else.

TC: So what were classes like?

CM: What were classes like? Well, it was wartime. So that meant that we didn't get the best faculty. I think that was the nature of the problem. But I remember the lectures in electrical engineering were by Gillman, who was the uncle of the present Professor Gillman. And there were very good. What else did I take ... Well, then Eric Weisner taught elasticity. I took a reading course with Norman Levinson and he was very shy, I was very shy. It was actually in partial differential equations which actually became my field. But it wasn't very good - I didn't get much more than by just reading the book, having a set of notes. And what else did I do? Well, I did some experimental - Somebody told me that if I was going to do electrical engineering, I would have to do experimental work. That was just the kiss of death. There is something called the klystron and I somehow managed to plug it in the wrong way and I generated a shock outside of it ... I knew that this was going to be my Achilles heel! What are you studying?

TC: I am studying engineering. Environmental engineering. So I was thinking of taking in partial differential equations next semester since I think applied math should be very useful. I liked ODEs a lot.

CM: Well, PDEs are a little harder, but you need the ODEs to do PDEs and I think you'll enjoy that. Who did you take ODE from?

TC: Um, I guess his name was Mattuck?

CM: Mattuck? I don't know him but I have heard his name.

TC: And I think the professor who is teaching PDEs is Friedman.

CM: I don't know which Friedman it is.

TC: They have a whole set of applied math courses so I am thinking of taking some of them next year.

CM: So at any rate, where was I? I was lonesome and I didn't succeed in making a circle of friends but then if you really think about it, I wasn't there for that long.

TC: Okay, so after MIT, you said that you went with your husband to the next chapter in your life.

CM: We came here - He was working for the Bakelite, which was part of Union Carbide in Toronto and he was transferred to New Jersey. And so I tried to get a job at Bell Labs, which was nearby. And I remember that very well ... They told me that, in so many words, that being a woman, I would go into the pool of college graduates, and the fact that I had a master's degree from MIT meant nothing. So I didn't want to do that at all, I was very annoyed and I consulted my father then and he suggested that I should look up the group at NYU, which was run by Richard Courant. I obviously don't remember exactly the timing of things because it seems to me that when I saw Courant, I came down from MIT, and he talked to me. Maybe I had that behind. But anyway, I was turned off from Bell labs when that happened. So then I found that it was a terribly long commute, I think it took me an hour and fifteen minutes on the Jersey Central. I only came in three days a week. But then I had my children and Courant was very accommodating about that. He let me work as much as I wanted to work. And actually, I finished my degree in 19- I got my degree in 1951, when I did the last work with him. And last year, before I got my degree, 49-50, I had my second child. We lived in Brooklyn in a one-bedroom apartment and it was a little-it was difficult. I got pretty depressed, I had two kids, and not very good health, and I wanted to get my Ph.D. In the end, I did it, but I don't recommend that combination.

TC: So what did your husband work as?

CM: Well, my husband was a professor. At that time, he was a student too when we lived in Brooklyn. He studied chemistry and then he got his Ph.D at Brooklyn Tech in Polymer Chemistry. He made his career there.

TC: What was the world like back then? You said that you got your degree-

CM: Well, nobody did what I was doing. There were people who thought it was wonderful, there were people who would walk into my office and tell me I was destroying my children's lives. You know, people are very funny. But that just made me angry, depressed. I had four children and by the time the last one was in school, I'd been back to MIT for a postdoc and then I was appointed to the faculty here and secure in my life's ambitions.

TC: Yeah, it's very different hearing about this and comparing it to the way it is now.

CM: Well, nowadays, a lot of women work after they're married. No one considers giving up their work until children. But even then, it's still a question of the right way to go about it. I would not have liked to stay home. That certainly- I just certainly would not have liked that at all. So I didn't! And of course once I had settled in a kind of routine- well I didn't finish the story properly. So in 49, I had a second child. And then in 50, my husband got a postdoc and Harvard medical and I went up to Boston and I got a job with C.C. Lin. He was at MIT for many years. Chia-Chiao Lin. Eventually, he went to Florida and also to China- back to China. He's still alive, he's a very well-known man. He had been a student of my father's at one time, so I don't know if that was why he gave me the job but it was a good job. He was very particular. He would give me a problem to work on for two weeks, and if I didn't get anywhere with it in two weeks he would take it away and give me another problem. It went on like that for several months and the funny thing, then in connection with one of these problems, I brought in my own problem and he said, "That's the problem I gave you two months ago!" I worked in ordinary differential equations and I worked on two papers, I didn't publish my thesis, which I felt was incomplete. And those were my first two publications, the ones done under the supervision of C. C. Lin. And of course, when I went back to Boston, when I was living there for the second time, it was so very different. I was married, I had these two kids, I had to worry about getting help for taking care of these kids. I was very lucky that somebody arranged for me to get my little girl, who was then two and a half, into a very good nursery school and also got us an apartment in Brookline, so that the school was across the street. That really worked out very well for us. Then I got a very nice woman to- who looked after the little ones and the other one, who had been some kind of an off-duty nurse maid for the Kennedy's. She has rather precise ideas of what they should be doing at certain stages. But she was very good, very nice and warm. And all

that settled down. I mean, I got good help, we had a rather nice apartment, a big floor there on Brookline, what is that big street there, I forget, passing through Brookline, near the Reservoir. At any rate, that was fine. And then after a year, during that year, the Polymer Institute of Brooklyn invited Herbert to be on the faculty, and Courant had told me- First, Courant told me that when I got my degree, that was it. And I said, "Of course, of course", I didn't expect to be kept, and then I went up to Boston and there was a meeting there and Courant came. He visited us and he said if I should come back to New York, he would have a job for me. That was really very nice, I wouldn't have to look for another job. So, then we came back to New York and we lived in New Rochelle, which is where a large number of people who worked here lived at that time. And I commuted three days a week, something like that, and I had a part-time salary, which was our agreement. In 1960, which was quite a bit later, I went on the faculty. But I never pushed to have the positions. I just, I felt that they made me a very good deal, I was able to work as much as I wanted to. And when I came back here, Wilhelm Behrens came on the faculty and he was doing a lot of work in fluid dynamics, air foil, so I got into that. And then I proved an important theorem for them, so that established that.

TC: What was the theorem?

CM: Well, the theorem is that if you take an air flow and you speed it up, it would be going supersonically if the whole thing was moving faster than the speed of sound. But before it gets to there, the flow at first is very smooth, there are no shock waves in it. Shock waves are bad because they absorb energy and they cause drag. At a certain time for a particular air flow, a little bubble forms and mostly that bubble has a shock in it. But there are certain air flows for which there is no shock. So the question was connected when do you get one and when do you get the other, what is the nature of the shock you get, and things like that. That was the first paper that I did something better than the others, the others were a little humdrum. This was an important paper. And then later I worked on plasma physics, that's because that was a project here. So I couldn't work on the project and not have any teaching to do. And that was very good for me. So I did plasma physics, and later I did scattering theory. You know, send in an electromagnetic wave against an object, which might be conducting or something, and it gets reflected, what is the pattern that you get? And so, how does the energy go? Does it actually go out to infinity but you know, how does this all happen in the same place? That's a certain idea with idealistic assumptions, so that was the area that I worked in.

TC: That's really cool. Every freshman at MIT has to take

electromagnetism, but we focus on extremely basic things. I'm sure the scattering theory in up, up , up in the physics curriculum.

CM: Well, not too far up. When you look at Maxwell's Equations, then you ask, how does the solution to Maxwell's Equations behave for large times. If there are no obstacles and just space, all the energy goes way out to infinity with the speed, whatever the appropriate speed is. But if you put an object in there, especially an object with a little hole in there, a cavity, the energy goes int here and bounces out. Does it ever get out? And I think one of your professors there proved that it had to get out. Melrose.

TC: Melrose? I'll look him up.

CM: Yes, he's Australian. He's still around?

TC: I don't know, but I can probably look him up in the physics department.

CM: Oh, he's in the math department.

TC: Everyone is crazy about Walter Lewin. He used to teach freshman electromagnetism but I think he retired from it because he -

CM: He's a physicist?

TC: Yes, he's in the Physics department. He had some very interesting hands-on experiment for the freshmen class so that definitely made it more -

CM: So what year are you in?

TC: Well, I'm going to be a sophomore, I just finished my freshman year.

CM: Where are you from?

TC: I am from New York Actually. I grew up in Long Island.

CM: Where about?

TC: Have you ever heard of the Five Towns?

CM: Yes.

TC: It's in Nassau County.

CM: We used to go to Mt. Sinai, just around the beach, right around Port Jefferson.

CM: But you're much nearer in. You're not in the city, but you're close to the city.

TC: I was actually born in Mt. Sinai Hospital, right next to Central Park.

CM: I had my youngest child there. But to be more exact, she was born in the doctor's office but we went there.

TC: So how long have you lived here in New York City?

CM: Well, when we came back, after the postdoc from MIT, we lived in New Rochelle and I was here working. But in 1958, about 10, 8 years after, we moved into the city. And we bought a house in West Village and that's where I live today.

TC: Wow! Do any of your children share your interest in mathematics?

CM: Well, I have one daughter who was very gifted. She went to MIT and her professors there, especially Michael Artin, tried to persuade, and Peter Shor was another one, tried to persuade her to major in mathematics but she majored in chemistry. Actually, she did major in mathematics, but she went into medicine. And once she went into medicine, she decided to go into psychiatry. So she is a psychiatric, psychoanalyst in North Carolina. And she was the only one who had clear mathematical talent, but all of my children are better than average at math. For example, one time my oldest daughter, who was not doing very well, she came to NYU and she wasn't doing very well at all, so she took a math course and she did very well. She did the calculus course and got an A. Then she got her degree in the History of Arts but at any rate she got out of the rut by doing mathematics. And of course, my husband was quite good at mathematics too but he did not pursue it.

TC: So I read in a profile that you were the first woman to get the National Medal of Science.

CM: No, that's not true.

TC: Really?

CM: I think I am the first woman mathematician to get the medal.

TC: Oh, alright. But that's still really cool!

CM: I still don't think that is true and you can look it up. The person who might have gotten it before me is Marina Ratner. But then if you need the first applied mathematician, then it might be true.

TC: That's really cool though. I think it says here that you are the second woman president of the American Mathematical Society.

CM: Yes, I was. And certainly, the first woman applied mathematician, because the other one, the other president, Julia Robinson, who was a very pure mathematician.

TC: So how far along in your career have to come before they admitted you into the society?

CM: Oh no, there's no problem, you just pay your money and you can be a member of the society.

TC: Oh, I thought it was like -

CM: No, the thing of that nature was to be elected into the National Academy, which happened, let me look it up. Hm, where is it. [Flips through book] These are awful glasses. I was elected in 1990.

TC: Oh, that's when I was born!

CM: I see. Well, that seems only yesterday to me. Let's see, I was born in '23, so I was 67, which is a little old, so I think if they hadn't been pressured by womens' groups, I wouldn't have been elected. But I am - I became with the math society around that time. I served on the council and I was a trustee in '87. So that's how I got involved in the society. The society is anybody can join, even non-mathematicians can join, but then it organizes the meetings, the people come to sign the papers and get publicity and operate a big employment search, people look for jobs, change jobs, meet people. It's the way that these societies work.

TC: During your time at Courant, what did you enjoy the most? Teaching, or doing research?

CM: I liked doing my research, when it works. When it doesn't work, then we need something else. But I enjoyed the company of my colleagues very much. They were just a wonderful bunch. We got along, it was just very nice. I was, of course, the director here for four years and I don't think they loved me so much then but I survived.

TC: What classes did you teach?

CM: Well, I taught- the usual load at that time was, well, I don't know, but I often taught, I think there was sometime that I taught two courses but the nature of the place here was that there was a graduate department and an undergraduate department. I was in the graduate department so you taught two graduate courses and usually that was an advanced course, which would be something that you knew, something else like linear algebra or differential equations, ODEs. But at any rate, I've forgotten now how it was worked out. I never taught a full load as long as I had my children. I didn't teach at all until 1960 when my youngest daughter was four years old. Then I was offered a faculty position, and I felt that I should take it, because Courant would retire and then he would not have as much influence. So I became a member of the faculty and I joined that year. But somehow I had a part-time status and didn't teach a full load. So that was that. As the kids got older over time, I guess I became a full-time faculty.

TC: Previously, you mentioned something about when you were an undergrad, you went to the University of Toronto but you said something about if you had pursued your undergraduate degree in America, you might have majored in something else? Why is that?

CM: The thing is that in your high school, you take competitive exams in the material, and they awarded every year about nine scholarships, full scholarships, that was full tuition. And it was a sum of money, it was a lot of money, I think it was like three hundred dollars, something like that? If you took the scholarship, you had to go into the M and P, the Math, Physics and Chemistry. After your first year, you could pick two of those. After your second year, you'd pick one, and your last year, for example if you went on the math stream, you would pick applied math or pure math. So that's how it worked. But you had to stay in mathematics or physics or chemistry to hold that scholarship. Looking back, it wasn't all that much money, but I guess you have to put a few zeros on the back of it to make sense! Here, you could go to college and then pick a major a couple of years later and stay with that major. But if you went into the M and P program, you could not switch over. You could switch into something called the arts degree. See, it was complicated. In Canada, there were five grades in the high school and then if you got a pass degree in university, there were only three years. That added up to the same thing as here. But if you got an honors degree, it was a year longer. And so I was in the honors program.

TC: In the past, I've interviewed other MIT alumnae. They've mentioned you know, "My high school counselor would encourage me to apply to Bryn Mawr, Vassar, the Seven Sisters". They would tell me

about this, and I was wondering about the difference in the educational system in Canada.

CM: The difference was at that time, was that people did not go away to college. That was considered an unnecessary huge expense. You lived at home. And if you came from the country or a small town, then you would live in the dorms. But you were not allowed to live in the dorms at the University of Toronto unless you came from outside the city. And so I lived at home and I took a streetcar to school, just like I went to high school. But you asked a different question. What did you ask me?

TC: When you were in high school, did your counselor encourage you to-

CM: Ah yes, well, when I was in high school, somewhere along the line, maybe in my fourth year, I had a math teacher who took a big interest in me. And when I went into my fifth year, there was a special group that met after school to get coached to take those exams, to do well and to get scholarships. And so that guy I am indebted to because he taught me a lot more beyond what was in the regular curriculum. He didn't teach me any calculus, there was no calculus in the high school but he brought me very close to it. We learned about limits, lot of stuff. So that, and in the last year of high school, you could take geometry, trigonometry, and algebra as three separate high school courses. That was a lot of math back in the day. So then I took that exam and there were about nine or ten kids who got scholarships. There was one prize at the top, the Prince of Wales scholarship. And I was very unhappy that I didn't get that. I was really obnoxious. Instead of being please that I got the other one, I was angry I didn't get that one. Actually, the guy who got it also became a mathematician but he was a very peculiar guy and he never made a good career. And I think it was because he was so peculiar. He wasn't sufficiently a genius to survive at the very top, and at the in-between levels, he didn't - maybe he chose the wrong problems but I made a much better career than he did.

TC: Actually, when you mentioned the three different high school courses, trig, geometry, algebra, my high school switched back to separate classes for those because they thought it might be better to split them instead of integrating the subjects. I don't know if you're familiar with the New York State way of dealing with math but they keep on changing it in the last few years. But I remember when I was in high school, just past a year ago, I took the calculus courses, the AP Calculus courses. That was fun. And my favorite teacher was my math teacher.

CM: Not surprising.

TC: I didn't really like chemistry.

CM: Oh, I see. Too messy. So how did you get to MIT?

TC: Well, I actually didn't know that I was going to go on a "tech" path. All the other schools I applied to were more or less liberal arts school. But when I went up to visit MIT, it was a really nice environment, especially the people, but now that I'm actually there, it's a little different, right? I still like it though. A lot of the people there are very driven.

CM: Well, when I was there, the main problem was that the war was still on, so that was influencing how people felt around campus. And when I went back there as a postdoc, that was better that way. But when I was there as a postdoc, I realized in retrospect that there was a lot of friction there between the math faculty members.

TC: Why?

CM: Why do people fight? I do not know. But anyway, there was friction there. And it emanated down to the postdoc level, that you felt it. So I missed the congenial atmosphere, which was much smaller here but I was okay. I got a lot out of the two years that I was a postdoc. Do you sail?

TC: Oh actually I don't. My friend does though, he took me on a boat one time. That was scary.

CM: I didn't do that as much as I should have then.

TC: It's beautiful out there in the fall, when they're still out there. Then it gets cold. So at that time, there were no women undergraduate housing but you lived across the river.

CM: At first, I lived across the river, then there was all this terrible noise so I moved and I lived on Memorial Drive, in what was actually at that time, a row of about three or four houses, old wooden houses, which were really sort of small wooden houses, that were owned however by Harvard. They eventually tore it down and put up something else.

TC: I remember reading about a house at 120 Bay State Road [for women] but I think that probably came later for women students at MIT.

CM: When my daughter was at MIT, she lived at - there was a dorm with this well-known woman's name-

TC: McCormick?

CM: Yes, so she lived there. And then she lived in one of the houses on the campus and then she had an apartment someplace.

TC: Now, there are a few new dorms on campus.

CM: How about the number of students? Is that about the same?

TC: It's around four thousands undergraduates, I don't know how many grad students there are.

CM: That is sort of a standard size.

TC: Besides the gender ratio, I don't quite know- I'm sure that there is a lot more diversity on campus than there was when you were at MIT.

CM: Also, there is a big business school, the Sloan school that was being started up there.

TC: Yes, the Sloan school.

CM: I had a reasonably good time- I was not suffering, I was not unhappy at MIT but here, I felt more at home. I enjoyed it a lot.

TC: So looking back at your career, what was the hardest thing you had to overcome?

CM: The year 1949 to 1950. I had a second child and was trying to do my thesis, things were not going well. I couldn't prove the right theorem and that was the hardest time. We were living in a one-bedroom apartment in Brooklyn and somebody would come in during the day. I got depressed. I was very depressed. But when I had four children, I had better health, and I was somehow more attuned to what I had to do.

TC: But overall, you enjoyed your career?

CM: Oh yes, enormously. I never thought it would turn out so well. I enjoyed it very much. Well, I'm eighty-six years old and I still come into the office. I came into the office today because I was going to see you. But I had lunch with my colleagues beforehand.

TC: I actually have a friend who is a student here at NYU.

CM: Undergraduate?

TC: Yeah, so sometimes I see her.

CM: Does she know what she is going to major in?

TC: I don't know what she's majoring in, I think she's taking a bunch of humanities courses, history-I think she's on the pre-law track.

CM: One of my daughters is a law professor here at NYU so that's very nice.

TC: So you can come and visit her whenever? That's nice, that's really nice.

CM: She lives right nearby. I have two daughters, one lives- one has a house three or four blocks from us, and another daughter that lives in Connecticut and works in the city. Yesterday night she stayed over.

TC: So what do you like to do now? What are your interests?

CM: Well, there are a few theorems that I wasn't able to prove that I am still trying to prove. Other than that, in the summer we have a place up in Canada, so I go there and I swim. This year I was kind of sick so I didn't do it but until this year, I belonged to a swimming club, where I could go and swim at Chelsea Piers.

TC: Yeah, I've heard of Chelsea Piers.

CM: There is a beautiful view of the Statue of Liberty and I swam there several times a week. But I haven't been for a while. I don't think I'm a member any longer. So what else do I do? I used to like to walk but I am having trouble. It doesn't get any better as time goes on! I read but not a lot. I used to be a big reader but I don't read a lot anymore.

TC: I haven't read any really good books this summer besides the ones that I have already read and want to re-read.

CM: So what courses do you take besides math at MIT?

TC: Next semester, I have to take an ecology course and an engineering mechanics course, a lab, and the PDE class.

CM: Sounds like a full load.

TC: I actually already have a few of my textbooks so I haven't cracked them open yet.

TC: I think I did well.

CM: You don't know yet?

TC: No, we got our grades a week after finals because they post them online. It's all very quick now. You either know them in a week or-

CM: Or it's the end.

TC: I think I did well. I really tried to mentally prepare myself for my first year.

CM: Where you wouldn't be the star.

TC: It's tough for some people to adjust but I'm happy with the way things turned out the first year. I've just got to keep on chipping away at it.

CM: Are you the oldest in your family?

TC: No, I have an older brother.

CM: What does he do?

TC: He's a sociology major at Vassar.

CM: So you go to the boy's school and he goes to the girl's school.

TC: The funny thing is that the two schools were founded in the same year, they have the same colors, same school colors, and MIT has a Vassar Street. It's very uncanny.

CM: Now, at some point or other, Wellesley had some affiliation with MIT.

TC: Yeah, they still do.

CM: What does that actually mean?

TC: It's a cross-registration program. So they have a shuttle goes in between Wellesley and MIT. You can cross-register for different classes.

CM: Are you tempted to take anything at Wellesley?

TC: Not really.

CM: No, you're in science and engineering.

TC: I mean, it's nice to take a humanities course from time to time but I don't think I would want to travel that much. I could be spending my hour on the bus differently.

CM: Well, I think you can get a few- well I should tell you a funny story about MIT. I went there, it was wartime, I went in the beginning of June, and when the second term started, which was supposed to end in February, and sometime after six or eight weeks, I was into my second term, they called me in and said they looked over my undergraduate record, which was this specialized stuff in Toronto, and they said I hadn't taken enough humanities, that I had to stay on at MIT in order to take some humanities. I blew my stack! I said that if they did that, I was leaving. And they backed off. And the course they had in mind for me was a course in economics. I never took it.

TC: I didn't know they had a humanities requirement back then.

CM: This is 1945, 1946. So, they may have invented it for me but at any rate, that was it, I am a very mild person generally and I had never gone and blown my stack at a bunch of people on what I should register for and so on, but then I did. And they backed off.

TC: There is a requirement for the humanities now, you have to take eight courses in humanities in total before you graduate.

CM: Well, of course, I was in the graduate school and they were trying to make me take that kind of requirement for something that was way in my past. That was my only run-in with the authorities. Now, when I arrived at MIT, I remember when I arrived then, they had somebody set up to counsel women. So I remember advised where to room, I think they even got me the first terrible room, but there was- they did make a special effort for the women.

TC: Like, a dean for women?

CM: I don't think it was someone with the rank of a dean. Somebody like an assistant dean.

TC: So just someone that women students could go to?

CM: Yes. Someone female students could go [talk to].

TC: I'm trying to think about what MIT looked like at that time.

CM: Well, it was only the big building, only the main buildings. There were some huts because they were doing - see, during the war, the radiation lab, which was what it was called, many physicists and engineers were hardly teaching at all and working in those labs. And then there was something called the Lincoln Lab. But I don't think it was situated there, it was somewhere else.

TC: I have a friend in computer science who worked at Lincoln Lab.

CM: So people got support that way. But of course, I was not a citizen or even an immigrant. I was on a student visa and so I had no rights whatsoever. And after I finished, since I wanted to come here, I went back to - I had to go back to Canada and I lived with my in-laws for about two months while I waited for my visa. It was- I never remember worrying about whether I get a visa or not get a visa, I just assumed everything would work out.

TC: I'm thinking about the [fact that the] entirety of West Campus just got erased!

CM: There was a building across the street from the main entrance to MIT which I think was a men's student dorms, or maybe graduate student dorms. My memory says it is a brick building.

TC: Yeah, I think that's Bexley.

CM: It's got a new name because someone gave it money.

TC: Or it might be Ashdown, because there are two brick buildings there. I'm not sure. I live in East Campus, which is east of the main building. It's one of the older dorms.

CM: I think that's about where my daughter was living. You walk up.

TC: Yes, that's where I live.

CM: Not very far from the President's house, is it?

TC: Yeah, the President lives in front of Senior House, which is also an old dorm, but they got renovated now so it's not as old.

CM: Could she have lived at Senior House in her last year? Well, to me that was so much better than when I went there. I had to walk

across the bridge. I used to walk down from where I used to live in Memorial Drive. I have this big image of me walking across the bridge. But walking across the Memorial Drive, I don't remember doing that at all but I must have done it everyday for months!

TC: It's always a lot better to walk with a friend, makes it go a lot quicker!

CM: And you say that bridge is the Harvard Bridge?

TC: Yeah, they named it the Harvard Bridge, I'm pretty sure.

CM: Even though it doesn't connect Harvard to anything?

TC: Nope. They do have another bridge actually.

CM: There is another bridge up near Harvard.

TC: But it's not the Harvard bridge. I don't know why they did that.

CM: When I used to live in Brookline, I used the other bridge. I used a car. Do you drive?

TC: Not up in Massachusetts. I can just walk or use the T.

CM: Public transportation is pretty good in Boston.

TC: The T is very very clean compared to New York.

CM: Oh, absolutely!

TC: Well-lighted, air-conditioned, everything works.

CM: It's air-conditioned! Well, here a lot of cars are air-conditioned.

TC: Except the lighting is not as good. It's very different, I think the subway system is more like a grid, but in Boston it's all over the place.

CM: Now, so you decided to go to MIT because you liked it, you liked the atmosphere, and you feel that was a good decision for you?

TC: Yes. I don't know, I guess if I hadn't gone to MIT, I probably would have studied economics or some form of applied math but I think I made a good decision. I don't think it's so much making the right choice, but you have to follow through with what you have and don't

look back.

CM: Yes, that's a good idea, that is a very good idea. It all comes back, what was it like ... yeah, I think when I first came to MIT, I somehow remember that I was taking- I was going- I'd been traveling with my younger sister and I took her down to New York and put her on the train, and then I went back up to MIT, I guess, but there are pieces of it that I don't remember. I don't have an image. I remember that first bedroom, and I remember the walk. And I remember living with the Epsteins on Memorial Drive. Those are the strong memories, oh yes, I remember another funny thing at MIT. This was when I went back as a postdoc. So the problem was there are a number of post-docs at MIT and also graduate students. And there were more or less given offices together. However, they had a rule that they wouldn't put a woman in an office with a man, there had to be a third person. So therefore, I was put in an office with- this was when I was working for C. C. Lin, there's a classroom in the math department but at the end- there's a classroom and then there's an office underneath it, which is sort of long and has limited windows in the middle of it. And that was made so there could be three desks, three people. And I was with another woman who explained all this to me, and there was a man. So it was alright to put a man with two women but I do not think they would not have put a woman with two men, and they certainly would not have put a woman with a man. So at any rate, I am sure that is all gone by now. So, what else can I do for you? If you'd like to go to the lounge for fifteen to twenty minutes and make sure you have everything you want, and then you can come back and ask me any question or so, would you like to do that?

TC: Okay.

CM: I'll read my email, I'll wait for you.