Interviews of the Margaret MacVicar Memorial AMITA Oral History Project, MC 356

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Irene Greif – class of 1969

Interviewed by Maggie Chen, class of 2022

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Margaret MacVicar Memorial AMITA Oral History Project

Irene Greif (SB Mathematics 1969, SM Electrical Engineering and Computer Sciences 1972, and PhD Electrical Engineering and Computer Science 1975) was interviewed on August 1, 2019 by Maggie Chen (SB Brain and Cognitive Sciences 2022) at Dr. Greif's home in Newton, Massachusetts.

Dr. Greif is the first woman to earn a PhD in Computer Science from the Massachusetts Institute of Technology and a founder of the field of computer supported cooperative work (CSCW), which brought a group collaboration-based perspective to the realm of computer science. Some of her innovations include version management, new interfaces to email (called Reinventing Email) and social bookmarking. Dr. Greif has received numerous accolades, including having been named an IBM Fellow, a Fellow of the American Academy of Arts and Sciences (AAAS) and a Fellow of the Association for Computing Machinery (ACM). She is also a member of the National Academy of Engineering and a Women in Technology International (WITI) Hall of Fame inductee. In addition, Dr. Greif is among those featured in the Notable Women in Computing Playing Card Deck, in which each card profiles, in baseball card-style, one of 54 notable women in computing.

Dr. Greif grew up in Brooklyn, New York and discovered her interest in math from her mother, who was an accountant. After graduating from Hunter College High School in Manhattan, she earned her undergraduate, master's and PhD degrees from MIT. During the academic parts of her career, Dr. Greif was a computer science professor at the University of Washington and at MIT. Dr. Greif left academia to pursue research, becoming an innovator at both Lotus Development Corporation and IBM. She retired from IBM Research in 2013 and currently mentors graduate students while pursuing artistic interests and traveling.

CHEN: To start, could you please tell us a bit about your childhood – for example, about some of the things that influenced your interest in STEM subjects? Also, whether your parents had some influence, or whether you had a mentor of some kind?

GREIF: Well, my mother had been a bookkeeper, an accountant, and she would give me a list of numbers to add up. I thought that was fun. She taught me how to do math the way she felt was right, but also how to write it down the way they wanted me to write it at school so I wouldn't get in trouble – so she had the most direct impact on me when it came to math.

Both my parents just thought that their kids were wonderful and just tried to do whatever they could for us. I grew up in Brooklyn and went to local schools until high school. I went to Hunter College High School. It's one of these exam schools in Manhattan. It was a girls' school, and it didn't feel like a particularly math and science-oriented place.

CHEN: Oh, really?

GREIF: Yes. But there were opportunities, being next door to Hunter College. I actually did get to take calculus in my senior year and do computer programming in my senior year on their computer, the IBM 1401, so there were opportunities there. But I also saw it as another way in which I was sort of unusual.

I took the exam for [New York's] Bronx [High School of] Science as well. I always felt that if I had gone to Bronx Science I might have been overwhelmed by the amount of science the other people did. I think it actually probably helped me as a somewhat shy person to be maybe the big fish in a small pond kind of thing (Hunter was very competitive, but the science-oriented were a minority). I don't know what else to say about my childhood.

CHEN: Did you have a mentor?

GREIF: Well, my mother, but there were a couple of things in school. In junior high, I had a teacher who really liked me, but also, she was both my homeroom teacher and math teacher. She was the first teacher – I got somebody else to do this later – who got me the teacher's version of the math book, so that I could look up answers, so I could work ahead and see if I was doing things right and so on.

I always wanted to try to find her after, but I don't even know her first name. Mrs. Jacobs in Brooklyn. My junior high has a Facebook page. I keep writing every once in a while, "Does anyone know where she is?" But by now I don't know if she'd be alive. She was one mentor. I think she was the main person. I don't think there was somebody I felt that way about in high school – although I do remember one teacher getting me another teacher's book. I had that idea from Mrs. Jacobs, so I asked for that and somebody else did that for me. The summer between my junior and senior year in high school, I went to a summer program at Cornell and took calculus. That was good for getting me ahead on math, but not with the personal touch of a mentor.

CHEN: That sounds interesting. You mentioned that Hunter is an all girls' school.

GREIF: It was. It did not last as a girls' school for long after that. In terms of feeling a little like an outsider, there were girls who had been there from 6th grade, and I

went in 10th grade. They took girls in 6th grade, and maybe a few more in ninth. Then one class of us came in 10th grade because we had just been going through other programs in regular schools, so I felt like a bit of an outsider that way. I think when people will ask about it – and you may do that later – about how it felt to be a girl at MIT, I felt like I'd had outsider experiences before. It's part of what I'm used to. Also, when I was young, I was very shy, and that probably kept me feeling – well, I don't know cause and effect, but it was a kind of outsider feeling, too. But I think that assuming that was me and internalizing it as my personality is probably something that protected me also later as I was in these environments that had a few women and so on, environments that might otherwise have seemed intimidating to people. It didn't occur to me to be angry about it or blame anyone else.

CHEN: It's interesting that even though you were an all-girl environment at Hunter, you still felt like an outsider, which kind of prepared you for what was to follow.

GREIF: I remember feeling that there were much more talented musicians [than I was], a lot of things like that. My parents had thought I was amazing at everything. I played the piano, so they thought I was going to go to Juilliard Dance [in New York]. I was going to marry a prince. I don't know, in the '50s, Grace Kelly was this actress who married a prince, and my father later confessed to me that he always thought I would marry a prince. They had this exaggerated notion of how wonderful I was. When I got to Hunter and saw how good a real musician was, I sort of backed off those things, but I still got to excel in math. Not so much science generally, but math.

CHEN: I think I can understand what you mean, because I also played piano. I started late, when I was about nine years old. Like you said, I kind of knew that there were people who were much better than me. You learn for self-enjoyment, not for competitions or going to Juilliard or something like that. I think I understand the sentiment.

            Do you think that it was a good thing, though, that your school was all girls?

GREIF: I don't know. I know that there's a lot of evidence and support for the fact that single-sex schools can be very good. I think, again, personally for me, being in a school where I didn't have to deal with dating until much later seemed good. I think that might be part of what people would say, not having the distraction and not having to fight for air time if the guys are talking more – it's supposed to be better. I also thought that not having that social environment was just fine for me, but having that later was fine. So I don't know what's lost.

            The year we were doing our 50th high school reunion, I was invited to be the distinguished graduate, a speaker at the graduation at Hunter High School. This

reminds me that Millie Dresselhaus went to my high school years before. [Professor Dresselhaus, a pioneer for women in science and engineering who was also a trailblazer in carbon science and carbon nanostructures, was associated with MIT for 57 years. She held professorships in two departments, Electrical Engineering and Physics, and was MIT's first female Institute Professor. Among numerous other distinctions, she was awarded the Presidential Medal of Freedom in 2014.]

Anyway, I had to go back to give that talk; the reunion was the week before the talk. And the reunion, besides things just for our class, they have a general meeting where every five-year class gets up and speaks. There were women from the 1930s and '40s still alive. Sweet little old ladies. That's probably what people say about me by now! And then they get to my class – I graduated in '65. (I think by '70 it was co-ed already.) A guy got up to talk for the class of '75. Every single class after the school was co-ed, a man got up to speak.

CHEN: Oh!

GREIF: So statistically, it could have just happened. Maybe the women had better things to do. But it did worry us that this formerly wonderful place for Hunter girls, who were so fiercely proud of being Hunter girls, that opportunity might be lost, and the women's voices might be getting swamped out by men. I ended up having to find a way to talk about that in the distinguished speaker thing the week after without being a downer for these guys that were graduating, too. I ccouldn't say, "You've spoiled our school."

We do have Lin-Manuel Miranda [creator of the musical Hamilton] from our school, so I can't say that all the guys were a problem. But it is worrisome that women's voices can be suppressed, and I think something is lost. It's hard to be an advocate of single-sex schools, because it's sort of not natural, or whatever, but I do think something was lost at Hunter.

The other question is whether the admissions tests at places like this – whether it's a self-fulfilling prophecy that the test will predict who will succeed. That's what the issue is on any kind of diversity, if you have to change your criteria, if you have to try to learn how to choose people through different reasons, you might also have to change your culture once they get there so that everybody can succeed. And people usually don't make it all the way to that.

CHEN: That can be very difficult, to adapt to a different culture.

GREIF: There were things like that at Carnegie Mellon. They did a lot to get more women into their computer science program, and they also did have to change the culture. What they found is that, not only were the girls not applying from

high school because the boys were all hackers and doing all these things that made them seem like they were better at computers, but once they got to Carnegie Mellon, they had to find ways to have those guys not be the dominant voice in class. If you gave the young girls who had not been hacking computers all through high school a chance to learn how to program, they did just fine. But if women didn't get a chance because they were so intimidated by these guys who seem to know everything because they've been hacking all through high school, then they didn't do well.

I've heard people here do this, too – talking to their class about how to talk in class and what it means to have been hacking, having these experiences before. Because they're not always predictive of more success, unless, though, they're used to suppress the other voices.

CHEN: Right. Do you think that may have affected perhaps the number of girls who applied to MIT during your time?

GREIF: I'm sure. Yes.

CHEN: Do you know how many, or if any of them, also went to MIT with you?

GREIF: From my high school?

CHEN: Yes.

GREIF: Well, one other came-- My mother always talked about the fact that the guidance counselor said I shouldn't apply. But Linda Sharpe [Political Science '69, PhD '75; a co-founder of MIT's Black Students' Union and first African American to serve as president of MIT's Alumni Association] was on the [MIT] Corporation for a while, and she was in my class at MIT. She's been very active in black student politics, and the Alumni Association. So one other person came with me from Hunter. And, I think, for quite a while, two women a year came from there. I have no idea recently how many might have come out of Hunter.

CHEN: How was your transition to MIT?

GREIF: Well, they had opened the [women's] dorm so that more women would come--

CHEN: McCormick?

GREIF: Yes. That was important to have families allow their girls to come; they needed a dorm. We were 50 [women] in there, so we had some company. But it was quite noticeable in classes, you'd feel like some teacher was looking, staring at you and talking to you. It was weird to be in that small minority.

I have to say, I never had as bad an experience as I've heard from people in other disciplines, where they were really explicitly told "Your degree will be wasted," or "We know you're not going to use this for a career." Have you heard stories like that?

CHEN: Not yet.

GREIF: Well, I'm not sure that we would hear it at MIT. Definitely at Harvard Law School. I mean, if you've gone to see the documentary about [Supreme Court Justice Ruth Bader] Ginsburg, she went to one of these sessions with the dean-- I've heard the same stories from friends of my husband (Harvard class of 1963), of new women students invited to an evening with the dean, who told them, "We're never going to have more than 10 percent women in the class, because it's really a waste. You're not going to use your degrees." This is how they were welcomed to Harvard Law School.

I never had that kind of experience, never as explicitly negative as that, but definitely weirdness. You perceived that you were being noticed.

CHEN: Was that among your classmates, too, or just with the professors?

GREIF: It was more with the professors, but there was this other thing: People would join study groups to do homework together, and I never found it comfortable to be in a study group with a bunch of guys. Again, it just felt like a kind of small, intimate group where I wouldn't understand what was going on socially versus just doing the work together – so I either worked with other women, or alone, pretty much. I don't know how much that mattered, because I think you can learn a lot from working in groups.

CHEN: Of course, because you have been an important figure in the development of Computer-Supported Cooperative Work (CSCW) [a discipline that Dr. Greif played a significant role in developing]--

GREIF: As you say that, it comes to mind how people say psychiatrists go into the field because they're crazy and have to deal with their own issues. I'm probably in the field about being social [in computing] because I struggled so much with social things. It's very possible. Who knows?

CHEN: Speaking of community, you mentioned living in McCormick. What was it like to be there in the early years? Was there a real community of women? I'm living there now.

GREIF: Are you? I was going to ask.

CHEN: Yes, I'm a sophomore studying on brain and cognitive sciences, or neuroscience.

GREIF: How did you choose to be there in McCormick?

CHEN: It's a long story, but McCormick was my second choice. During CPW, the admitted students' gathering, I had stayed at McCormick. I thought, "This is a pretty nice building. I like the paintings. I like that there's a piano. There's a good vibe to it. I think I would want to stay here possibly over the school year." And then by the lottery, I've heard that, "Oh, we need more girls to be at McCormick," because now that all of the dorms are co-ed, they don't have enough girls to be at McCormick. So all girls who are one, two or three [on the list], go to McCormick regardless. I'm fine with it. I like it.

GREIF: I have felt, in visiting it, that given that everything else is co-ed, that it'd become the place for very conservative people, like women who wanted to be in an all-girls' dorm.

CHEN: Oh, really?

GREIF: I don't know what gave me that impression.

CHEN: There are more international students in McCormick now. Maybe there are some families with more conservative views about sending off their daughters to a co-ed place like MIT.

GREIF: Conservatism wasn't the issue when I was there. The dorms were single-sex and everybody had parietal hours, hours when a guy could be brought in.

CHEN: For the date rooms.

GREIF: Yes, there are still date rooms here. I saw that when we were there for our [50th] reunion in June. It didn't have any of that feeling attached to it of being the choice as opposed to being in a co-ed dorm. And it was a useful community. At least there was some place where there were a lot of women, so that was fine. Yes.

CHEN: It sounds like it was very different than what it is like now, actually.

GREIF: I think it's very different now.

CHEN: It is very different.

GREIF: The whole campus was very different [when I was a student]. I don't know if anybody had co-ed dorms in the middle or late '60s.

CHEN: Is it possible to say what some of your best and worst experiences as an undergraduate were – or your time as a grad student at MIT, for that matter?

GREIF: I don't know even know what to say about worst.

CHEN: Or most memorable?

GREIF: This is bizarre, because in a Humanities course, I remember I wasn't doing well. I was talking to the professor, and he asked me-- There was some scene in Dante's Inferno, I think. Whatever it was, it was described in terms of birds or something. He just asked me to try to find a different way to describe the same thing, and I was a total blank. I don't know if I felt humiliated, or that isn't what I could be good at. But I do remember later in a psychology course, being able to write a really good essay on a topic. I think there was a lot of development in my non-science courses over the time I was there.

The thing I do remember most, I guess, is that there wasn't quite a computer science major. It was being formulated as part of electrical engineering, which is a huge thing now. (Well, it might change with the new Schwartzman School, I guess.) It had too much of an engineering emphasis for me in the end. What I was doing was going back and forth, sort of, between math and electrical engineering. I remember really getting a strong sense of different ways of thinking and different disciplines. I think that that influenced me a lot later, for being able to appreciate interdisciplinary work and know how to, if not switch how I'm thinking, appreciate that someone else is thinking differently.

I remember very clearly: Somebody once was doing a proof in a way that-- I just suddenly realized that's how you do that kind of math. Well, that's the other thing – that you'll ask about what influenced me in math, but my mother giving me numbers to add up, or arithmetic, or even geometry, and trig and stuff that that you do throughout school, it's all so formulaic.

CHEN: Right. Very systematic.

GREIF: It's a really big step to figure out how to do proof, where you have to kind of have some insight about what are you trying to get to and how are you going to get there.

And so many things about math at that level, even calculus, I learned it as plugging in formulas. It was years before I really understood what calculus was about. I think that coming to understand higher math – or just that math isn't arithmetic, even though I still love playing with regular just numbers – was an important, formative part of my education.

I had some difficult roommates freshman year, and it was hard figuring out how to deal with that. And I didn't do well: I had terrible grades. I can't do physics.

CHEN: Neither can I!

GREIF: I do have my things I can't do. Certain kinds of math I never could do. I'm terrible at combinatorics. I just will believe any story I'm told. I mean, they always seem plausible about how you count things up. I mean, I just can't do it.

By the end of my second semester, I did not do very well. I dropped some courses and didn't have good grades. But I remember being grateful that my scholarship stayed in place. I guess one semester isn't bad enough to take a scholarship away, because it was expensive for my parents to be paying. And then I did OK sophomore year. And then my junior and senior year, I was mostly taking graduate math courses.

CHEN: Oh, OK.

GREIF: It was, at the time, almost expected that you just get A's in graduate courses. I don't know if that's still the case.

I started having very good grades. I must have taken more than just math. I did psycholinguistics, which was my minor in graduate school, so I took psychology courses and the math. Nothing else stands out as to what else I took.

CHEN: They always say the first year is like a fire hydrant: you're hit with a huge gush of water. It's so daunting when you just come in. Did you have a similar experience?

GREIF: Well, yes and no. I got through the first semester. I did badly the second. But also, as I remember it, we were in the first year when it wasn't totally regimented what you would take. Before then, it used to be chemistry, math, physics.

CHEN: Right.

GREIF: And every week, there was an exam in one or the other. It just sounded way worse than what we had. Again, I'm really always thinking, "Whatever." I felt like that was a relief. But also, "Maybe I can get a real MIT education."

So I don't know if I got the fire hose thing. Did you feel that way freshman year?

CHEN: I think so, in different ways. The culture was different than when I was in high school. You'd go home after a standard day. But here, the day still goes on after classes – there are still things you need to keep up with. That's one thing I noticed in particular. Also, it is very competitive for undergraduates, UROPs [students in the Undergraduate Research Opportunities Program], to start getting experience in laboratories or research.

GREIF: We didn't have that same competitive feeling, I don't think. Or at least I wasn't aware of it. But I must say, my role is now mentoring. I do see some graduate women, or graduate students, women I mentor, and I can't believe what they have to go through with having to publish all the time.

CHEN: Right. It's all about publishing papers!

GREIF: When I finished my PhD thesis and started my first job, the first thing you'd do is publish about your thesis. You didn't publish all through school, though. That's kind of crazy.

CHEN: It is, very.

GREIF: It sounds like you almost need to publish as an undergraduate to get into graduate school.

CHEN: Exactly.

GREIF: And then you have to publish all the way through.

CHEN: Publish more before.

GREIF: I've talked to faculty members, and it's not even just our department or other departments in particular. The notion of what a PhD thesis is really changes, because it's not as much of a sustained research effort of two, three years.

Some of this comes from computer science being a new field. But I always remember somebody telling me, "You know, Irene, if you think about any problem for two years, you will know more about it than anyone else in the world. You will be able to write your thesis." It just feels like that's just not true anymore.

CHEN: Yes.

GREIF: It's like everybody's racing for--

CHEN: It's a lot, yes.

GREIF: --incremental next results.

CHEN: That's why it felt very, very daunting. Like everyone's already figured everything out and you're already behind even after one week of being here.

GREIF: I feel like I don't even know how to advise my mentees, because I want them to calm down a little bit. I can't tell them to calm down too much, or they'll just fall out of the race.

CHEN: Right. It's very strange, I think, the way MIT has shifted over time.

GREIF: Yes. A lot of that just didn't exist. As I said, UROPs didn't exist [when I was a student], for example.

CHEN: I'm wondering about two other things. First, what made you stay at MIT for so long? You have three degrees from the Institute. Second, you were at the Institute during a very political time, during the Vietnam war and a time when there were many campus protests. What was it like? And what made you stay?

GREIF: Some of it is inertia. I mean, some of it is that I was interested in computer science, and MIT was one of the best places, if not the best, to stay for graduate school.

            The political stuff I think kind of passed me by. I was aware of it, but I wasn't active in it.

            It was very interesting. At my (50th) reunion, they showed a film from November after we graduated, so November '69. Our class should have been gone, although a lot of people stayed for the fifth year to avoid the draft. For the guys, it was certainly different; you stayed in school as long as you could, so you wouldn't get drafted. In fact, in the book published for our class, they had the letter advising people on what to do when you get your letter from the selective service and so on. That was a big deal.

            People I knew were much more involved in the protests and so on than I had been. That was not a force either way for me. I remember listening to the [military draft] lottery, and that the guys were worried about what their number would be.

            For me, though: First, for computer science, MIT was the best place. Why not just stay? And then, a lot of MIT PhDs just stayed on the faculty.

CHEN: I see.

GREIF: The year I finished, they literally were not hiring, and I felt relieved not to have to find out if they would really want me. I ended up going to the University of Washington, in Seattle, for two years. But then, MIT was hiring two years later, and so was Berkeley. I interviewed at two places and came back to MIT then. I wasn't sure already that I was enjoying trying to teach and do research. You know what it's like.

CHEN: Yes.

GREIF: You know, I thought you go through the PhD in a place like MIT, you think you want to be a professor. And also, I'd been told all my childhood that I should want to be a teacher. I thought I wanted to be a teacher. But for me, it was not working out to be kind of juggling the two careers, the research and the teaching.

I think I had enough of a glimmering of that at Washington, which was about to become a top school but was not yet then. I sort of felt like, "If I'm going to get out of this, I should do it from MIT." It just seemed like the better stepping stone onto other things. And they were hiring, so I went back to MIT.

Then, after a few years, I switched to the research side at MIT. So how I stayed at MIT for so long had a lot to do with the fact that I was a leader in this newly formed field, CSCW. [Computer-supported cooperative work is a term coined by Dr. Greif and Paul Cashman in 1984. It addresses "how collaborative activities and their coordination can be supported by means of computer systems." It goes beyond technology to consider how people work within groups, and how technology affects those interactions.]

Even leaving, I feel like being faculty is really being first class, despite there being a research track: research associate, principal and senior, and rolling tenure for the more senior positions. It's kind of a track, but it's not the same as being faculty. It turns out that even in what maybe it was a second-class track, it was a really good place to be, and it gave me the opportunity to start CSCW.

The computer science department maybe now has finally changed a bit. But it was never very friendly toward user-facing kinds of things. It was much more systems, networks, hard core computer sciences.

CHEN: I'm curious about that.

GREIF: I was a bit of an outsider there – big surprise. But I was able to find the right people in the right place to be able to start that field. And then it was time to move on.

CHEN: I'm interested in how your innovative career has been. You mentioned CSCW. I wonder how many people even know about that now, not because it isn't important but because there are so many other things to know about in the field.

Some articles written about you mention your work on social bookmarking and Lotus 1-2-3 [a spreadsheet program from Lotus Software, popular in the 1980s, that was the first major application for IBM personal computers], for example.

Could you perhaps describe what these things were and how they were innovative?

GREIF: Well, my daughter ended up recording a lot of the talk I gave. Did you come to the day that I spoke at my reunion?

CHEN: Unfortunately, I was out of town.

GREIF: I have probably a recording, maybe a written version of it. Because when I looked at the recording, I was all handwaving. I thought it was good at the time. But I kind of reminisced about all of that. And it might be just as easy to have you see or read that. I could get you various versions of the story. There have been interviews, and there are some online.

[A transcript of an oral history IBM did with Dr. Greif in 2003 is available at: https://www.ibm.com/ibm/history/witexhibit/pdf/greif_history.pdf. It includes details regarding her role in the development of Lotus Notes and Lotus 1-2-3.]

CHEN: Right. I've seen the IBM interview you did a while back.

GREIF: There was a three-minute video when I got some Women's Hall of Fame award; you could find it by Googling. [Available here: https://www.witi.com/halloffame/143610/Dr.-Irene-Greif-IBM-Felow,-Director-of-Collaborative-User-Experience-Group-IBM-Research/] That sort of had three chunks, including a little bit about my childhood, a bit about my work, and then it had a third chunk. The talk I gave at Hunter, my daughter recorded. There's an article about starting CSCW that was published within the last year. So you could read that story. [Available here: https://www.nature.com/articles/s41928-019-0229-y] What else? And this talk I just gave.

When you say Lotus 1-2-3, young people don't usually know any of that stuff. The first stpreadheet was Visicalc, and then Mitch Kapor [founder of Lotus Corporation and instrumental in the development of Lotus 1-2-3] built on that idea to ads some graphics and data anayliss tools (the "2" and the "3"). Today, you would probably know Excel. It was so much fun at my reunion to ask people not just about 1-2-3 but about VisiCalc [the first spreadsheet computer program for PCs] even before that. They had heard of it, and most people now haven't.

There are a bunch of things out there that describe how we started this – but some of the things that we did once I had the research group were reexamining any application for how it could be used by a group. We were always looking for a shared experience around anything.

The one patent I hold is for something called Version Manager in 1-2-3. What we realized is that the wonderful thing about spreadsheets was the 'what if' experiment. You could type in a number, and everything changes, and you see the impact. But if I'm working with you, and I type in a number and give you the new sheet, you don't see what it was before. It doesn't show my reasoning. And we added some features that would let you record some of the versions and let somebody flip back and forth easily. That just makes a huge difference in how people might understand and work together.

CHEN: Right.

GREIF: As it happened, we added it to 1-2-3 just before 1-2-3 kind of lost out to Excel. So, it didn't really have impact as a part of that product. But I'll always remember a focus group we had. It's interesting, because this experience is still relevant--

My daughter is non-technical but is involved in product design at Amazon, and she'll be trying out ideas. You'll have an improvement to a system, and if you talk to the people who are surviving, they were using this terrible system but found their ways to cope. They just won't be impressed with anything you want to hit on, because they say, "I don't need that. I could do it." But if you talk to anybody new about how they'd like to work, you could get way different reactions to a good, well-thought out set of features. So we had this Version Manager stuff. We showed it to people in focus groups who were used to using spreadsheets and keeping files multiple files with all different versions of the spreadsheet with made up funny cryptic names. They had their ways of doing things, and they didn't care.

Then we kept at it and kept at it. I always remember when somebody said, "You know, I could imagine, though, that you could get more buy in, you can get consensus better if you could look at it this way." And it was just like, "Oh, well, that's what we thought." So it can be very hard to introduce change to something that people have learned to cope with.

CHEN: Right.

GREIF: But sometimes, you can get past that. And especially around group things, it's turned out that-- Well, one of the papers I love the most from the years of CSCW is about cost-benefit tradeoffs, because it was very easy for people to build systems that seemed clever but served part of the population, not everyone. There was this product called For Comment that was great for adding comments on a document – you could ask people to give you comments. The features in this product made it very easy to sort through them and decide stuff

that you have in Word now anyway. But the problem was that it wasn't Word, it was For Comment. If you wanted to ask anyone to give you comments, they had to get this new system, and they had to import your document. It helped me as a writer, but it was a real burden on the rest of the people to try to help me because they'd have to use this new software. It's just very easy to get that balance wrong when you're designing for a group. You really have to think about all the people.

CHEN: Everyone who's involved. Right. It's considering multiple people who are involved.

GREIF: Yes. I think we had to get through a lot of new users of a spreadsheet who wanted to understand what was going on in the group, might have liked versions. Somebody who's been around for years and knows and has this system, they would have to change – but they don't want to change. Anyway. Those were concepts that had to eventually be incorporated into Design Process.

CHEN: Right.

GREIF: Yes, and their points of view.

Scandinavian countries were really big on participatory design and had a lot of influence over time in CSCW. But again, it was a very explicit notion of trying to understand everybody who would be participating, and making sure you talk to all of them.

The other thing that we've learned about design is that it's very hard to get useful input if you just ask people what they'd like in the system. But if you show them a very clear design, good or bad, and if you're not too invested in it and don't get upset if they criticize it, people will criticize. They can react to a design. You have to learn how to put concepts in front of people, hear what they're saying, and be willing to change and evolve. A lot of what the field, I believe, is about really has been design and good design practices, and design practices that will take into account these kinds of things.

CHEN: I wanted to ask about Lotus being acquired by IBM. And then after that, about your becoming an IBM Fellow. That was a real honor.

GREIF: Yes.

CHEN: I read that you were only the fourth woman to become an IBM Fellow, and that only around six other women have become one since then. Can you explain what the selection process is, if you know about it?

GREIF: Well, you know, the process when I was there was a little different: They decided that the few of us who had been Lotus Fellows should be IBM Fellows. I think because of the emphasis on design and so on that I had in my work, I'm not sure, again, that I would have risen to the top by ordinary paths at IBM.

But I have to say, when IBM acquired Lotus they were very afraid of messing with the culture. It actually took five years before they just said, "You're not a separate company. You're part of IBM now."

We almost ran like a separate subsidiary. I stayed part of Lotus. I had my little Lotus research group, but I was part of the worldwide research community. I knew people at IBM Research. I started going to meetings there right from the beginning. It was like stepping back into the past. There were not a lot of women at meetings. I'd go to a 200- or 300-person meeting, and I'd look around for the women, and then I'd realize that half the women I noticed were actually admins and not really researchers.

CHEN: I see.

GREIF: So that's the culture. I mean, it's something that I hate. I always hated to be a downer talking to young women about issues of being in a minority, because a lot of girls have come through school feeling fine. They're just the same as the boys.

CHEN: Right.

GREIF: But you get out into the real world that has, I think the term, it's like hysteresis of a system. It's like they've been hiring for a lot of years. You know? You're going to walk into a place that's still got more men then you're going to be comfortable with. You'll hit it someplace in your life. It greeted me when I became part of IBM Research. You could hear it in performance assessments. For women, there will be comments on personality – too quiet (we never hear from them) or too aggressive – and you rarely hear that about the men who are far more likely to be evaluated on content of their work. I think we'd call it "conscious bias" toady. (We have a label, but we still see it and don't always call people out on it.)

CHEN: That's what I was going to say. It's probably not something they were going to discuss for men, their being "too quiet."

GREIF: No. They don't say if for the guys. For the women, you know, they're aggressive, pushy, or too quiet. "We never hear from them."

We tried to correct that attitude, but also at least if those are the issues, work on them for development. I couldn't believe it, because it was what you might have heard would be the case, but I hadn't heard it myself before.

CHEN: Wow. That's absurd.

GREIF: Yes.

CHEN: Nowadays, if someone said that at MIT, there'd be a huge riot going on after that, right?

GREIF: Yes. This was 20 years ago. And maybe there were more [women in leadership roles]. But when I left in 2013, the senior vice president of research had no women directly report to him, which I thought was outrageous. It's weird: It's a company with a woman CEO, not that she's not criticized, but it's very hard.

CHEN: It sounds very hard. Wow. It's just weird to think that there were those other kinds of issues you were dealing with in a company instead of trying to work together toward your goal, right?

GREIF: Yes.

CHEN: Well, I know that at some point you also were the department general manager at IBM. What exactly was the direction you were going for? When you were starting to really push for CSCW, what was the climate like in the computer industry?

GREIF: Well, it was very weird. IBM bought Lotus really for Lotus Notes just before people figured out that really the internet was going to be the way that everybody collaborated.

CHEN: I see.

GREIF: There were a lot of things wonderful about Lotus Notes that still haven't been replicated in the way we work these days, but IBM was just not comfortable with them. But this was the first of many software acquisitions IBM made. I think they were never going to be comfortable with real user-facing software, end user-facing. I mean, a lot of the other things they bought weren't software products but products that were for developers, like rational development tools and cloud things.

Anyway, Lotus was always going to be the most problematical because they just don't have the relationships with direct to customers. They knew how to work with big IT departments. As much as they sort of thought it was the culture and

the Hawaiian shirt stuff [at Lotus], it wasn't just that kind of hippie culture. It was really the fact that it [Lotus] made products for end users.

It's interesting because, some years before, IBM Research had really been leaders in the human computer interaction field. I mean, they had a research division that was very academic. And I guess as I was going through school, a few companies could afford to have very world-class research, ivory tower research. And then slowly, over the years, either those labs were shut down or were very deliberately turned towards being much more practical.

They had a lot of user interaction kind of research and visualization work, and, slowly, they just weren't relevant to the products and the research efforts went away. As they bought something like Lotus Notes, they no longer had that sort of research. Except they inherited us – we were one of those groups – and there were a few other people around the company who did that kind of research.

It was always a struggle within the research community to keep that research funded. They developed funding models that really depended on product groups chipping in to fund the work. And there weren't enough products that were user facing, again, to fund this kind of research. So we were always kind of marginal. If we had sympathetic managers who believed that it's just the right thing to do, that was fine. But each time there was a change in management we had a go at making our case again. It was challenging and, in some ways, not wrong. If they didn't have enough of these kinds of products, why should they have invested in this kind of research?

CHEN: If I can, let me quote one of the articles I read about you. It says, "Some of her supporters believe Irene's works brought a feminist perspective to the world of technology."

GREIF: Yes. That was someplace. Yes, that was weird.

CHEN: What are your thoughts on that?

GREIF: I don't know. It's not like it's all women in the field. It's more balanced than other parts of computer science, but I don't know whether it's feminine or appropriately social. I mean, I was always a bit uncomfortable with that.

CHEN: I was also curious about what they meant.

GREIF: It made me a little uncomfortable. And yet, one of the reasons I would put forward for wanting diverse teams and teams that have women in them is that you will find almost a broader perspective. There is something to the feminine perspective, I guess, that mattered, whether it's feminine or just different. But if

you have all one kind of person, you're not going to be as likely to understand workforces that will have a mix of people. If you're developing products for a mix of people without any input from half the population, you're not going to get it right.

CHEN: I was also wondering because, previously, you mentioned that you took courses in psychology. Did any of that apply?

GREIF: I don't know. I was interested in language and logic. Some of the psychology felt related to logic because it was related to linguistics. I'm not really sure. That's interesting, because I do feel like I was very aware of the engineering versus math and logic kinds of thinking. I had not thought before about whether any of that psychology input mattered. Clearly-- I'd have psychologists, anthropologists involved in the work. It must have had some impact. Nobody's asked me that before, and I hadn't thought about it.

CHEN: You must get asked what you see as the future for group collaboration in computer science.

GREIF: Well, it's interesting. I mean, there are some things that haven't been solved-- Everybody's email is still a mess. I did work on shared calendars early on, when I was still at MIT as a research associate. It seemed to me that you could pick any application and think about what happens if multiple people were using it, and you would get insights into both people and the application.

So that's another thing. I can't remember if I've talked about this elsewhere. When I came back to MIT from Washington, the thing that was going on was distributed databases and different ways of updating them. There's this thing called two-phase commit: If you're keeping multiple copies of the same database because if you lose one, you want for reliability, and so on. But you want to make an update. You can't risk changing two of them and then everything crashes. And now, all your databases are inconsistent. So one of the protocols was you sort of tell each database you're going to send an update, and then you send the updates. Part of the protocol is that there are ways to back out if something goes wrong and you don't get them all updated. You could go back to the other state. So anyway, two-phase commit: warn them and then do it.

Then I realized, when people use calendar system, when you're trying to set up an appointment with people, you'll often say, "Can you hold these times open? I'll get back to you." Then when you find out what time would work for everybody, then you go lock it in.

It seemed to me that that's so interesting. People are doing this whether you've got a reliable, low-level database system or not. People are going to be doing a very similar thing in their application.

I thought it was more interesting to look at the people doing it. I also think that it often is the case that if you see what the people are doing, you don't need as robust a low-level protocol. Because you're going to compensate for it anyway. Because that's what people are going to do. And there was something called end-to-end protocols. There were people starting to look at the fact that if you really understand all the application layers over low-level networks, you realize that you could have quite unreliable communication at the low level, and it would be just fine and sometimes cheaper.

CHEN: OK.

GREIF: I always remember a lecture by a man named Kleinrock [Leonard Kleinrock, a professor at UCLA's Henry Samueli School of Engineering and Applied Science, known for his contributions to computer networking] who said our U.S. mail system depends on a very simple protocol; it's called deposit and pray. And if you care more than that, you do registered mail, certified mail.

CHEN: You can do more.

GREIF: Anybody who cares pays for something else. And at least the low level was cheap. Anyone could do it.

CHEN: Right.

GREIF: That's really the same idea. If people, for whatever reason, are going to have to or just maybe are nervous and choose to do stuff at their application level, it could really change what's at the low level. In fact, that was very important with Lotus Notes, because the networks of that time were very flaky. You couldn't be sure that your databases would stay consistent unless you were doing very simple protocols. But for the applications that Lotus Notes was about, that was just fine. So again, you've got to look at all levels when you're building a system.

Anyway, I was working on calendars. Calendars are so not solved! Nothing is right with calendars.

CHEN: Exactly, yes.

GREIF: So, some of the applications are still not solved. We're all coping. Maybe that's good enough. I think the biggest challenges in the future are going to be finding the broader social problems – the issues having to do with where is it more efficient to use AI. And if it really eliminates jobs, what are people going to do?

CHEN: That's definitely a big topic now--

GREIF: Yes. And how do we retrain people? How do we find the niches that only people can fill?

             There have been two conferences now at MIT on AI and the future of work. One of the things I remember was [the need for] people being trained for jobs that we knew would be taken over by AI, but they wouldn't be for a few years. So people can have good jobs, but then they have to be willing to be trained again on something else. I just feel like it's the same way I feel about you poor kids who have to do so much research and compete so much in school. What if I had to learn something new every few years? I don't know.

CHEN: It's a lot.

GREIF: That's what we're telling people: that they'll have to keep doing more to keep being more useful than AI. I'd like to think most of us are really up for that, but I'm so glad I don't have to go through that.

CHEN: It's hard to imagine another 20 years from now. What will happen? Maybe it's going to be OK. I don't know.

GREIF: And then there are issues of collaboration. It's not just collaboration among people, but how do you collaborate with computer systems? How do you make the interaction with the computer system more of a collaboration? We probably need that as these systems get more and more intelligent, but we'll clearly have gaps. How do we think about working together and understanding when should you second guess the system and so on? I think, if anything, there will be more and more socio-technological issues that we have to address.

CHEN: Did you write something about having to figure out with driverless cars, how the car would indicate to a person, "I'm waiting for you to cross the street"?

GREIF: Oh, that's actually very important. Because sometimes, a person will gesture, and you know they're waiting.

CHEN: Right.

GREIF: But if you were there and the car is there, and you don't know if it's going to wait-- And if there's no driver--

CHEN: That's very true. It seems like every day somebody realizes some other social aspect of one of these things that could easily get lost.

             I know you're a Fellow of both the Association for the Advancement of Science and the Association of Computing Machinery. In 2000, as you mentioned

before, you received the Women in Technology Hall of Fame honor. How did you feel about receiving these honors?

GREIF: The AAAS [American Academy of Arts and Sciences membership] I got very early. I remember somebody calling to ask me if it would be OK to nominate me. It was before I was thinking about collecting honors. I think I was at Lotus. I can remember sitting in an office when I got that call.

Being an ACM [Association for Computing Machinery] Fellow, that, I think, was pretty meaningful. Because again, the social stuff even within ACM has been slow to be recognized. There's an AAAS here [in Cambridge] that I'm a part of. I love that one for being local and having events and going and mixing with other people who are just interested in intellectual pursuits. It's very diverse: arts and politics and science.

The National Academy of Engineering is one that I think was the most meaningful. It's interesting. The others are all mostly honors. You can get active in the society or not. With the National Academy, I've been involved in trying to get other people nominated.

There are studies, all sorts of things. But I've been active in trying to get more HCI [human-computer interaction], more human computer and CSCW people nominated, more women nominated. It feels a little circular or something. You get in, and you just worry about getting other people in. But I feel like it actually is useful and meaningful, because we have not had nearly enough women or user-facing kinds of researchers represented. So that's one where I feel like I've been useful, and it's one of the few things I'm still active in, because I've slowly done fewer and fewer technical things like program committees and that kind of thing.

Anyway, I haven't really been ranking honors. Actually, it's one of the things I appreciate about IBM, except for that one that I got at Lotus, probably all of them were the result of people at IBM being systematic about trying to get their people nominated, I think. And so, again, I'm not sure if that would have happened if I had been somewhere else.

CHEN: I read that you found the Women in Tech Hall of Fame honor to be meaningful to you.

GREIF: Well, that was interesting.

CHEN: How so?

GREIF: When I first got told I was in it, I thought it was like one of these being in the 'Who's Who' [in America]: kind of square. It's like not really an honor. Then it

turned out, a friend and colleague of mine had gone to some trouble to nominate me, and she was sort of offended that I felt that way. And then I realized that I think it's a mix. Anyway, I do remember that there were some impressive people there that week, so that was nice. And my family came.

Somebody from IBM was introducing the awards, and he went to some trouble to say I was a formidable woman, and this was because I had just won a battle against him at IBM. At Lotus, there had been a sort of grassroots effort to make a wonderful daughters' day event happen. Do you know about this?

CHEN: I'm not familiar with that, no.

GREIF: I think Ms. Magazine or the Ms. Foundation started something – god, how many years ago? Maybe in the early '90s, because '95 was when we were acquired. So sometime in the early '90s, they started this thing called Take Your Daughter to Work Day. People would bring their daughters into work so they should see what it's like to be in the workplace and so on.

It was supposed to start with nine-year-olds and up, but the women who got organized to start it at IBM has some younger children. So we started at seven years old and up, and we had activities all over the building. Everybody got so involved. They would design workshops and just great stuff. In the video that was done for WITI [Women in Technology International] and you saw all the little girls sitting in the auditorium. It was just a wonderful thing.

We got acquired by IBM, and after a year, they had switched to Bring Your Children to Work Day.

CHEN: Children as opposed to daughters--

GREIF: I think after 10 years, the Ms. Foundation gave up on daughters' day. A head of diversity at IBM came up to Cambridge specially to meet with us to convince us we should have children's day. At one point, he said, "You know, we had daughters' day. And there was a father who wrote a letter to Lou Gerstner, the president of the company, saying, "Why can't I bring my son? I'm upset."" And Gerstner writes to this man and says, "Fix this." So three men decided we should bring all our children instead of just our daughters. We had somebody else very articulate [make the argument for daughters], but it's not about fairness. Life has not been fair. Anyway, we just were all over him, and he caved: we got to have daughters' day until the Ms. Foundation stopped doing daughters' day.

This had happened just months before I was going to get the WITI [award]. And as it turns out, this person was introducing the awardees. My husband and I

always laugh over this because he said he'd met Irene, and she's a formidable woman!

That was meaningful. I gave a nice little speech. They made this video – It was fun to have had the video of my life made. I had so many people from my family. It was lovely. It was really lovely in the end.

The other weird thing was, flying home from it, we were in first class, because I upgraded because I took my mother with me. We get on the plane and the man sitting across the aisle from us is somebody I used to report to. Every time I'm giving a talk about women at work, I always think, "Should I tell the story or not?" And I never do.

But: He had decided to promote someone to director. I wanted to be a director, and I went in to see him. I was so upset that he was bringing in some new person on group stuff and he wasn't going to promote me. I got all teary. And 10 minutes later, we went into a meeting and he announced he was promoting me. So when women feel bad if they cry at work, I say, "Yeah, I cried and I got a promotion." Anyway, I'm coming home from getting this award. I had just decided, "I'm not going to talk about that in my little speech." And there he was sitting on the airplane. I said, "Do you remember when I cried?" He said, "I remember."

CHEN: Wow.

GREIF: It's fun to reminisce about. I don't think it was my most important award, but we sure made a big deal of it once we got into it.

CHEN: That's not a bad thing.

GREIF: Right.

CHEN: I understand that you're on one of the Notable Women in Computing playing cards. [Decks of cards that were created to honor – and make better known – notable women in computing.]

GREIF: Oh, they're right in the kitchen.

CHEN: That's great.

GREIF: I was thinking I really should order more. I got a few for my family.

I should show you my calendar; it's even better. There was a Jewish women scientists calendar, and I'm Miss April, I think.

CHEN: This is so cool.

GREIF: My sister loved it, and I got her one. And I had to get them for our kids.

CHEN: This is like beyond cool. Wow.

GREIF: It's really fun.

CHEN: [LOOKING AT SOME OF THE NOTABLE WOMEN IN COMPUTING CARDS] This is just fantastic. I'm in awe. They even have everyone's timelines. Oh, this is really funny: "Ten computer science concepts you can teach with this deck of cards." I find this really amazing.

GREIF: Yes? Thank you. They were fun.

CHEN: Getting away from computing, I was going to ask you about your knitting. I hear you were known for knitting in meetings.

GREIF: Yes, I was known to knit. And people would say, "Irene's the only one getting anything accomplished here." I used to be a doodler before that, and I could fill up pages with—Well, I guess I had latent art skills.

CHEN: [LOOKING AT EXAMPLES] These are amazing.

GREIF: I had always done a lot of drawing, but never anything with color, So I decided I'd try color for my new thing in my retirement. I went through a bunch of different things. Around two years into it, I had a teacher who had us do self-portraits. She said, you know, it's just you. Then I started doing the family, and I realized I could do likenesses. It was really exciting. I've been doing people for a while now, a lot of people. That's my daughter, and my son.

CHEN: These are really good.

GREIF: This is from the first day Gideon was born. This is my grandson, my husband, and my son. So it's three generations there.

CHEN: What's your medium?

GREIF: Mostly acrylic, but those of my parents are in oil. Anyway, that's what I've been doing now, and I love it.

CHEN: What else do you do with your time, now that you're retired?

GREIF: I don't know if I do enough. Some people have whole other careers and lives. I exercise. I still knit. We travel more. I cook a lot. We play with our grandson. I've lost interest in staying up technically, but I've been doing various things, mostly the mentoring and the National Academy work.

But in all, it's a retired persons life. I don't have a new career. I don't have a big thing I'm doing. It's interesting being retired and not having your career be your identity.

I still like to know what somebody did do, because it is part of how you understand people. But you also just meet people and, like, people in my art class, we talk about the art. It doesn't have to be what your work is, or what you really" do. But it is interesting to realize how much we are invested in our work, careers, and how much it has been our identity. So I'm learning, I'm still learning. It's six years now.

As you can tell by now, I'm never exactly comfortable with who or what I am. So I don't know if I'm doing a great retirement or not. But this is it.

CHEN: I think this [ARTWORK] is great. I wish I had more time to paint.

GREIF: So you paint.

CHEN: Yes. I'm not that good, and I don't have that many chances to practice. But I occasionally post some of my paintings on my social media accounts. I really want to learn oil painting. I want to try to do some of the Renaissance-style painting.

Actually, I have one other question before we end. It's general, I know, but what do you think was the most challenging to you – whether gender-related or not?

GREIF: Well, I think that I have a kind of fuzzy way of getting at the crux of a problem. I don't always seem precise. Finding the right ways to express ideas-- I think I've probably ended up better at being able to pull together groups and get other people to do the realization of work that is at these intersections of fields than to do any of it, really, myself. It feels like years – maybe back to the calendars, or some work on databases around the time of Lotus Notes – that I really did work of my own. But I know how to identify what things ought to be put together.

I also love visualization work – innovative ways of displaying information graphically, beyond bar charts and pie charts. When I hired some visualization people, I got them to start thinking more about interactions and social things and they developed some amazing, and revealing, visualizations. One of my favorites is over here. Oh, this is one of my most satisfying things. Because this was in a museum. This is a print; it's not the original, but this was in the Museum of Modern Art in New York from my visualization. [POINTS TO A FRAMED PRINT OF THE VISUALIZATION OF THE HISTORY OF THE CHOCOLATE PAGE ON WIKIPEDIA]

CHEN: That's so interesting looking. I'm going to have to look up more about visualizations like that one.

GREIF: This is a visualization of the chocolate page of Wikipedia, quite early on, before people understood Wikipedia. (They did a bunch of visualizations.) Basically, what they did is, they'd have a color for each person's contributions, and you could see an article growing over time as more people added things. In the chocolate one, there was a debate about whether there was a certain kind of chocolate sculpture. Somebody would write about it, and somebody else would delete it, so that's why you've got this jagged argument going back and forth. This one – and then another one that I think was on abortion – they were both in the Museum of Modern Art.

CHEN: This is really cool.

GREIF: This is beautiful. And then the other one had these places where the whole article was deleted, and then it would come back. It was the first time they found evidence of how quickly the community would notice vandalism and try to fix it. Anyway, interesting.

               I saw wonderful visualizations, not from my work. I think I put them on Facebook at some point. This came from a woman who was knitting at meetings. She was a mayor, or held some other elected office. She would change colors depending on whether a man or a woman was speaking in the room.

CHEN: Really?

GREIF: So you look at this scarf or whatever she made, and you could see that the men were talking a lot more than the women.

CHEN: That takes a little bit of time to cut the yarn and tie it off and continue.

GREIF: I guess, but she did it. Anyway, I love visualization work. That never caught on.

               If I talk about a failure, actually, I don't think there are any products, really, that have good visualizations as their user interface, and you could just see so much more. I mean, we had visualizations of an email inbox. You could have tens of thousands of emails and have a sense of what's there, and what you have to answer, and so on, instead of seeing 20 on a screen. It never took off. I don't think it was just IBM. I can't think of a product anywhere, really, that has made good use of visualization. They just get you a so much better notion of the whole context.

CHEN: Is there anything I didn't ask you, anything you'd like to mention?

I saw that you were interviewed by the IBM archivist. I think you mentioned coming back to MIT as a professor. You were looking for some help, and there wasn't much. And someone said, "That's not how this place works. No one's going to help you." I was just wondering if you could talk about that. I just think it's a bit shocking for another woman to tell you something like that.

GREIF: Yes, it's kind of true that it's very sink or swim. Even in a business – where you have evaluations every year, performance evaluations, and you sometimes do help people improve their performance – I think there's a lot of value to trying to help people.

It's not particularly how academic settings then-- I can't speak for now-- I think it fits with coming back to the kind of thing we talked about before, about how do you diversify a work population. Because, you know, if MIT is great, and they've had a sink or swim approach to succeeding there, why should they change? Because they're great. They don't notice that there might be some people who, with just a little help could have been even better, or that it just could have been nicer.

I think probably some of it has changed. Maybe that's a women's issue. Maybe some of the women's issues have been recognized, like with the Nancy Hopkins report [Amgen Inc. Professor of Biology at MIT; initial chair of an MIT committee that led to the publication of a report titled "A Study on the Status of Women Faculty in Science at MIT"]. Do you know about it?

CHEN: I'm not familiar with it, no.

GREIF: A report on women in science. A very successful woman, and another woman who did fine here in the biology department, I think, started to realize (I always tell women, you've got to compare notes, talk to other women) that yes, she had made it, but maybe it had been harder than it needed to be. Or maybe, when you go around and measure lab space that women have versus lab space men have, they have less. Even though I'm a full professor, and I'm very famous, I have less lab space. Why is that?

CHEN: Right.

GREIF: So people do notice. They have spoken up. MIT has decided it's an issue. This was under late MIT President Chuck Vest. I'm sure that MIT has changed in how they approach some things, like whether there's unconscious bias and so on. Whether that means somebody really helps you figure out how to get started as a professor, or tell you how to prioritize teaching versus research or something-- It's probably partway there, but not all there.

I also remember another woman, but she was not a computer scientist. When I was deciding not to be on faculty and become a research associate, the lab director was going to make me be an ordinary research associate, where you can't be a PI on a grant – a Principal Investigator – and I should have been a Principal Investigator.

I remember this other woman coming to my office with a single rose for me, and giving me a pep talk, and saying, "That's not right. They've got to make your principal research associate." I wrote down the case for why I shouldn't be [an ordinary research associate]. I went back to the lab director, and I got that [better] position. So I got help, and a pep talk, and advice that I give people all the time: it's never too late. You did it wrong the first time? You didn't ask for the right thing? Take your time, make the case, go back. Not everybody thinks right on their feet.

Sometimes it it'll be too late. But most of the time you could fix it, so I tell people always, "Go back and fix it."

CHEN: That's such important concept.

Actually, I was hoping we could talk about managing work/life balance. I realize it's a huge topic and you've probably spoken about it before, but could you share some of the top-line thoughts you have for women like myself who are at MIT now? For example, do you think things are significantly easier today than they were when you faced this issue in your own life?

GREIF: I think you have to look at the long term for balance; it's hard to have balance at any one point. The challenge for women is whether taking the risk to prioritize family for a while puts you back too far on your career. It shouldn't, but it can. I think I took some risks to manage this – the time as a research associate before I moved on from MIT for example. But I was lucky: between the start of CSCW and the rise of groupware in the commercial world, my timing for that move worked out well.

You ask if it's easier today. Some things are better: more parental leave options – for men and women – for example. But the hardest part still has to do with culture and unconscious bias, whether it's seen as okay to take time for family and whether someone who does that will be written off. I think there's still a wide range on that.

CHEN: Well, I really appreciate you talking with me today.

GREIF: I feel bad that, at this stage of my life, I still don't have my elevator-speech version of what it was like to be a woman at MIT. I will always feel tongue tied

and wave my hands a lot. I'm probably in a classic women's bind of not wanting to be complaining too much, and not knowing really what to say. But I hope this was helpful.

CHEN: Absolutely. It's interesting to think about all these things. I want to thank you so much for speaking with me.

GREIF: You're welcome.