**Interviews of the Margaret MacVicar Memorial AMITA Oral History Project, MC 356**
Massachusetts Institute of Technology, Institute Archives and Special Collections

**Audrey M. Schaffer** – class of 2005

Interviewed by Dou Dou, class of 2017

July 17, 2015

**Margaret MacVicar Memorial AMITA Oral History Project**

This interview with Audrey Schaffer (S.B. Aerospace Engineering, class of 2005) by MIT undergraduate Dou Dou (S.B. Mechanical Engineering, class of 2017) was conducted on July 17, 2015 on the George Washington University campus in Washington, D.C. Her title at the time was Cyber Team Lead, Office of Emerging Security Challenges, Bureau of Arms Control, Verification and Compliance, U.S. Department of State.

DOU: I guess we want to start from early childhood. Where is your family from? What do your parents do? How did you grow up? What's the environment you grew up in?

SCHAFFER: I grew up in a part of Los Angeles, California, in a suburb in the San Fernando Valley. My father was a lawyer; my mother was a bookkeeper. I have a younger brother who's about five and a half years younger than me, so I was the only child for a little while. We had a good relationship as children, and we still do as adults. So I guess I feel like I lived a pretty average life growing up. I went to public school for high school, did really well there, and from there I went on to MIT.

DOU: Did you always know that you wanted to go to MIT?

SCHAFFER: I don't think so. My interest in engineering evolved over time. Ever since I was a little kid, I knew I was interested in outer space. I don't really know why. A lot of people ask me that question, and I don't have a good answer for it. I think it's one of those things—

All little kids are fascinated by space and astronauts and things like that. And then over time they lose it, and I guess I just never lost it. But it evolved as I got older. At first I wanted to be an astronomer, then later, when I saw the movie Apollo 13, there was a scene where they have a round peg and a square hole. They get all these engineers in the room, and they give them a box of stuff, and they say, "You have to figure this out." That's when I decided I wanted to be an engineer.

From that point, I started looking at engineering schools. At some point while I was in high school, over the summer, my dad and I came to the East Coast and visited a bunch of schools. I mean, of course MIT is the most prestigious engineering school in the country, so I set my sights there.

I don't remember exactly what year it was. It was probably the summer either before my junior year or my senior year. I did a summer program at Penn State one year, and that's the year my dad flew out. We went all up and down the East Coast looking at different schools.

DOU: Do you feel like your family provided an environment that fostered your engineering and science interest?

SCHAFFER: You know, that's an interesting question. My family certainly fostered my general academic progress. I remember my dad would edit my essays in high school, because he was a lawyer and he writes for a living. But I don't– There wasn't anything particularly science-oriented or engineering-oriented in my childhood. But in general, my parents have been very supportive of me. They were thrilled when I got into MIT, of course.

DOU: For your brother, do you feel like it's a little bit different or that it's similar?

SCHAFFER: It's a good question. You know, we both received the same kind of upbringing. He went to Stanford and he majored in American Studies. It's sort of like a combination of history and social science. Not just studying the history of United States, but also studying the social changes and different forces that shape our country into what it is today. I don't know, I've never heard of that major before, but that's what his is called. So it's funny: we both received the same upbringing, and we went on to completely different path, at least in college anyway. It's funny, because now he works for a technology startup and I do policy.

DOU: In my experience, when people see your profile, they always notice your achievements – and more on the academic side. Tell us a little more about your interest outside of academics.

SCHAFFER: Sure. Right now, as an adult, I do a couple things that I really like. I *love* travel, first of all. I get to do that as part of my job, too, but it's not the same when you have to travel for your job. It's much more fun when you travel for yourself. My husband and I always take a two-week trip somewhere new every year, and that's probably the highlight of our year. As a student, before I was married, as a young adult, I did a quite a bit of travelling in fact. My first big trip overseas was right after I graduated

from MIT, like that Sunday or something. I left from Logan airport with a friend and we spent about five weeks going around Europe together. So, lots of travel.

I also like to cook. I like to try new food, and travelling, of course, is a way to learn about new food, too. I like to swim, which is something I actually kind of discovered at MIT, because of the PE requirement. I took a swim class.

DOU: So it's actually helpful--

SCHAFFER: Yeah. I already knew how to swim, but you either have to take the test or you can take the class. So I thought, "Oh, well. I like swimming. Why don't I take the class?" And it was actually that class that taught me some techniques, like to use swimming as exercise. I've been a swimmer ever since.

DOU: Besides swimming, travelling and cooking are my big interests as well! I'm also thinking about traveling after graduation.

SCHAFFER: Absolutely, absolutely. I told somebody else that. When I spoke to the interns [from the MIT Washington Internship Program] last year, it was more about careers. And there was somebody who asked a question: "What do I do if I don't have a job lined up by the time I graduate?" And this other person on the panel, she was right, of course, but she was, like, "Oh, you should go to the Career Center and you should email your professor." And I was, like, "You should join the Peace Corps!" You know, travel and do something like that. You'll never be able to do it again. So absolutely – you should do it.

DOU: Great. I'm pretty sure at this point that I'm going do something out of the norm.

Let's move on to schools in general. You said that you've always had this interest in space, and looked at MIT from an early stage and put your mind to it. Once you got into MIT, what were your friends' and parents' reactions?

SCHAFFER: My parents were very proud of me. I went to a public high school, with about 550 people in my graduating class. There were around 3,000 students in the whole school, so it's a pretty big school. And I was like the

first one in a long time who got into a school of that caliber, so everyone was just really impressed. My parents were very proud. I have a picture they took of me holding up the folder you get when you get accepted. It was a very good feeling.

DOU: So you went straight ahead to course 16 [Aeronautics and Astronautics]. And after studying four years of Aero and Astro, do you feel that it was the same as what you expected, or different?

SCHAFFER: It's a good question. I don't really know what I expected, honestly. You know, at some point in my education I feel like-- Well, I certainly wasn't doing as well as a lot of my peers in engineering, which is one of the reasons why I moved away from sort of pure engineering to more policy and other aspects of space.

There were times when I felt like that the way that the course was taught was actually too technical. I didn't grow up learning about how airplanes fly, like the concepts of lift, and I don't even remember what all the other engineering concepts were. The professors, at least in AeroAstro, they sort of seemed to assume you understood the concept, and they just went straight into the math. And for me, I am much – I've learned this about myself since becoming a professional and taking all these leadership management classes – I'm a much more "big picture" person. And for me it would've been a much more enriching educational experience if there has been both the math and the more conceptual discussion of aerospace engineering.

I almost wonder, in retrospect, if I had had more of that big picture stuff, if I would have done better. I don't think I would go back and become an engineer if that had been different, if I had been taught differently. I just wonder if I wouldn't have struggled so much with the classes while I was there. It was hard for me. I know this is for the MIT archives and I'm supposed to say glorious wonderful things about MIT--

DOU: No, just say honest things!

SCHAFFER: Yeah, the honest truth is I really feel like I didn't get the education that I thought I would.

DOU: The complete picture.

SCHAFFER: Yeah, which isn't all bad, necessarily, right? Because what MIT did teach me was how to solve problems. How to take something really complicated, break it down into smaller parts, sort of figure out the answer to each of those parts, and put them all back together and to make something bigger. I think a lot of students at other engineering schools – they may learn sort of the fundamentals of engineering, but that broader problem solving? I don't know whether they get that. But I certainly got that from MIT, and that has helped me in my career, even if I'm not as technically savvy as the rest of my [MIT classmate] peers.

DOU: I actually have heard that from some other majors as well, for example, Course 6 [computer science and electrical engineering]. You know, some students would say they didn't have the same coding background as some other students, and going to 6.01 was like going into deep water.

SCHAFFER: Do you hear that from women that you're interviewing or do you hear that across the board?

DOU: I think just peers across the board. It really depends on what their background is. But then they point out the importance of having previous experience or background in that sense. It also depends on which majors--

Did you see any gender imbalance, either in the number of students, or maybe achievements, or how people were struggling with classes between the genders in your major?

SCHAFFER: Well, not necessarily. When I was there, I remember my class in Course 16 was about a third women, which I think was pretty big, or rather had been growing ever since women first started going to MIT. I'm assuming that now, if you looked at it, I would imagine it's even more balanced than it was then. So, no, I don't actually remember any particular gender issues.

But my closest friends in Course 16 were women. In fact, I had a good friend – the one I travelled to Europe with – who was a 5.0 student in Course 16. She and I did our problem sets together. She helped me a lot, and, I mean, she was by far the smartest person in the class. So I don't know there are necessarily any gender balance issues in my major.

DOU: You also worked in a lab, right?

SCHAFFER: I did the Mars Gravity Bio-Satellite Project, or Program. It's funny; it was a student-led satellite project. The purpose was to study Martian-level gravity on mice.

Mars has about one-third of the gravity of Earth, so the idea was to see-- We have very little data of moon-level gravity, which is, like, one eighth [of Earth's gravity], and we have a lot of data on micro gravity, which is basically zero, from the International Space Station. We didn't know – and we still don't know – what the long-term effects would be on the human body if we would send someone to Mars. Like, if they would have to live on Mars for six months or something, to make the orbits work out to minimize the journey time.

What we wanted to do was to design and build a satellite that could house mice, and the satellite itself would be spinning at such a rate that it would mimic the one-third gravity of Mars. That was the project. A lot of things had to come together in order to do this – not only design, but then build and launch a satellite. And, of course, we never got there. But it was kind of a cool project, because it was all student-led.

I was a deputy program manager, so I really didn't do a lot of lab work. Maybe this was an early indication that I didn't necessarily want to be in a lab or be an engineer! I basically managed the program – everything from recruiting the students to overseeing our finances, to working with MIT facility people to help us get space, bringing in cubicles and all that program management stuff, you know, running weekly team meetings. We were working with two other Universities: the University of Washington and University of Queensland, in Australia. We would have weekly-- There wasn't Skype back then, but we would have weekly video teleconferencing. I kind of kept the program running.

DOU: How far did the project go?

SCHAFFER: It kept going after I graduated. I don't really know where they ended up. I think they did a lot of lab prototypes of some of the mice habitats. And I think they might've even tested them on some sort of spinning centrifuge devices to test them for a week. Some mice can live in a spinning device on the ground for a week. I know they never launched anything. I know they never built a complete satellite. I just know that at one point they decided to stop.

DOU: But it was a very good experience just to practice the skill sets. Right?

SCHAFFER: Absolutely.

DOU: It sounds like what you're doing now, but in a much smaller scale.

SCHAFFER: Yeah, I mean, it's much more similar, I guess, to what I'm doing now than engineering is.

DOU: Did you have any mentors while you were at MIT? Any people that you can think of off the top of your head?

SCHAFFER: You know, the one person I think of was a retired colonel. His name was John Keesee. I don't think he works at MIT anymore. I don't think he was a professor, per se. But he was a staff member in the Space Systems Lab, which was where the Course 16 students – when they do the capstone projects between their junior and senior year. That's usually where their projects are housed. John was not only our faculty advisor for the capstone project, he was also the advisor to the Mars Gravity Project.

It's hard for me to put my finger on what it is about him that I would say was like a mentor, but he was always willing to talk in his office. I wouldn't go home for Thanksgiving, because I'm from California – you're from China, so you know! – there's really not enough time to go home for a long weekend. So he would have me over with his family for Thanksgiving. It was just nice to have a faculty member who wasn't just your teacher.

DOU: Anyone else? Mentors are not really restricted to faculty, for sure.

SCHAFFER: That's a good point. I don't know-- The program manager, the guy above me in the Mars Gravity Project, he was a couple of years older. In a way he was a mentor in that he showed me what you could do with space that wasn't just necessarily being an engineer, although, ironically, he is now an engineer. He works at SpaceX.
And actually, we had another-- She was a Ph.D. student at the time, and was also involved in the Mars Gravity Program. She just seemed like a woman who had gone through both-- I think her undergrad was biology or something like that, and then her master's and Ph.D. were in aerospace engineering. She was just a good role model.

DOU: Did anyone at MIT point you to some career paths or choices?

SCHAFFER: That's a good question. I don't remember. I mean, I probably did talk to a lot of people, but I honestly don't remember. But I can tell you this story of how I went from engineering to policy. I kind of told the interns [from MIT Washington Internship Program] the other night-- When I was in Unified, when I was a sophomore in Course 16, I really didn't like it. I knew it sort of at that point -- and maybe, like I said before, in retrospect I might've had a different experience if the course were taught differently.

DOU: Could you explain what Unified is?

SCHAFFER: Oh, sure. Unified is the course that all sophomores take in Aerospace Engineering. It's like a double course-load class-- I think the typical class is three credits, right? So it was, like, six credits.

DOU: Maybe it was different then. Now it's 12 credits for a class as a regular class.

SCHAFFER: Oh, 12 is a regular class? Maybe it was still that way then-- Anyway, so 12 units is a normal class, and Unified was a 24 credits class. You spend about two hours, pretty much I think every day. I think lectures were Monday, Wednesday, Friday, and then tutorials (or whatever they call them) were Tuesdays and Thursdays. So you spend every morning – the first half of your day – in Unified. There were always two different lectures as part of the class.

So Unified – I don't remember how many different subjects there were – was all the fundamentals of aerospace engineering, everything from fluid dynamics to structures to astro-dynamics. There was a little bit of coding, too. And systems and signals, right? Basic electrical engineering. So those were all taught over the year. You have one lecture, and then you have a 10-minute break, and you have a second lecture. They had this very complex schedule to make sure you get the same number of lectures in each area spread out over the semester. And there were different professors for each of them – it was like an entire aerospace faculty helped teach the classes.

It was a very intense experience, because you were learning in these big

blocks of time, and you have, just like any other class, you have a lot of problem sets, you're constantly taking tests, because you'll have one course that'll go for the first six weeks, and halfway through it a different one would start. So it was very tough. It's just a lot of materials all at once.

The subjects, I didn't find them interesting. I don't think I was very good at it, either. So I started looking for other things that I could do still in the space field, but not as an engineer. Like I said before, I was always very passionate about space. I knew I wanted to do something in space. I just didn't-- I thought I would do aerospace engineering, but when I got to college I found out that that wasn't really true.

I didn't go to MIT to major in French Literature, and I didn't feel like it was worth switching to mechanical engineering or something like that. It's basically the same coursework. So I tried looking at fields that were related to space, but not engineering itself. The summer after my sophomore year – I don't even remember how I found out about this program – I applied for an internship at NASA Johnson Space Center with the National Space Biomedical Research Institute, which does studies on, among other things, how humans react to space, and I got that internship. I interned in Houston for the summer. I did some interesting stuff on habitability and human factors; designing a habitable environment for the astronauts. It was really interesting! But the summer I was in Houston was 2003, and that's the year that the Columbia space shuttle blew up, or disintegrated on re-entry.

A quick aside, I actually remember where I was when I first saw that news. I was in the little store – I don't remember what it is called – where they sell subs, right inside the student center, off to the right. Is that little grocery store still there?

DOU: Oh, LaVerde's?

SCHAFFER: LaVerde's! I was in LaVerde's waiting for a sub or something at the counter. They had a TV up, and, I'm sure it is totally different now, but that's where I found out about the Columbia shuttle. It's funny how small things stick with you.

Anyway, when I was in Houston, that was the summer after that accident happened; the accident happened in the spring or late winter. Everyone

was very depressed there. The missions were grounded because they had to figure out what was wrong. I got the sense that they were feeling helpless, feeling like, "These decisions are not our own to make. We have no control over this situation. We have to wait for those guys up in Washington to tell us when we can start flying again." And that's when I started thinking, "Ha! Maybe public policy would be something I might be interested in."

I went back to MIT the following fall and literally saw a flyer in Lobby 7 for this MIT D.C. internship program. I thought, "Hey, maybe that's an opportunity to learn more about policy." I applied to the program and I got in. I took a public policy class, I don't remember which one, but I took some sort of public policy class at MIT that fall. I also took international affairs class at Harvard the same semester – or maybe I took those my senior year. In any case, I thought maybe this is something I might want to do.

When I came to D.C. that following summer, between my junior and my senior year, I worked on the Hill for the House Science Committee. It was the summer of 2004. It was the election year when President [George W.] Bush was reelected. It was a very political summer, and it was very interesting to see the dynamics on the Hill. While I didn't necessarily think I ever wanted to work on the Hill or Congress, I certainly got the policy bug. It was that summer that I started meeting with Professor [John] Logsdon, who runs the GW [George Washington University] Space Policy Program. That's when I started to look into the program.

I know this is a very long answer to your question about mentors, but it was through this exploration process of taking something that I cared about – but not do the things that I was being educated to do – that I made my way into this policy job.

DOU: It was kind of a complicated process but it led to, hopefully, where you want to be.

SCHAFFER: Or you figure out where you do not want to be!

DOU: Exactly! Similarly, when I got into MIT, I had this idea that I was probably not going to be an engineer as a career. But now my strongest interest is in International Development; that's why I am interning at the World Bank. I did develop this interest from MIT, my freshman year. I got into I-

House, the international development house. It's a student dorm founded in 2009; it's fairly new. From there, I got to know what ID (International Development) was and I realized I really enjoy it. So, MechE is just to acquire a fundamental engineering background, but my focus is more on ID.

SCHAFFER: I had coffee with one of your peers the other day. She is in a similar place as you. She studies physics – and she likes physics – but she knows that she wants to have of an impact on the world. What I told her, and what I'll tell you, too, is that it is important to have those fundamentals. Not that I use engineering, at all, ever, in my daily life, but I am not afraid of talking about technical concepts. A lot of my colleagues who have just a political science background always start with "Well, I am not an engineer, but..." Not that I am an engineer, but I will never start a sentence that way, because I don't have that lack of confidence in my ability to understand a technical concept. The concepts I actually have to deal with on a day-to-day basis are not really detailed stuff. I can handle that. So, I'll just say to you, it's good, keep studying it, keep doing something technical for as long as you still like it, but don't force yourself to get a Ph.D. just because that's what somebody said you needed. That's not true.

DOU: OK, got it! Let's steer away from academics for a little bit and talk about some other aspects of your MIT experience. Which dorm did you live while at MIT?

SCHAFFER: I lived in Burton-Conner. I lived on Burton Third. I don't know if you know much about the Burton Third Bombers, but there is kind of a culture that goes along with the floor. And it's interesting because, when I got there, I actually got assigned the dorm, and the floor, and my room. It was all a little bit by chance.

DOU: You didn't get to choose?

SCHAFFER: Well, I did. What happened was that I fell during orientation. I twisted my ankle at a sorority rush party, so I wasn't able to do some of the dorm tours during the orientation period. I had visited a couple before and I had a general sense of what I wanted. I put my preferences down, but I got assigned to Senior House. When I showed up, I was a little overwhelmed, and I didn't think I actually wanted to live there. In retrospect, it probably would have been fine but at the time, it was a

little intimidating.

So I went to the dorm officer, or whomever you go to, and told them I wanted something different. I think my next choice was probably Burton-Conner. There was a student that got assigned to Burton-Conner that actually wanted to live in Senior House, so they swapped us. The thing was, she had already chosen a floor, and she already had a roommate. So it was kind of like, "Yeah, we can switch you, and you are in this room, with this roommate, on this floor."

If you know Burton Conner, the floors have their own kind of identity. I ended up in Burton Third, which actually was great. The floor usually had this legacy, this history of a particular culture, but when I got there, it was all very dormant. Some of the seniors who were there and sort of knew what the history had been and some of the freshmen who had just arrived wanted to bring it back. We actually tried to foster more of a community than had existed when I arrived as a freshman. And now, I get the emails and it seems like it has just blossomed; they are doing hacks and – we had parties while we were there – but they are doing lots of parties. There is a very robust culture there, which I think I had some hand in bringing that back, whether MIT likes it or not. [LAUGHS]

DOU: Would you say you were pretty happy there? Were you there all four years?

SCHAFFER: Oh yeah, I was really happy in Burton Conner, actually. I really enjoyed living there. It was a nice place to live, and I liked having the kitchen, because I like to cook. My junior and senior year, I actually lived in the same room. I had a single on Memorial Drive, overlooking the river. I have never had a room, anywhere, with such a great view; I saw the whole Boston skyline. When the Red Sox went to the World Series, which was when I was there, they put Red Sox on the Prudential tower and I could see that from my room. It was great!

DOU: That's great! So you were living in the dorms, even though you were in a sorority?

SCHAFFER: That's right. I didn't live in my sorority, because I liked living in the dorm so much. And most sororities only had space for 25 or 30 sisters to live at one time, and there are, like 100 sisters, so not everybody can live in the house, even if they wanted to.

DOU: Please, tell us the story of how you got into Greek life.

SCHAFFER: I don't know how it is now; I know it has gone back and forth. When I was a freshman, the rush was during orientation as well. While I was there, it switched to being during the spring semester and then I think they switched it back at some point.

So it was kind of an accident there, too; I had never pictured myself as a sorority girl. I actually am pretty sure that 99% of women who join sororities in MIT never could see themselves in sororities either. But, you know, it was orientation and you have nothing to do but explore different options. It's actually a great thing, I think, that MIT does.

I showed up to the first set of parties and got swept up in the process. And by the end of it, here I am, I am getting this cute little card saying: "you have a bid to Alpha Chi Omega." And, I was thinking, "Ah, what do I have to lose, I could always drop out." So I joined the sorority, and it was really a great decision. It proved to be an excellent support network of people and friends while I was at MIT. I mean, I had plenty of friends in the dorms and I also had a lot of friends in Course 16. But just this sorority bond, it seems sort of cliché to talk about it, but at the same time they were some of my closest friends while I was at MIT. And now even, it's funny, I have lived in D.C. for almost 10 years, and the only friends I have from college, in this area, that I still keep in touch with, are my sorority sisters. There are about five or six of us who are all within a year or two of each other, who all graduated around the same time. We all live in D.C. and I see them on a regular basis. They are part of my circle of friends here in D.C., too.

DOU: I'm wondering how the rush process actually was like back then?

SCHAFFER: Each sorority had a room in the Student Center. Most of the rush activities happened in the Student Center. Some of them happen at the houses, too. There are four or five rounds, and each round is, like, a thing. I remember, the first round was-- they had a little play or something that they did. They basically introduce you to the sorority and you talk to the sisters. And then there is another round the next day. I think the next round happens in the house or something – I don't remember.

The whole purpose of rush is just to get you to talk to as many of the sisters as possible, to see if they think you would be a good fit and to see if you like the people you are talking to. I don't remember all the intermediate rounds. The last round is usually semi-formal, kind of a little party that they have. For us, it was in the Student Center. I remember they were all wearing black dresses. They were serving us in fancy cups and stuff, and serving things like chocolate-covered strawberries, introducing you more and more to the ritual of it. And then you are paired with somebody from the sorority whom they think you like or who likes you. And then, the next day you get little cards that say you have received a bid.

DOU: Do everyone go through the entire process, or just the selected ones?

SCHAFFER: Well, it's a mutual thing in that there are many people who want to start. Then I think you have to drop one sorority each day or something like that. And I think the rushees get to drop the sororities at the beginning, and then towards the end, it's a drop on either side. I don't remember exactly. So, what is it like now?

DOU: It's still a mutual process, and the idea is to talk to as many people as possible. I think now they try to squeeze rush into one day.

SCHAFFER: One day! Are you serious?

DOU: At least, that's how they did it my year. So there is one day – sorority rush day. You are shown to all the houses actually the first day. The umbrella organization, Panhel, coordinates the events. The sisters welcome you at the door; they all kind of stand lined up at the door while you walk through. Then they give you a little tour of the house, and then you are broken up to talk to the sisters. It's all done in the house within a certain time limit, I think. And then you move on to the next sorority. It's an entire day of talking. I think there is a second day too. The selection process is a bit faster. The second day, the people who really want to stay come back. Halfway through the first day, I decided that I couldn't do that for two days. But I definitely hear a lot of good things about sororities and I have a lot of friends who are in sororities. [LAUGHS]

SCHAFFER: I think at MIT it's important to have a support network. It doesn't matter if it is a sorority or a dorm, or your acapella group, or your soccer team. It doesn't matter. It is just important to have friends who are there for you

when you have four p-sets and you haven't slept.

DOU: That is very true. I think my closest friends mostly come from my dorm – I-house only has 21 people in the house – and my acapella group, which is my biggest extracurricular. Between them, I feel like I have an incredible amount of support already.

Let's talk about something other than sororities, dorms and academics. Are there any other activities or extracurricular you participated in?

SCHAFFER: I was a tour guide in my senior year. That was my other big thing. I really liked showing prospective students around MIT with they parents. I actually really enjoyed that. It's very energetic; you get to tell the stories about the dome being turned into R2D2, and the police car on top of dome-- It was fun! I really liked doing that my senior year. The other big thing I did was – I know I did it my freshman year but I can't remember if I did it afterwards – I worked at the MIT Edgerton Center, which I think is still there.

DOU: It's still there.

SCHAFFER: They had a program back then where they worked with kids who were elementary school age. They had these Lego kits with some sort of circuitry, so it was really easy to say: "I want it to turn around when it senses black." It would drive until it hit a wall and turn around. It was really simple things that you could program. We helped them build these little Lego robots and program them. That was really fun. I had worked with kids when I was in high school; I was a camp counselor for many years. So I liked working with kids – but then again, I got paid!

DOU: Was it a UROP?

SCHAFFER: It wasn't a UROP. I don't remember how I found out about it. It was probably advertised on a wall or something. So yeah, it was just a paid job, hourly; based on how many hours I worked.

DOU: And of course you swam on the side--

SCHAFFER: It wasn't until junior and senior year that I swam. But I wasn't on the swim team.

DOU: So it was just a personal hobby?

SCHAFFER: Yes.

DOU: So can you summarize any lessons you learned along the way, as an MIT undergradute?

SCHAFFER: On the positive side, I certainly learned how to solve problems. I did not recognize that at the time. It wasn't until much later after I had gotten out of MIT that I figured that out. I also think MIT was probably one of the most stressful and difficult things that I ever did in terms of just how much stuff you have to do at any one time. In retrospect, I don't know if that is what I wanted out of college. But since then, nothing has ever been as stressful. After MIT, everything else seems like a walk in the park. I guess that's a positive.

DOU: True. Now you know that you CAN do pretty much anything.

SCHAFFER: That is a great point. I think that I'm kind of fearless when it comes to things at work. I never think that I can't do something. Part of that, I think, is the problem solving skills. You can get very overwhelmed when you face really problems. But if you think, "Oh well, let me just break it down," it becomes a lot less scary and a lot more manageable.

DOU: Absolutely. Even two years into MIT, the way I am thinking now is very different than before MIT.

So, after your undergrad at MIT, you moved on and had a very fruitful career. Please, walk us through how you got here, and what you did in between.

SCHAFFER: Right out of MIT, I went to get my master's in science and technology policy at GW [George Washington University]. And I did that because I didn't think anybody would hire me as a policy person with just an engineering degree, and I didn't want to work as an engineer. I found out about the program when I was here, the summer between my junior and senior years. So I decided to come to GW, and had a very good experience here. Most of the classes in this program are at night, so that students can have meaningful internships during the day and go to the many events that are always around town in D.C. – like hear an afternoon speaker somewhere.

While I was a student here [at GW], my first year, I was a research assistant at the Space Policy Institute, working for Professor Logsdon [founder and former director of SPI and a member of the Columbia Accident Investigation Board], who is one of the premiere space policy scholars in the country, and in the world, really. I supported his research on a book about NASA's history. I also supported some research that he did on international cooperation for NASA. I also co-edited a book on space security with him. So it was actually a really great experience.

And then, starting that following summer all the way through the time that I graduated, I interned at NASA headquarters. I was working on their global exploration strategy, which had been announced around 2004 – from President [George W.] Bush – that we were going to go back to the moon and onto Mars, and we were going to work with international partners to do that. Of course, while that never really panned out at the time, we were working on a series of goals and objectives for that program. I worked on a lot of that, which was a really cool experience.

I was actually all set to work at NASA after I graduated. I had been accepted into the Presidential Management Fellows program, which is a way that early mid-career civil servants get their foot in the door. Once you are accepted into the program you are eligible for the pool of jobs that only is available to PMFs. And the people I wanted to work for at NASA did not have a job in that pool. So they promised me, "Oh we are going to create it, we are going to create it, you know, we just need you to do the paperwork. It will be fine."

I wanted to work there, I really did, but I wasn't seeing any progress on their end and I was starting to get a little nervous. So when I went to the PMF job fair, I just happened to see an advertisement for the Airforce's Space and Missile System Center. And I thought, "Oh, that is interesting!" I didn't really know there was anybody else in the government who did space; I had never really thought about it. They were so impressed that I had a background in space. It didn't really matter that it was policy versus—well, I have the engineering, too. That organization basically acquires and purchases all of the Air Force's satellites. They basically oversee the contractors who are doing the development.

The fact that I had an engineering background actually was attractive to them. They were just so impressed that I knew something, that I could

"spell" space. They basically just hired me on the spot. I mean, you have to interview officially, but it was, like, "Well, we have to do this interview, so let's sit down and work through all these questions." And I was offered the job literally within 24 hours. They were very persuasive, and gave me all sorts of recruitment incentives.

It was a hard decision for me to make at the time. I really wanted to work at NASA, but it just seemed like a good professional opportunity for me [to work for the Air Force]. And NASA hadn't really shown that they were doing anything. So I took the job with the Air Force, and that was almost eight years ago now.

Since then, I have done a variety of different jobs within the Department of Defense (DoD), focusing on space. My earlier jobs were more focused on space acquisitions, partially because of my engineering degree and partially because that's where I got picked up within the system. Over time I was able to migrate from acquisitions organizations towards policy organizations.

And for about the last five years, I have worked in the office of the Under Secretary of Defense for Policy, who is responsible, in general, for all DoD space policies, as well as also supporting the Secretary in his international engagement. It's also responsible for representing the Department of the Defense in the interagency – the group of agencies in the D.C. area that get together and discuss policy. I have had a really interesting time doing that job.

DOU: You get to really see how it works.

SCHAFFER: You do. And something I didn't realize before I joined the government is that DoD is really a big player in a lot of policy debates. Just because of the sheer number of people and the amount of budget that it has, even if an issue isn't all about DoD, DoD's vote means a lot. It has been a really interesting experience seeing the policy process from the DoD perspective.

DOU: Then you moved on from that area?

SCHAFFER: One of the things that my organization in DoD does is set aside a certain number of civilian billets for external development rotations. So I was given a one-year detail to the State Department, both to learn more

about the State Department, which as an organization is very important to DoD – we work very closely with the State Department – but also to broaden my knowledge and expand into new areas.

I had previously only done space. So this year, I focus mostly on doing cyber policy, which is a completely new area for me. And I have actually learned quite a bit. I realize that I actually know a lot more than I did a year ago. Most importantly, what I learned this year is how passionate I am about space policy. While it has been really interesting to work on cyber policy – and I have really learned a lot – I find myself volunteering to help people on space projects. I find myself working nights and weekends on space projects and doing cyber during the day.

DOU: Why did they put you in cyber policy?

SCHAFFER: I kind of asked for it. I wanted to learn about something new. I wanted to find out about myself – if, really, I was actually that passionate about space policy or if I could do any kind of national security policy. There are a lot of people who do that. They go from working on Iraq policy to working on Japan.

DOU: So it's kind of a gap year exploration?

SCHAFFER: Yes, exactly. A lot of people encouraged me to do that. It was a great opportunity, because my organization [within the State Department] didn't previously do a lot of work on cyber – and I was charged with building the team and expanding our responsibilities on cyber policy matters across the State Department. I got to do something that I had never done before; not just from a substantive perspective, but I never had had the opportunity to start from nothing and build something. That was really cool, too.

DOU: It's kind of the basic process of engineering.

SCHAFFER: True, kind of. I had no guidance, and I had to figure out what the heck I am supposed to do when I come to work. I had to think about my long-term goals and the intermediary steps to get there.

DOU: What does your day-to-day life look like? What do people generally do everyday?

SCHAFFER: It is a lot easier to generalize with the State Department than with the DoD. At State, I would say, your average person here shows up in the morning, spends probably the first hour of their day not just reading their emails but responding to emails, and clearing out the stuff that isn't really that important but still needs to be dealt with.

Usually in a given day, you would have a couple of meetings. Those meetings range from, "OK, I have a staff meeting every Monday when we get together as an office and we share what we are doing," to meetings where we are either talking to people within the State Department or with people in other agencies like DoD about our policy issues. For example, when there was a negotiation of cyber international law-related questions in the U.N. a few months ago, we would have meetings among the teams who then go to that U.N. meeting to discuss what are our positions-- to discuss and prepare our guidance and talking points. In any given day you'll probably have one or two of those meetings.

Then, another thing that you would mostly spend your day on is writing small papers or talking points, to support your boss. For example, I work for the assistant secretary and the deputy assistant secretary, and they travel all over the world and meet with their counterparts in other countries. We put together papers for them saying, "You should raise these issues as your talking points; here is the background." Even though those papers take you an hour to write, the process by which the government approves those papers is usually called the clearance process or the coordination process. So you write the paper, but you then have to email it to many different offices in your department, and also many offices in other departments to say "please review and approve these points." And, of course, they'll come back with edits, because you didn't phrase this right, or they say, "We already talked about that with this country, we should talk about something else." You spend a lot of time working through that revision process and also completely administrative process of dealing with the comments as they come in. I would say that, that is mostly a typical day at the State Department. I think that it is probably fairly generalizable across a variety of different fields.

Yes, I do cyber policy, but somebody who doing Japan policy or China policy is doing pretty much the same kinds of things. Maybe a little different content, and they probably have more meetings with the people who are at the embassies here or from overseas. But basically it's

the same. In my organization in DoD, the policy office, that is very similar to what we would do there. And in fact, probably most people in the Pentagon have that kind of day.

DOU: OK-- Tying MIT with what you are doing now-- Do you see MIT in some way in your work?

SCHAFFER: Every once in a while I would run into someone who went to MIT, and who is in my professional circle. But in general, I rarely have any daily interactions with other people who went to MIT. I do feel that the perspective I bring or whatever I learned at MIT is value added to my organization. Not a lot of people have the kind of problem solving skills that I developed at MIT.

DOU: From what you observed in your work circle, or just around you, what were these people's most popular majors?

SCHAFFER: Most of them are political science, public policy or international affairs. Those are the three big fields of most of my colleagues.

DOU: And what about the gender? Do you see any gender dynamics?

SCHAFFER: It varies a little bit, but in general, I would say it is very balanced. If anything, there are more women than men in some of the fields, which is great. If anything, DoD is more of a meritocracy than other places where I have worked, because the whole military culture is very much based on merit. You don't get promoted just because you are a man or just because you are white, or just because you have the right connections; you get promoted because of your accomplishments and your potential in the future. And that culture pervades the civilian life as well. It really is about your performance and your accomplishments. Not true, at large, of course, in the government, but I find that different cultures are better at sticking to their values than others.

DOU: I would have assumed that DoD is probably a male-centered culture – that is good to hear! And how is it at the State Department?

SCHAFFER: My organization within the State Department is a little bit different because it grew out of the Cold War, of arms control in the 70s. Its history is nuclear issues, and a lot of people who are in the bureau have been in the bureau since the 80s. They have been in theirs jobs since

before I was born, certainly before you were born. So it's a very unsettling idea. I find it is a little more male-dominated, just because back in that era there were not many women in more professional roles. On the other hand, many of the women that I have worked with have been very supportive of other women and younger women.

DOU: As a young female professional in the State Department, do you feel like you're part of a minority?

SCHAFFER: There are just as many women in general who are working in the State Department, so I don't feel like I am in a minority. My organization more so, but even so, I generally have not felt any sort of gender bias, generally speaking.

DOU: That is really good to know. Part of the idea of having only female alumnae for this project is that MIT in itself has gone through a gender transition. If you look back to the interviews that were done 20 years ago, we have alumnae that are probably 90 years old, and their MIT experience was completely different. It is really cool to see.

SCHAFFER: I think it really has changed. Even hearing from stories from my colleagues-- I work with a woman at the State Department who is in her mid-sixties, and she is a cyber policy professional. She started out as a nuclear policy professional in the 60s—OK, probably in the 70s – she's not that old. Anyway, when she started with the State Department in the early- to mid-70s, she was one of the very few women. And she has told me stories about the gender bias that she faced; people telling her, "Well, your job on the delegation is to get us all coffee," or something like that. She had to face that her whole career.

She tells this story to young women in the department, partly for us to fully understand how good we have it, but also because she makes a special effort to try and support young women – and to put young women in position of authority that she never had the opportunity to have when she was our age. Now she is in a very senior position, and no one questions her being there, but that was not the case earlier in her career.

DOU: She had to go through much more struggle at that stage--

SCHAFFER: *She did.*

DOU: My last questions are about your plans for the future; also, looking back to MIT, whether you have any advice for current students.

SCHAFFER: Looking ahead, your guess is as good as mine. I know currently I am thinking about my next step for my career, because I have been with DoD now for eight years. That was not all eight years in one job, but it was eight years in that department. Again, I thought I would work for NASA; I never thought I would work for DoD. I was never interested in national security issues, and I kind of fell into it by accident. While it has been a really great experience, and I have learned a lot from it – I don't regret it at all – I am starting to think about how I can move back to the more civil space issues that got me excited about space in the first place. So I don't know where I will be in three years, but I hope that it is more on the civil space side than where I am now. We will see.

The advice I would give to MIT students is not to get overwhelmed. Don't take it so seriously. Of course your grades are important, and of course you learn all you can. It's an amazing opportunity and you should take advantage of it. But looking back, now I am 10 years or so out of MIT, I don't even remember what I learned in my classes. I don't really remember half of what I did at MIT.

The things that you will keep with you, and that will help you in your career, are not the things that they are testing you on – unless, of course, you become a certified engineer in something. But I think most MIT students, even if they start in a very traditional engineering path, most of us go on to become leaders of some form. I think that is what MIT really gives its students.

So, I'd say keep that in the back of your mind, and don't be too focused in the weeds of what you are doing. Remember to have fun. I wish I had had more fun in college! That's what you are supposed to do when you are 21 and living in Boston! Unfortunately, partially because of the pressure students put on themselves, and also part of the pressure that comes from the culture of the university, the tendency is to do too much. I would tell students to relax and enjoy their time there.

DOU: I love that advice!

SCHAFFER: *You are going into your senior year, right?*

DOU: No, I am going into my junior year.

SCHAFFER: Oh, you are going into your junior year. Junior year is hard because you have done all the initial fundamental classes. Junior year is when they try to give you all of the very hard classes. Sophomore year was difficult because of Unified, but I remember junior year also being very difficult. But by the time I got to my senior year, I had done most of my requirements. I probably still needed some credits or something, but I had done almost all of the engineering classes. I was taking classes at Harvard, and I took one of those random three credits courses taught by some student. I actually got straight A's my senior year, which was the first time ever, because I was taking classes that I was actually interested in and I thought that was so much more relaxing.

DOU: A quick question about Harvard. Not everyone at MIT knows that they can take classes there, and probably not a lot actually do it. Since you so strongly recommend it, what do you think is value of making that commitment?

SCHAFFER: In addition to just stepping back from MIT for a second, it just exposes you to a different educational style in a way. I would not recommend going to Harvard to take an engineering class. What I took at Harvard was an international affairs class. It was a basic class. I was a senior, but most of the students in that class were freshmen. It was International Affairs 101. It was a big lecture hall with a professor, and we had recitations and stuff like that.

The main difference with MIT was the reading and the writing. I mean, sure, MIT has that Humanities requirement, where you have to write at least 20 pages during the whole semester. I think you had to take three of them where you were required 20 pages. You were required to write that many pages every week in Harvard! I am exaggerating, of course, but if you stack up the books that we were given, and all the reading for this class-- you would never be expected to read that much for an MIT class. It meant learning a completely different style of education, having to read a lot and write a lot, as opposed to a more math and science-based approach.

That was actually good preparation for when I went to grad school, because most of my studies in policy involved reading and writing. So

having had some exposure to this notion of, "You are supposed to read 150 pages in a week" really prepared me for grad school as well.

DOU: So you would advise this route, especially for students who want to have more exposure to humanities?

SCHAFFER: Yes. And it's just a different campus; it just feels different out there. The students are different. It kind of gives you a glance of what your life could have been. Most students who got into MIT also got accepted to one or two Ivy League schools – Harvard, Princeton, Yale or whatever. You get to see what your life might have been if you had gone to Harvard.

DOU: Thank you so much. It was really nice talking to you!

SCHAFFER: And thank you! I really appreciate it.