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Interviews of the Margaret MacVicar Memorial AMITA Oral History Project

Elisabeth Drake – Class of 1958

(interviewed by Anne Marie Atencio)

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MIT ALUMNAE ORAL HISTORY PROJECT.

Interview with Elisabeth Drake
Boston, Massachusetts

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TAPE 1, SIDE 1

Atencio: This is an interview with Ms. Elisabeth Drake, and the date is 23 April 1989. I don't know a lot about your early years. This area is a hard type of thing to find documentation on. All I really know is that you were born in 1936 in New York City to John and Ruth Mertz.

Drake: Right. My parents were both professionals. My father was a lawyer, and my mother was a school teacher. Both pretty intelligent people. My mother was very, very smart, and she went to NYU. Actually was the founder of the business honor society at NYU back at the turn-of-the-century or a little bit after that. Since I was an only child -- my parents were also older -- I was brought up to really be very work oriented. I think I was kind of rebellious too. I didn't like being told that there were things I shouldn't do. Part of that got me to MIT. I did very well in school. And my home was pretty strict so I didn't -- wasn't really allowed to go out and play, and if I didn't obey orders I sort of got punished so I kind of grew up as a kid who followed the rules. Any praise I got at home really came from getting good grades. One of the things that was really an incentive was I loved to eat lobster, and if I ever got all A's, my father would buy me a lobster dinner. And so that was an added incentive. I

did pretty well in school and really was intrigued, fascinated, by math and science -- all kinds of things, you know. I wanted to know how things worked. I think my father probably wanted to have a boy because when I was three years old he gave me a model railroad set for Christmas, and so I got into model railroading. I liked that. Whenever my dad was repairing things around the house or painting the house or working in the garden, I was always there working with him, so I learned how to use tools.

When I got into high school, I took the academic program because my parents expected me to go to college. My mother, I think, had fantasies that maybe I would go to a fancy college and be socially adept and marry a wealthy man and be an upstanding member of the country club. She sent me to dancing school, and I alienated all my partners because I was very clumsy. I stepped on their feet, and I hated it. But somehow, because of my interest in math and science, I took those courses, and in those days -- and this was in the early fifties -- when I was in high school, I was the only girl in most of the classes. I took geometry and trig, and I took a second semester of physics beyond the normal physics program, and I took a calculus course. And I was the only girl in all those classes. I had a female math teacher, Mrs. Brown, and the guys in my classes were talking about applying to MIT, and Mrs. Brown told me that even though I was the best student in her math class, I shouldn't even think about it. And I think maybe to spite her, and because the guys were doing it, I applied to MIT kind of for the hell of it because I also applied

to Wellesley and Smith and Holyoke and applied to a bunch of schools in New York State because I had a New York State scholarship. And I really was shocked when I got accepted by MIT. I didn't know what to do at that point. And my parents really weren't too keen on my going to MIT. They thought that that was pretty weird. But I think the way that I was thinking of it was that if I went to MIT and flunked out, I probably still could go to a Wellesley or a Smith or elsewhere, you know, but if I went to one of those schools, there was no way. First of all I probably wouldn't flunk out of them and I would stay and that would be my life. There was no way that I would ever test an MIT unless I tried it and saw what happened.

So I headed off for MIT, and there were about a thousand students in my class, which was the class of '58, just a little bit less than that, and there were seventeen women in the class to start off. A number of them dropped by the wayside, and a couple of transfer students came in, but you're talking about one or two percent of the class being women. It was really overpowering, and I was kind of scared by the whole thing. There was a women's dormitory at that time that had space, I think, for seventeen women, and I understand now that the number of women that were admitted to MIT was limited in those days by the amount of living space available. There was a rule that all freshmen women had to live in the women's dorm. So if you were from out of town, they took only as many women from out of town (who wouldn't be commuters) as beds that they had in that little dorm over on Bay

State Road. There were a number of women commuters. I think they were admitted on a more open basis with the guys. The dorm was quite a place. There was a lot of pressure on the upperclassmen to move out to make space for freshmen to come in. But there were a few upperclasswomen who stayed in the dorm. And --

Atencio: So only freshmen had to live --

Drake: Right. After your freshman year, you could move out. It was interesting. We had a housemother -- Mrs. Alvord. Very charming older lady from Maine with silver hair, who bought all the groceries from S. S. Pierce and made sure that we had proper manners. Once a year, it was expected that all the women in the house would go over and have tea with Mrs. McCormick. Mrs. McCormick had a very fancy Boston townhouse on Commonwealth Avenue. And Mrs. Alvord, our housemother, made sure that we all got dressed up in dresses and stockings and gloves and hats. Most of us didn't have hats and gloves, so we visited the five and ten and got ourselves suitably equipped. As a freshman, I had no idea what to expect when I went over there. There was this guy, I guess he was a butler, who opened the door. I went with four or five other girls in a group, and he let us in, and this place was just gorgeous, you know -- antiques -- beautiful. Obviously a very wealthy house. And we had been really prepped for this. We were told that Mrs. McCormick had a lot of money and someday she might do something for the women at MIT because she, of course, had gone through MIT herself -- married McCormick, who, I believe, was of the McCormick reaper fortune, and, as I remember the story,

he had very serious mental problems. And she had to be a pretty strong lady to live through all that. But MIT, even though she didn't practice her profession, was something that was very important to her.

Well, we all went, and we sat down in this living room perched on the edge of our chairs with our gloves and, you know, trying to balance a tea cup. And I didn't quite know what to expect, and she piped up. She said, "Well, young ladies, thank you all for coming here. It's good to see you all. I assume you all know about birth control." Well, I was about ready to drop my teeth. She wanted to make sure, you know, we didn't get ourselves into any trouble. And we had a great time with her. She was very easy to talk to. I think that was the only year I went because after my freshman year I moved out of the house. I don't really remember whether I went back again, but I remember her as being a very, very unique, interesting down-to-earth person -- certainly not my picture of a Bostonian social butterfly. But of course she was also a woman of exceptional breeding. There is a story that she gave a picture of herself to McCormick after the dorm was built, and she had the painter put a little lace over her cleavage because she didn't think that the young ladies should -- is that true?

Atencio: I've never noticed any lace over it. I suppose I could go check. Never noticed it.

Drake: The story is she had a lace insert painted into the portrait before she gave it to hang in McCormick.

Atencio: I'll have to look at the portrait again.

Drake: But in those days, she had set up a taxi fund. The Bay State Road dorm, 120 Bay State Road, was a pretty long hike from MIT. And she had set up a taxi fund so that if any of us were at MIT late, you know, past eleven o'clock at night, we could take a taxi back to the dorm and get reimbursed. And if the weather was really terrible, if it was a blizzard or something, or raining cats and dogs, several of the girls could get together and take a taxi over to the Institute.

Atencio: There was no campus police type of thing?

Drake: No, no. Well, there was a campus police back in those days, but they didn't do a shuttle service. We raised some hell in the dorm. I remember this freshman-sophomore rivalry thing was quite something, and we were across from the Beta House and Student House. And the Beta House really didn't pay too much attention to the co-eds. MIT co-eds were sort of a joke in those days.

Atencio: I don't know if that's changed.

Drake: Well, I think there may still be jokes about tech co-eds, but when you look at the number of women at MIT today, which I think is just fantastic, I feel so good about that. In those days, when I went back to the dorm, it was like -- when I was at MIT, I always felt like I was just in a sea of men. You would see secretaries around because they were dressed up, but there were very, very few other women visible. And going back to that dorm on Bay State Road was like a little refuge where you'd find other girls that you could talk to. That was a real need that I had in those days.

But anyway, I was talking about freshman-sophomore rivalry. We had one sophomore who was in the dorm at the time, and -- I forget -- she organized us to do something to Student House, and I think one of the things that we did was we snuck over in Student House, and we stole a bunch of the guys' underpants and sewed up the flies. And I don't remember exactly what happened, but they came over and they got hold of this gal and tied her with a rope to a chair and put her out in the middle of Bay State Road, and the cars had to drive around her. And, of course, we had water bombs from the roof -- all that kind of stuff. Field Day was a freshman-sophomore rivalry that sometimes got out of hand, and I think it's probably a good thing it ended. As I recall, it took some kids getting hurt to have the thing called off. It was an old tradition, sort of in the tradition of hazing, but it was a competition between the freshman and sophomores, and because there were so few girls, we were more spectators and cheered our classes and got involved in the tug of war and fell in the mud and got all dirty and pretty much had a good time.

Atencio: There wasn't any of this competition going on between sophomore girls and freshman girls?

Drake: Oh, yes, in the house it was a little bit unfair because we only had one sophomore, you know, and we had maybe two or three juniors and there was one girl who was a senior. So the odds weren't really conducive. But we did a few things that were in the spirit of good fun.

Atencio: Do you remember what happened that caused them to cancel Field Day?

Drake: I don't remember exactly what the incident was, but those were the days when there was a lot of fraternity hazing too. And occasionally kids were being badly hurt. They were being carted off somewhere or there was too much drinking or whatever. It was one of those things that as long as it was kept in the spirit of good fun, it was fun, but it was an opportunity for things to get out of hand. And, you know, it wasn't worth it -- the fun wasn't worth it to take the chance that someone might get seriously hurt. So it's one of those traditions that, I think, in its day everybody was enthusiastic about. But, you know, times change, and people change with it. I think maybe there are more productive ways to expend your energy. There are lots of good causes to put your energy toward that are maybe a little more productive than mud wrestling in the middle of Briggs Field.

Atencio: I have to confess I let this totally get off track.

Drake: Okay, get me back on track here.

Atencio: Getting back to your early years, can you tell me something about the neighborhood and the environment you grew up in?

Drake: I grew up in a -- I guess you would call it a lower middle class neighborhood. It was in a city called Mt. Vernon, New York, a commuting suburb of New York City. My folks had a small house. My dad left at seven o'clock every morning, and my mother drove him to the station. He got on the train and went into New York City to work. He got back around six-thirty. My mother taught

high school in Fordham, which was part of New York City. After she took my father to the train, she would drive herself to high school, and I was mostly brought up by my grandfather, who was at home. My mother would get home maybe three or four o'clock.

Atencio: What led to your interest in science?

Drake: I think it was curiosity. And maybe part of it came from interacting with my father. Even though he was a lawyer by profession, he was very into how things worked. I also had some cousins who were into how things worked. I think I got interested in engineering because one of my cousins who was maybe four years older than I decided to go into engineering. He went into electrical engineering at Penn State. Most of my cousins were boys and they were older and they would do things like tinker with cars. And when we had family get-togethers, I would hang around with them, and they probably thought I was a pest, but I was interested in things like that. I was very interested in how things work.

Atencio: Was there any particular person that you can think of that supported this? Because you said your parents were interested in pushing you forward in academics, but not necessarily science and technical type stuff.

Drake: No, I don't think that there was anybody who really encouraged me to do it. My parents supported my interest in math and science. I think they were a little skeptical about my going to MIT. I think I mostly did it to be stubborn because people were telling

me I couldn't do it. It sounds a little weird, but I figured I'd give it a try.

Atencio: You were a very active person at MIT, from what I can tell anyway. I'm looking at this list. You were on the Dean's List your entire time. You were Women's Dorm president, AWS president, AIChE secretary, Frosh Coordinating Committee secretary and chairman. Can you tell me a little about not just the activities but what got you into them?

Drake: Well, even when I was in high school, I was active. I think I'm the kind of person who has a lot of energy. I enjoy people, and I like doing things. When I was in high school, I was one of the editors of the yearbook, and I did various other things that were activities. Part of that, I think was that, not only did I enjoy the activities, I knew that you had to be involved in activities to get into college, so I think, to be honest about it, that was some incentive. I was a very shy person, and I think being involved in activities was a way for me to be able to do things with people because I was too shy just to walk up to somebody and say, you know, "How are you doing? What's up? Let's go to a movie or something." I didn't have the courage to do that, but if I joined an activity, I knew that that would be a reason for me to do things with people, and I always ended up enjoying what I did.

Atencio: Can you tell me, because we've gotten through the school years, can you tell me a little more about your time here at MIT?

Drake: Well, one of the things I did was during the fall of my freshman year. There was this correspondence that was going on in the

Tech. One of the male students had written a letter to the Tech, and the gist of the letter was MIT women are real creeps. They're not real women; they don't take baths; they're ugly; they're boring -- something along those lines. And, of course, when this issue of the Tech hit the Women's Dorm, we were all incensed. We had big sisters, the freshmen all had big sisters, and my big sister was a woman named Cynthia Shur. And Cynthia, a very charming young lady, took great offense at this, and she wrote a letter back to the Tech saying, "Look who's talking! MIT men are social misfits. They don't bathe either, and they don't shave, and they're filthy, and they're terrible." So this really was something, and then a guy named Alvin Drake wrote a letter answering Cynthia's letter saying that MIT co-eds were -- he agreed that they were pretty bad. And the outcome of that was that we wrote a letter to Al Drake asking him if he would like to come over to dinner at the Women's Dorm, and he wrote a letter back, and he said, well, he would be afraid to come by himself, but if he could bring a bodyguard, he would come over. And so we said, sure. So the night came, and Al came over with his friend Roger. And, as I recall, we were having some kind of a birthday party for one of the women, and for some reason somebody had passed out cigars, and most of us were smoking cigars, and Al and Roger were rather appalled at first, but then they got into the swing of things. And I started going out with Al. And that ended in our getting married about three years after that. He and I really went steady through my years at MIT, which I think made me

a lot more comfortable because otherwise, I think I would have been very uncomfortable with all those guys around.

Atencio: Why chemical engineering?

Drake: At that time, I got into chemical engineering. Let's see if I can reconstruct my thinking. I knew that if I went into math or science, that you really needed to have a doctorate to do anything significant to have a high level career; otherwise your career would be more at a super-technician level. And I didn't think that I was smart enough to really want to go that route. And I was interested in engineering because I was interested in how things worked and building things. And I was also interested in chemistry, and I think that combination was what pointed me in the direction of chemical engineering.

Atencio: When you were talking about this, you were talking in terms of a career. So early on, you were planning on a career. What made you decide on doing this definitely as a career then?

Drake: Somehow, I think I knew that I wanted to have some kind of a career -- that I wanted to be able to take care of myself. That I didn't want this life that my mother thought was ideal. I mean, my mother was a career woman so I really don't [know] -- even to this day, I've talked to her since -- why did she want me to marry somebody wealthy? And she just thought that that would be a nicer life than the life she had lived. But I didn't want that life. I didn't want to have to depend on somebody else to take care of me. I wanted to be able to do something. I wanted to work, and I felt

that I wanted to enjoy work. I wanted to do something that was interesting, not just make money.

Atencio: How did you feel about the academic environment? We've talked about the social interactions between the women and the men, but, I mean, academically, how did you feel about that?

Drake: It's hard to say, you know. In hindsight, the faculty in the chemical engineering department at that time were just a bunch of super people. And a lot of them were a little bit skeptical about whether women really belonged in the profession or not. Some of them were quite frank with me about that. In fact, the professor who was my thesis advisor -- we did bachelor theses in those days -- told me that he thought I was taking up a spot that a guy could take, and a guy would probably stay in the profession whereas I would probably end up getting married and not practice. At least that was the gist of what he said. I can't remember the words, but that was a message that came across from a lot of the people. You know, you'll probably get married and not follow the career. But times have changed a lot since then. It's amazing -- that was thirty years ago.

Atencio: Other than the Women's Dorm, where did you turn for support?

Drake: I think I got a lot of support from Al during those years. We were very, very dependent, mutually dependent, I think, for support, and I had a few close friends who were supportive. I think my father certainly was proud of me. I think my mother was too, in her way. Even though she thought that it was kind of a

weird path that I was following, she was glad that I was doing well.

Atencio: You've mentioned several times that your ex-husband -- how did he feel about your long-term career goals?

Drake: Well, he was very supportive, and when I graduated, he had plans to go on for his doctorate. And he was in course 6A, so he and I actually graduated the same year even though he was a year ahead, and he had planned to go on for his doctorate. So I went to work, you know, while he continued in school, but he knew that I was interested in having a career, and he was very supportive.

Atencio: Can you tell me something about how you focused on, not just a choice of a major, but more your choice of career?

Drake: I think it happened more by chance. I told you how I went into chemical engineering, and when I graduated, I had to find a job. I got married the summer of my junior year, and Al was staying in school, so I was looking for a job in this area. There was sort of a recession in 1958, and I had applied to a bunch of companies in the area for a job. And a number of them told me that they weren't hiring. You know the old "Well, we've got your resume on file, and when we start hiring again, you'll be in the pile there, and we'll be back in touch."

While I was in college, I had a summer job at Arthur D. Little that had been arranged through one of my professors, Bob Reid, and that was a very good experience for me. It did a couple of things for me. One of the big things it did was it got me to stop smoking. I hadn't been allowed to smoke when I was at home,

and when I got away to MIT, I thought I would be very sophisticated, and I could smoke. So I started smoking. And this particular job -- I was working as a lab technician -- and they were doing some research for Liggett & Myers, where they were extracting tar from cigarettes and doing animal experiments because they were trying to find out whether there was a link between smoking and cancer. I didn't get to see the actual experiments. My job was cleaning up the glassware. And we used extraordinarily strong acids to dissolve the tar, and some of it had to be scraped off, and it was disgusting. The fumes that came off, even though we were doing this in hoods, were just terrible, and somehow that made me decide to stop smoking, which was really a blessing. I'm very, very grateful that I had that particular summer job. And I'm also grateful that that introduced me to Arthur D. Little, which is the place where I ended up working after I graduated.

Atencio: What year was this?

Drake: I graduated in 1958.

Atencio: I meant this summer job.

Drake: Oh, the summer job was probably in '55.

Atencio: So what did you do the other summers? Were you working for Arthur D. Little still?

Drake: Well now, let me see, I'm getting my dates mixed up. One summer I went to summer school and took some courses which resulted in my graduating a half a term early. One summer I had a job at the MIT Accounting Office, and this was the first year they were putting

the tuition accounts on a computer, and they weren't sure that they could trust a computer. Everything before that had been done by these mechanical adding machines, and so they had this run off everybody's tuition payments. The bills and everything were done by computer, and my job was to do the identical thing using a mechanical adding machine, and then hold the adding machine tape up next to the computer printout to make sure that everything tallied. That was very exciting, and after I corrected all the mistakes that I made, it turned out that, after all the keypunch errors were corrected, the two were the same, and the MIT Accounting Department guy who was in charge of it decided maybe it was possible for MIT to trust a computer to do tuition accounts. So those were basically the three summers that I was at MIT.

Atencio: What was your financial situation like when you were here at MIT?

Drake: I was fortunate in that I had some partial scholarships, and I had been working while I was in high school and had saved up some money, and my parents supported me to some extent. I didn't have any real extra money to spend, but I was able to survive, and the way things worked at the dorm was that essentially all our day-to-day needs were covered. There was stuff there so we could make our lunches, and stuff there for breakfast, so we got three meals a day really as part of the package of living in the dorm.

Atencio: Tuition and everything was no real problem?

Drake: Right. Tuition in those days was \$450 a term.

Atencio: It's all relative, though.

Drake: Yes, it is.

Atencio: \$450 was a lot more back then too. You had mentioned you worked in high school. Can you tell me something about how you spent your free time in high school?

Drake: Well, I spent some of it working. I worked in a factory that made eyeglass frames for no good reason other than that they were willing to hire me and that I could work part-time and I could work odd hours. So that was a chunk of my time. And I loved to read. I always loved to read. The one other thing -- I was a model railroader so I built a model railroad, and the other thing I enjoyed doing was I loved animals, and I loved to go to the zoo.

Atencio: I find this interesting -- you were saying you worked in a factory -- how did you -- you just sort of applied?

Drake: Yes.

Atencio: I've always wanted to work in a factory just to see what it was like. You mentioned reading, what types of --

Drake: I read everything I could get my hands on. Well, I had a lot of reading to do for school, and I enjoyed that. I liked autobiographies. I liked science fiction. I liked things that had to do with other cultures and countries.

Atencio: I'm surprised you didn't get involved -- wasn't there a model railroad club here at MIT?

Drake: Yes. I went around there a few times, and I didn't feel welcome so I --

Atencio: No women allowed?

Drake: I don't think so, you know, it wasn't that blatant, but I certainly wasn't welcomed.

TAPE 1, SIDE 2

Atencio: How do you feel, not just at MIT, but how do you feel overall you were treated because of your choice of major and career?

Drake: I think it was mixed. There certainly was some prejudice against women in those days, but being the only woman in a class, I know that I got noticed more than sort of the random guy, and so I think that there were some advantages, and I know that a lot of people helped me -- gave me special help. It was hard, though, finding a kind of emotional support. I think in terms of scholastics and things, I got a lot of special breaks, and people would try and help me and so forth. One of my special friends at MIT -- I just remembered -- was the guy who ran the elevator in building 10, a guy named Jimmy Athens, and he was just delightful, and whenever I was feeling bad or something, I'd go over and ride the elevator, and he'd cheer me up. I later got to work with his son at Arthur D. Little, and after many years of working together with his son Peter, I finally learned that Peter's father was my old friend from MIT.

Atencio: That worked out well.

Drake: Yes.

Atencio: I always see those little seats in the elevators, and I think, "You know, they must have at one time had people that actually did this."

Drake: That's right.

Atencio: These clueless people from the latter part of the century don't know anything about this stuff. Can you tell me something about --

I don't want to say day-to-day life, but I guess that is sort of what I want to say -- after graduation?

Drake: Well, after I graduated, I went to work at Arthur D. Little, and Al was in graduate school. And our life was mostly revolving around our professional activities. We liked to go for rides, and initially the rides would be riding the T, and later on we got to the point where we could afford to have a car, and then we'd go out for car rides. We didn't have a whole lot of friends. Neither of us were very socially oriented, and we had one or two close friends that we would spend some time with, but basically we were very much oriented toward work. And, looking back at it now, in terms of our relationship, I kind of somehow right from the beginning let Al make all the decisions because he was quite opinionated about what he wanted to do and wanted things his own way. And the few times that I bucked him I would do it in a way that, you know, I'd kind of throw a temper tantrum, and then he'd be mad at me, and he'd sulk for two months, and I figured it wasn't worth it. I really let him make all the decisions, and then sometimes resented it, which doesn't make much sense, but that's what I did. I was pretty happy in those days, though. Things were going well.

Atencio: I have this summary of all your career stuff and everything. You've been at ADL, or you were anyway for a very long time doing --

Drake: All kinds of stuff.

Atencio: Basically working your way up.

Drake: Yes.

Atencio: Can you tell me something about what it was like when you first started working there?

Drake: When I first started working there, there weren't too many women on the staff. There were some. The ones that were there tended to be working in the labs or the -- in a professional capacity. There was one other woman engineer on the staff at the time. But I was given interesting work to do, but was sort of kept in the back room. I didn't get invited to meetings with clients even though my work, some of my work, was going to be presented and things of that sort. My boss would present it for me. I don't know whether some of this had to do with the fact that I was a woman or it was just the normal way that they treated a junior, a real junior, person. Probably was a combination of both.

There was a period there of six years when I was working after my bachelor's degree, and Al was still in school, and then he had to go and finish up a military commitment because he had been on an ROTC scholarship. During that time, I got pregnant, and it was during -- actually I had started working for ADL in January of 1958 because I had finished everything. And I graduated in June, and I was pregnant when I graduated, and I -- it wasn't planned, obviously. But I left ADL around Thanksgiving and had a baby that was born with very serious birth defects and only lived a couple of weeks. So then I went back to ADL, and later on I got pregnant again and had a miscarriage, and I got really scared about the possibility of having a child that had

some major physical or mental disability, and I guess at that point I really started thinking about putting all my energy into a career.

Al was finishing up all his commitments. It looked like he wanted to teach. He had been teaching while he was a graduate student. He was a very, very good teacher, and he loved teaching, and he was going around to a whole bunch of universities on interviews. And, of course, he ended up back at MIT on the faculty. It was kind of funny. In the EE department they were very concerned about inbreeding at that period of time because most of the EE faculty were MIT graduates, and so it was very difficult if you graduated from MIT to get on the EE faculty, and some fund had been set up for young faculty -- for young recent graduates who were interested in faculty positions. They were joking that they gave them one-way tickets to visit any school they wanted. But anyway, Al ended up back at MIT.

I guess around that point I had decided if I was going to be able to really move ahead professionally it would be good to go back to graduate school, and I didn't know what Al was going to do, you know. He might, at some point, want to relocate, and I might be in a position where I could have an academic job, but not an industrial job. So it seemed to me that if I had a doctorate that that would keep that option open. So when he went into his ROTC service -- he was stationed in New Jersey for eighteen months -- and I had been talking to a couple of the faculty members at MIT who had been encouraging me to go back for my doctorate and

one of them in particular was Professor Reid. He's emeritus faculty at this point. Very distinguished in the field of physical properties and thermodynamics. Very outstanding. He had been consulting at Arthur D. Little and had been suggesting to me that going back to graduate school might not be a bad idea. When I went down to New Jersey, I took a leave of absence from ADL. Did a little consulting for them. Would fly back to Boston a couple of days here and there and do some consulting.

But Bob Reid had suggested that maybe I might want to take some time and study for the qualifying exams, and he got me a list of old textbooks and materials that were needed to prepare for exams for various graduate courses. So I did that. And came up a year later and took the qualifying exam. I knew that I had flunked it because when I got out of it all the guys were saying, "Is the answer to the third problem 17.2 kg/min?" or something, you know. I didn't get a single answer. I didn't work any of the problems all the way through, but what I had done -- and I think this is because I had had the work experience -- was I had written out my approach, how I was going to do it, and then I started setting it up and got as far as I could get and went on to the next one because I knew I had to allocate my time. Somehow, I passed. I don't think very well, and when the department chairman called me in to tell me that I had passed -- there also was an oral part to it too -- he prefaced the good news with "Well, this is somewhat against my better judgment, but the faculty have decided to admit you to our doctoral program." [1964?] But that

was O.K. So I then was admitted to the doctoral program, and when we moved back to the Boston area, and Al joined the faculty, I started working on my doctoral dissertation. Spent a little over a year, so I had kind of an efficient doctoral program.

Al also was writing a textbook at the time, The Fundamentals of Applied Probability Theory, and he was putting long, long hours on that, so we both were into real hard work stages at that time.

Atencio: What I think is interesting is that you mentioned earlier that part of your choice of major was determined by the fact that you didn't think you were smart enough to continue on to a doctorate level in math and science, and yet you went back for chemical engineering. I was just wondering what changed?

Drake: Well, I don't know. Somebody told me -- I think it was a secretary I had once -- she said that she saw absolutely no correlation between people's level of education and their intelligence. A few years ago I was going through some old stuff to see what I wanted to throw out, and I came across a copy of my doctoral thesis, and I sure can't understand it today. But I don't see myself as an exceptionally brilliant person. I think I'm intelligent, and I'm just interested in a lot of things. I don't think that my doctor's thesis was a great outstanding contribution, but I don't think that most of them are. You know, there are some that are incredible contributions, but the purpose of a doctorate is to teach you how to do original research and organize finding out about something and writing it up in a way that is useful. I think maybe at the time that I had been

thinking about science, I had been thinking more -- I really didn't know what I was getting into, you know, having a doctorate -- well, even now I'm somewhat awed by people who have a doctorate in physics. You know, I think, gee, they must be really smart.

Atencio: They probably think the same thing about you.

Drake: I don't know.

Atencio: I'm still at the "I'm impressed by doctorates" level.

Drake: Well, when I think about those days, there were a couple of other women. There was a -- actually, this is kind of interesting. I think this goes back to when I was a senior, and I know this is out of order, but it just occurred to me. There were very few women in chemical engineering, and there was a woman who was in the masters program at that time whose name was Vilma Espin. And we kind of found each other and spent some time together -- not a whole lot, but she was one of the people that I really enjoyed talking with, and one day she was gone. Apparently what she had done -- she was Cuban, and she had gone back to Cuba to fight in the revolution. She ended up marrying Raul Castro, and Raul Castro was Fidel Castro's brother and sort of one of the super revolutionary leaders, and I've always wondered --

Atencio: Did you keep in touch?

Drake: No, no. I saw her name once again in Time magazine many, many years ago where she was mentioned as Raul Castro's wife and someone who had been interested in women's rights in Cuba, but she's another woman who went through MIT who might have an

interesting story to tell. She wasn't there very long, and she never graduated.

Atencio: It might be hard to get that one.

Drake: Yes. So anyway, before I got sidetracked, I forgot where I was going.

Atencio: You were talking about getting your doctorate --

Drake: Yes. I had a friend, Lita, who was getting a master's degree at the same time, and of course doctoral students are supposed to be very studious people, but we raised some hell too. There was always a bridge game going on. People were running experiments, but while you waited for something to happen, you went and played bridge. There was a lounge, and graduate students hung out. I remember a lot of good friendships from those days. There was one guy who had a grant that was supporting his doctoral research, and he was very, very protective of all his equipment and had built an enclosure, and his experiment was inside this enclosure. And he had the best equipment. He had somehow finagled it, and it was all locked up in this little enclosure, and one day he let it be known that the people from the agency that was supporting his research were coming and that he wanted everybody to be on their best behavior and that he was going to show these important people his wonderful project. And so Lita and I went to Woolworth's, and we got decals. We got these little things that they put on children's cribs of little pink lambs and we took these things and put them on this door to his experiment. He came in in the morning, and he was all set. He was all dressed up in his suit

set to impress people, and then he went in there, and I'll never forget that. "What the hell is this!? Who did this!?" So we scraped them off before the important people came. But we had good times. We had some fun.

Atencio: That's back when you were in building 12, right?

Drake: We were in building 12, the basement of building 12.

Atencio: So it sounds like there was a drastic contrast between when you were working at ADL and when you were a graduate student. Not work-wise, but I mean socially.

Drake: Yes. The other thing that happened at about that same time [~1965] was that when Al came back from finishing his military commitment, there was an opening as housemaster at East Campus. And Al was asked if he wanted to take that job on, and we both were really enthused about the possibility, and so we did that. We were living at East Campus for, I believe it was six or seven years that Al was the housemaster there, and that was another piece of my life. I really loved it there. It was wonderful. There were about five hundred students, between 450 and 500, I guess. And we would throw these parties in the lounge, and I would practice batch processing by baking many square feet of cake. It was good.

Atencio: How were your interactions -- because you were still a graduate student at this point, right?

Drake: Yes.

Atencio: O.K. I'm keeping on the time scale then. Can you tell me a little more about being housemaster? Sounds like a fun job.

Drake: Well, I've always really enjoyed being around undergraduates, and, you know, we were there. It was just fun. There was always something going on. Sometimes it was a crisis; sometimes it was fun. Sometimes it was the Mayday Sound Wars between the parallels, and you'd put in your earplugs.

Atencio: The what?

Drake: Sound Wars. The parallels would put all their hi-fi equipment in their windows and see who could outblast --

Atencio: Oh. O.K.

Drake: One of the students in East Campus was the guy who went on to found Tech Hi-Fi, and he started Tech Hi-Fi actually by selling audio equipment out of his dorm room in East Campus.

Atencio: Great traditions here.

Drake: During the years that we were at East Campus -- during the early years -- was the time that MIT put on a concerted effort to really try and increase the number of black students on campus. This was in the late '60s? Not exactly sure when. Someplace in there. And, of course, there always had been a few black students who were chosen to come to MIT, but it was in those days really a white male institution with a few oddball females and an occasional black face, but it certainly was predominantly white male. And this particular year, East Campus was chosen as one of the dorms where they would put groupings of black students so that the black kids wouldn't be too isolated. And so we had a couple of floors in the dorm that had maybe thirty percent black students, and it was a tough year. It really was -- it must

really have been a tough time for those first black students who were thrown into this situation.

Some of the black students let it be known that they didn't want to participate in East Campus traditions. One of the traditions was that the night before the first physics quiz, the sophomores threw the freshmen into the showers. And some of the black kids said in advance that they didn't want to participate. They didn't want to be grabbed by a bunch of white guys and pushed around. They just didn't want this. Some of the white kids were saying, "Well, it would be racist if we treated the black kids different." And it was just crazy, you know, it's insane, but it was an insane period, and there were some very, very tense times. It got quite nasty. Some of the black kids called for help, and some of the black kids from other dorms came over with their umbrellas, and it was very, very tense. We ended up inviting some of the ringleaders of the white students and some of the black students up to our apartment a day or two later to talk about the whole thing and try to figure out how people could learn how to live together and respect each other. There were a number of people from the MIT counseling staff who joined us, and it was a very, very awkward, tense session, and in the middle of it the doorbell rang. I went and answered the door, and there were these two kids from the dorm carrying this bleeding, messed up cat, and they said, "Mrs. Drake, somebody just threw this cat off the roof. What should we do with it?" And it just wasn't the way to do it, but somehow it broke the ice in this otherwise tense situation.

But we shoved some money at the kids and said, "Why don't you get in a cab and take the cat to Angell Memorial and send us the bill?" On our dorm expense sheet we put in cat repair \$200. Fortunately, after that year there was much better communication between the black students and the white students.

We were also there when at the very end there was talk about some of the dorms going co-ed. We had senior tutors in the dorm on each floor, and Al had wanted to bring in a woman, one of his graduate students, as a senior tutor on one of the floors before the dorm actually went co-ed, and the time wasn't right at that point, and so that was turned down. I know that when the dorm finally went co-ed, it really was kind of refreshing because it had some effect on the "animal house" mentality. One of the floors that was having women on it, the guys actually went out -- there were several bathrooms on the floor -- one was going to be the women's bathroom -- they couldn't figure out what to do with the urinals. So they went out and they got geraniums, and they planted geraniums in the urinals. So, you know, that's nice.

I'm glad that there are so many women at MIT now that there are co-ed dorms. That McCormick is here. I think it was the first year I was at East Campus, I was told that one of my jobs as wife of the faculty resident was to be the chaperon for the women who came for some spring prom. What happened was they would clear out a section of one of the floors, and all the guys who had dates coming in from out of town, the girls would stay there, and I had to go over there and chaperon them, which I thought was rather

ridiculous, but this was 1967 or sometime around there, and so I did it. And, of course, the guys were doing their usual thing. It was about five a.m., and I heard a blood curdling "AAAAHHHHH!!!" And so I got out and investigated. It turned out that some of the students had strapped a vacuum cleaner to the bottom of one of the girls' beds with a switch running downstairs, and they waited until they knew that she was asleep, and they turned on the vacuum cleaner. It vibrated the whole bed, and she was scared to death. I thought that was ridiculous. I was rather happy when that custom bit the dust.

Atencio: What did they do with the guys -- just parcel them off to friends?

Drake: Well, the guys would double up with other kids in the dorm. It was a weekend thing so it was O.K.

Atencio: So McCormick had actually opened by then, right?

Drake: Yes.

Atencio: Substantial increase in the female population.

Drake: And it was only when McCormick opened that MIT started equal admissions for women. Started admitting women and men on an equal qualifications basis.

Atencio: I'm slightly confused about something -- when did you go back to ADL then? Was this after all of this or was this while you were at East Campus?

Drake: Well, I really spent just over a year doing my doctoral thesis, and I was at ADL before and after it. So most of the time I was at East Campus, I was at ADL.

Atencio: How was that? I mean, working and being housemaster and having your obligatory duties as the wife of faculty?

Drake: It was fine. When I was at ADL, I was still at a fairly junior position so even though I was working hard, I wasn't doing a whole lot of traveling, and most every weekend would be spent on things that involved the dorm. So that that was all fine. In hindsight, what I realize is that I put no energy into my marriage and that Al and I were both involved in work and the dorm, and we were talking to each other totally superficially. Just because, you know, we were busy all the time.

Atencio: How was that?

Drake: I didn't know anything else. It seemed like the way people did. You know.

Atencio: How did you eventually decide that this was not the way that people did it?

Drake: Well, it's taken a long time, and I think it was after I was divorced and looked back at what had happened. We started out as being total mutual support system for each other and then when we didn't have any children, I think we both got wrapped up in our careers, and when we were living at the dorm, we were wrapped up in that, and we never really put a lot of energy, we just assumed -- I assumed that the marriage was O.K. But we didn't know anything different. So, you know, it's only in recent times that I've sort of become aware that there are things in life other than work.

Atencio: It's a good realization to come to, still, at any time.

Drake: Yes. Something that I realized when I talked to some of the women who had gone to MIT in the real early days, you know, graduated in the class of 1920, and most of them didn't marry because work just took so much energy that they couldn't. They really made an early decision that they wouldn't get married, that they wouldn't have families because they knew they couldn't do both. And in those days, men did not share in helping to raise a family, so they knew that if they had a family, they couldn't have successful careers, most of them.

Atencio: So how did your life proceed after you left East Campus?

Drake: Well, things went very well at ADL. I had started out working on cryogenics, which was a strength of ADL, one of the areas that they were very well known in. They had a number of pioneers in the field of cryogenics, which is low temperature phenomena, and they had patents on early refrigeration devices that would produce cooling at temperatures down around absolute zero. Liquid helium and liquid hydrogen temperatures. And so when I went to work for them, I started out designing some of these low temperature devices. I designed a liquid hydrogen refrigerator to be used for low temperature materials research in a nuclear reactor that was over at the Watertown Arsenal. I designed an air separation plant that could be used on aircraft carriers that pitch and roll in the sea to make breathing oxygen for the aircraft. So I was doing things like that.

In the '60s, people started getting concerned about energy supplies, particularly with respect to natural gas. And they

started looking toward liquefying natural gas as a way of storing it in compact form. The only other way of storing it is at high pressure. You can't store a very large volume because the containment is so impractical, but if you refrigerate it and liquefy it, you can store it at near atmospheric pressure quite efficiently. But you need to have very special steel tanks or aluminum tanks, and they have to be very well insulated, and you need systems for maintaining your refrigeration. And, of course, the material is very hazardous. If it gets out of the containment system, it'll vaporize and it's natural gas like you have in a -- you know, it can explode. It can burn, and early in the use of this technology, there was a terrible accident that occurred out in Cleveland, Ohio, that got everybody very scared. It turned out that the reason was using sort of a marginal metal in the storage tank. But the economics and the supply and demand of gas in the early '70s made this a very attractive technology to develop.

If you look at the U.S. natural gas pipeline system, the pipelines are sized for certain baseload capacity, and if you have a super cold day in the winter time in the Northeast, there isn't enough capacity in the pipelines coming to the Northeast from Oklahoma and Texas to provide the full flow, particularly if the people in Washington and Pennsylvania and New York City are pulling on the pipeline too. So there's something that's called peak shaving, and that's somehow having a way of storing fuel so that when you have one of these peak demand periods, you can use it.

TAPE 2, SIDE 1

Drake: I was talking about using liquefied natural gas for peak shaving, and because of my background in cryogenics, I was able to find a lot of opportunities for consulting, and it was a large group at Arthur D. Little that started helping gas companies that were putting in peak shaving plans because that wasn't really part of the knowledge base, the traditional knowledge base of gas companies. They were used to pipelines and scrubbers and things of this sort. Low temperature refrigeration facilities. And so we had quite an activity working for these companies, and, of course, safety was one of the major concerns in handling the stuff. And it wasn't very long before I started getting interested in how you could design facilities so that you could have very safe containment -- how you could lay out a facility so if you had an accident, you could contain the consequences within planned boundaries. I got involved in a few programs where we actually went out and ran tests in the desert where we spilled LNG, and later on we spilled some other fuels and looked at how the flammable vapors would disperse from a boiling pool of this very cold liquid; looked at what happened when you lit the vapor; looked at how they burned as pool fires and developed models for predicting how the hazardous properties change with distance.

[Early to mid-1970s]

So that kind of led me into my major career interest right now, which is how you manage hazardous chemicals which we need for our modern society because a lot of the materials which we want

and use involve hazardous chemicals in their production. How do you make sure that you can build the plants that produce these things and that they're safe? And, of course, safety is relative. There is no such thing as absolute safety. We wouldn't do anything if -- we wouldn't get out of bed in the morning nor could we stay in bed either and say that we're going to be totally safe. That's impossible, but it's important for the chemical industry to be very responsible -- to make sure that they're doing everything that is prudently possible to make sure that these chemical plants are operated safely and responsibly. So that's the area that my career has taken me to up to this point. Most of my interests at this time focus on issues that relate to managing technological risk.

One of the little interesting side things I did in those days was -- this was the time of the lunar missions, and ADL was chosen to design and build several of the lunar experiments. I was primarily involved in one which was an experiment to measure the heat flow coming out from the center of the moon and involved designing and testing a very sensitive array of temperature sensors and heaters that were to be inserted into a hole that would be drilled into the lunar surface. And that was really exciting. I was involved in a couple of the other experiments too in doing minor parts of the design and construction, but this heat flow experiment was a major project for me. The first one that was deployed -- I remember being down at the Johnson Space Center [~1970], and what we did was we wanted to turn heaters on in this

thing on the moon and then follow the temperature response at some distance away from the heater. The transmission time for information back and forth between the control center and the moon was about seven minutes, so you signalled to turn the heater on, and then you waited seven minutes and then all of a sudden you said, "Hey, hell, it's up on the moon there that the temperature's starting to rise because we turned the heater on." It was real, real science fiction. That was pretty interesting. So that was a very interesting piece of work. It was also interesting that the quality assurance on anything like that is so monumental that when we shipped off the actual flight hardware -- well, the flight hardware itself, the thing that was actually put on the moon -- weighed only a couple of pounds at most, and then, of course, it had a power supply which was heavier, but the paperwork that went with it filled a small truck.

So anyway, a lot of my work at that time on liquefied natural gas and other hazardous fuels took me around the world, and I worked in a lot of different countries. The Japanese import tremendous amounts of liquefied natural gas. They use it to generate electricity because it's a clean fuel. Very, very expensive way to generate electricity, but it's a solution for Japan, and it certainly is an incentive for tremendous conservation too because the fuel is so expensive. I got involved in projects involving liquid propane in Australia, New Zealand, Thailand, Europe, Algeria, Abu Dhabi. You know, different places.

Atencio: I don't even know where that is.

Drake: The Middle East. Which is an interesting place for a woman to work. I never worked in Saudi Arabia. I think that's because women are still very restricted in what they're allowed to do in Saudi Arabia, but I've worked in other Arab countries.

Atencio: I'm trying to figure out where you were in ADL at this point.

Drake: I had a group of people who were working for me and with me on these projects. I was leading projects. Somewhere during this time, I became a vice president. You know, I had a fairly responsible position. My marriage was falling apart. I thought that some of it was due to my being away all the time, and I had an opportunity to take a job as chairman of the chemical engineering department at Northeastern, and I thought that this might help the situation with my marriage. [1982] I think I was going through a mid-life crisis at that point too. I wasn't happy. I had a lot of success, but my insides didn't feel too good.

So I went to Northeastern, and I stopped traveling, and a year later that didn't solve the problems with the marriage. We went our separate ways. That was real hard for me. Looking back at it now, it was good. I wish that, you know, maybe I had looked more at my personal needs a lot earlier than I did, but I spent those years at Northeastern, and I enjoyed Northeastern a lot. It's a very different atmosphere from MIT, but it's first class when it comes to cooperative education. It's focused a lot more on the undergraduate, and it's a wonderful way -- even though it takes five years to get an engineering degree there -- just

watching the kids go out and work and then come back to the classroom and say, "Oh, you know, I ran into this situation at work, and this is what we're learning about now, and why is this done that way, and ..." It was a great place, and I am very, very attached to Northeastern. It's produced a tremendous number of high quality engineers who are out there. You don't hear too much about Northeastern engineers, but there are lots of them out there, and they're doing super well, many of them. I was there for four years. The chemical engineering department there is a fairly small department, and it was interesting. I had the opportunity when I joined to bring in a couple of new faculty and try and work with them to get them started. There were no computers in the curriculum, and so we got a little project working with the faculty to update the curriculum and get computers integrated and have a computer facility the students can use.

All that was interesting and challenging and fun, but I think that I missed the consulting environment, and I also found that I couldn't do academic research myself. The kind of work that I was really interested in doing professionally was too interdisciplinary. That I couldn't go off with a graduate student and identify a project that had to do with safety in the chemical industry, that would be a doctoral project or a master's thesis even. And I missed that. I missed the interactions with colleagues in my primary professional area. So I went back to ADL. When I went back there, I knew that I really didn't want to

go back into the old rat race, which was working all the time, traveling all the time, coming back from one trip and throwing the clothes in the laundry and getting up at four a.m. the next morning to pack to get on the seven o'clock airplane to go somewhere else. I didn't want to do that, and I thought that I could control it, but I couldn't. And it's important to me when I'm any place to feel like I'm doing my job well and contributing, and I felt like I couldn't do that anymore at ADL. What I was doing, I was doing well, but I didn't need the money. I didn't need to kill myself for advancement, and I figured what I really wanted to do was to work so that I felt productive and that I was doing something that I enjoyed and to put some time into enjoying the rest of my life. So I've left ADL after being back there for two years. I'm doing some independent consulting now.

I have been very active in the American Institute of Chemical Engineers. A couple of years ago, I was elected a director. And one of the other activities there is that I'm on the managing board for their Center for Chemical Process Safety. I've been very active in getting that Center, which, in my opinion, which may be biased of course, is doing some very important things for the chemical industry. It provides a mechanism where different chemical companies can pool the state-of-the-art in safety management and safety technology without getting involved in collusion. If XYZ Chemical Co. publishes a paper that says this is the way we manage our safety and another

company follows that advice and has an accident then they can sue XYZ Chemical Co.

Atencio: Really?

Drake: Oh sure. So XYZ Chemical Co. is not going to tell any other chemical company how to run their business, but this Center for Chemical Process Safety puts out guidelines where they'll have a technical steering committee where there's a representative from Monsanto and from Dow and from DuPont and from Union Carbide and from other leaders of the chemical industry. They'll put out guidelines that will say the leaders in the chemical industry can do things this way, and they use this kind of technology when they're dealing with the most hazardous chemicals, and for plants that involve lesser hazard, they use this kind of management system and technology. And I think these things are very, very beneficial to the industry as a whole because the top companies can put their resources into developing technologies and management strategies that a mid-level company couldn't afford to do, and the mid-level companies need to have these things as well as the top ones. I think it's a real good thing for the chemical industry as a whole.

Atencio: What was your function in this?

Drake: Well, I was on the technical steering committee for quite a while, and then, when I became a director of AIChE, I became a member of the managing board. So I'm part of the steering group for the Center. ADL has also been a contractor, and I was involved in reviewing some of these guidelines, books that have been published

by the Center. Involved in writing some of them. That's been a very good experience for me. It's given me an opportunity to work with a lot of really top-flight people in the chemical industry, which has a black eye, you know. People always seem to think that -- they associate the chemical industry with pollution and bad accidents and, of course, the chemical industry is the source for some of those things, but there are a lot of good things and responsible things that are going on in the chemical industry that the public never sees. It's kind of nice to be part of that.

Atencio: Going back, you were a visiting lecturer at UC Berkeley?

Drake: Yes. My husband went on sabbatical to Berkeley. So I took a leave of absence from ADL. I was sort of an ADL yo-yo. I guess I was sort of doing reverse sabbaticals, but when he went out there, I got a position in the chemical engineering department.

Atencio: How was that?

Drake: It was fun. I didn't do a whole lot of teaching there. I was just involved in one course. And I really loved California. It was, you know, run around San Francisco and the mountains and the Gold Country. It was like a combination work/vacation. It was a very nice time in my life.

Atencio: What were you doing specifically?

Drake: I was teaching a design course in chemical engineering. I was also involved in things in the department and a couple of graduate theses committees and things of that sort. That was really a part-time activity. One thing that I noticed was very different, Berkeley being a real top-flight place, but different from MIT in

that people at Berkeley also seemed to know how to play much better than the MIT people. Maybe it's because the weather is just so beautiful. You didn't see the graduate students in there every weekend, and you saw some kids coming to class with surf boards or something.

Atencio: How was it personally? You said that it was a very satisfying time and everything, and it sounds to me that this was during that whole period when you were sort of going back and forth in your personal relationship with your husband.

Drake: Yes.

Atencio: How did this affect all that?

Drake: Well, he was working very hard during that time. He was working harder than I was working, and what I was doing was just roaming around enjoying California, and when we had time off, we would travel. Took rides, you know, to all the different national parks. And traveling was good. Traveling's always been good, I think because even when our marriage was totally falling apart, we took a trip to Scandinavia, and we got along wonderfully, but it seemed to be that when we were traveling, we were all focused on where we were going and the interesting things we were seeing, and we still weren't dealing with any personal issues between us.

Atencio: You were talking about being a yo-yo, I was just wondering is that common procedure, and if not, how did that affect your career at ADL?

Drake: Well, it had some effect on my career at ADL. I'm hoping it's changing for women, but I think people looked at me and saw me as

not being a serious career person because I came and went a few times. I've noticed very often with women that if they are out because they have some family situation, often a secretary will say, "Well, you know, Mary Beth isn't in today. Her kid is sick again." Whereas with a male engineer, the secretary will say, "Joe is out of the office today. We expect him in tomorrow." And it's just a perception that somehow, if a woman has a family responsibility, and what I was doing was basically following my husband when he went on a sabbatical or when he was in the military, that that made you less serious about your career. There's still some of that today, but I'm hoping that that is going to disappear in the pretty near future.

Atencio: Another thing that I was wondering about -- this is off of one of those Who's Who-type directories -- you were the inventor of a fractionation apparatus?

Drake: Yes.

Atencio: Was this with ADL?

Drake: Yes, that was ADL. That was the early cryogenics. A gadget.

Atencio: You were also at MIT again as a professor, weren't you? Can you tell me something about that?

Drake: Well, that was a period when MIT was starting to increase the number of women students, and they were also trying to add women to the faculty. And the chemical engineering department at that time didn't have any women faculty, and I think they were getting a little pressure put on them. I remember being approached very delicately about whether I would consider being a visiting faculty

member, and it turned out that they really wanted someone to join the faculty, and they said, "There are only three women with Ph.D.'s in chemical engineering in this area; one has dropped out of the profession, and the other one is a vice president of a major company and wouldn't consider it, and then there's you." So I don't know, but I thought that it would be something good to do at that time, and my husband also encouraged me very much to do it. He never really thought that I was happy at ADL. I would come home, I guess, and talk about some of the politics that went on at ADL and bitch about it, and he thought that I would be happier outside of that environment, but I didn't find life at MIT as a faculty member to be very good at that time. [~1974] The other faculty in the department, with a few exceptions, sort of looked at me as their token [woman] faculty member, I think. At the end of it I was offered a permanent faculty position in the department, but I went back to ADL.

Atencio: What was it particularly about ADL that made your husband feel this way?

Drake: ADL is a very political place. It's got a lot of people who are power-oriented -- success-oriented. I think it's true of any high pressure environment, but it's particularly true of the consulting business. I am not very good at playing power games, and I also don't like to -- I don't know. I guess I'm basically an honest person, and when I see things I don't think are right happening, it bothers me. But I also found that if I spoke to Al too much about good things about ADL, he didn't want to hear about those.

He'd rather hear me complain about it, and at the time I thought, "Well, gee, maybe he's being a little bit defensive about my being too successful or something," but since we didn't talk to each other about things like that, I never knew what the reality was.

Atencio: So why ADL? If you already said that you don't characterize yourself as the type of person that is suited to that type of mentality, I was just wondering why --

Drake: Well, that's only part of it. The rest of it is that it's a bunch of very, very creative, interesting people. It's one of the leading consulting companies so they get to work on all kinds of very interesting and challenging problems, and I have no regrets about being at ADL at all. It's a great place. I've got tremendous friends who are there, and I hope to maintain a real good relationship with them in the future. I just don't want to work that hard anymore.

Atencio: Well, this is with regards to MIT. Was it strictly because of the fact that you felt that you were treated as a token woman faculty, or was there some other reason that you did not feel that this was the environment for you?

Drake: Well, I didn't feel like I was of the intellectual caliber to be on the faculty, to be honest. I mean, I knew that it would be good for some of the women students in the department to have a woman faculty member, but I didn't feel like that was what I wanted to do at that point, but I wanted to be someplace where the fact that I was a woman didn't really make too much difference.

Atencio: I take it you felt that way at ADL.

Drake: Yes.

Atencio: There was something else. I also noticed that you were a Corporation member. [1981-86] How did that come about? Can you tell me something about that?

Drake: Well, the MIT Corporation is a fairly large body, and they try to get it balanced with different groups so that they have representation of the whole MIT community, and so I ended up being nominated by the Alumni Association and representing them as a member of the MIT Corporation, and that was a five-year -- And it was extremely interesting. It gave me a lot of insight as to how major universities are run -- some of the issues they have to face. During that time, they were trying to figure out what to do about the Whitehead Institute and were having great debates about whether MIT should go ahead with that. Some of us felt that the money came with certain strings attached. The issue was whether MIT should take the chance that they could accept these strings. A lot of us felt that the opportunity was so tremendous that the strings really could be managed, and so, of course, they went ahead. I'm very glad to see that -- the flourishing studies.

Atencio: What were the strings?

Drake: The strings had to do with the way the management of the Whitehead Institute was planned and the part that the Whitehead family would play in the management. And if the Whitehead family had decided that they wanted to run it their way, and that was different from what MIT wanted, the way it was set up was that they had enough of a vote in the thing that they could perhaps do something that

wouldn't follow MIT's interests. Of course, the Whitehead family, giving the money to MIT in the first place, obviously had mutual interest with MIT in making this thing. So it was whether you trusted that everybody would operate in good faith, which didn't seem to me to be unreasonable. It seemed to me that that was a good risk.

Atencio: I was just going to say that it seems to me that throughout the years you've kept fairly close ties to MIT.

Drake: Oh, yes.

Atencio: Was this by choice or did it just sort of work out that way?

Drake: No, well, I've always been interested in MIT, and two other major connections are AMITA, and I was active quite a few years ago as an officer. More recently, I've been involved in their high school visiting program, which I think is an excellent program, and then when the Women's Independent Living Group was formed, AMITA was the group that provided the initial people for the Corporation that would have financial responsibility for the group, and so I was the first president of the Corporation for the Women's Independent Living Group and really enjoyed seeing that get off the ground. I didn't do as much for it as some other people, like Marjorie Pierce has been a tremendous -- and part of the pleasure of all that was working with Marjorie. Dottie Bowe was another person who had a tremendous amount to do with getting that off the ground, and there were many others. So that house is one of my pet connections with MIT.

Atencio: Can you tell me something about what you've been doing since the split with ADL?

Drake: Well, right now I'm looking for a job, and what I'm looking for is a job that will be more like a forty hour a week job than a seventy hour a week job so that I can have the rest of the time to do things I want to do -- spend time with other people, spend time with friends. And that's progressing slowly. I'm doing some consulting to pay my bills, but --

Atencio: This is a throwback-type thing. This is when you were at Northeastern. I was wondering if you could tell me what was it like from day to day. In and of itself and also as opposed to MIT.

Drake: Well, Northeastern was quite an experience. The chemical engineering department there. I was the third department chairman, and the department had started in the thirties, and so there were two very powerful prior department heads who had organized the department the way they wanted, and then run it that way for years. And the department always had very high standards, but it had very few faculty for the number of students, and so the faculty were teaching three courses a term, or two courses a term. It was a very heavy teaching load. Hadn't had the opportunity to do research, so they kept up in their specialties really just by reading the literature. There were four faculty members there who were sort of the core faculty when I joined, and I think they were all kind of in shock, and there was a new dean who brought in all new department heads, and I was one of them. Not only was I not

from Northeastern, but I was from industry, and I was female, and if I had three heads, they probably would have considered that not a major factor -- But they were terrific. They were good, and they helped me feel comfortable very quickly, and most of them are real close friends of mine today.

But it was kind of weird, and, of course, there was a lot of university politics going on because there was pressure to change the nature of the school from really an undergraduate teaching institution to something that was both teaching and research, and some of the departments did have graduate programs and doctoral programs, but Northeastern's chemical engineering department hadn't graduated a doctoral student for about ten years when I arrived. So it took a little while to start that, and some of the faculty who had been teaching really philosophically disagreed with the idea of trying to build up a research component at the university. So there were a few battles.

Atencio: What was your perspective?

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Drake: One thing about Northeastern is its close connection to industry. And it seemed to me that they are uniquely qualified to do applied research -- much more so than MIT, but there was some feeling maybe that this kind of research was second class or not as important or not as pure. It was funny. I think Northeastern, a lot of the people at Northeastern, have an inferiority complex -- particularly maybe being in the same general community as MIT, but

they are extraordinarily strong in solving very practical problems, and they have some really excellent top-notch people there. And the school is gradually building up its research capability in a lot of very interesting areas. It's going through a lot of management change right now. They're searching for a new president, new provost, and various other senior officials, and it'll be interesting to see what comes as its direction in the future.

Atencio: Also, you had mentioned all these wondrous arrays of different countries you had worked in. I was just wondering what was that like for you -- it's hard for you to generalize, I imagine, for all the countries, but what was it like?

Drake: Well, I've enjoyed all the international work that I've done. I think because I love to travel, and I love to get to know different people and their customs and because the people I've worked with have been so terrific. And it's nice that I kind of have friends all around the world. New Zealand is a country that I totally fell in love with. It's the most wonderful country. I don't know if you've been there, but if you ever get a chance, it has magnificent scenery of all kinds, you know, from fjords to mountains like the Alps to volcanoes and lush tropical forests and the people are so friendly. It really is a great, great country. I was there for a whole summer which, of course, was winter there, at some hearings. The hearings went on for several months, but the court would sit for two weeks and then take a week's recess,

and, of course, during the week's recess I would hop on the bus or the train and tour around. That was great.

Atencio: So you feel overall, they were all really positive?

Drake: Oh, yes!

Atencio: What was it like working as a woman in some of these countries?

Drake: Usually it was O.K. I think in the Arab countries it was the most difficult, but once the ice gets broken, people realize that you know what you're talking about. You start talking about whatever it is you're working on rather than formalities once you really get into solving the problem. It's easy to work together. People are curious about me just like I'm curious about them, and it tends to work out pretty well.

Atencio: This is pretty much the end, then, of our conversation. I was just wondering if there's anything you'd like to say to sum it all up?

Drake: No, I was just thinking it would be interesting to interview you.

Atencio: I've only been around a couple of years. I don't have all that much to say.

Drake: Yes, well, thirty years from today, when you're sitting someplace. This has been fun to remember all this stuff. I usually don't think about it, but, obviously, a lot of it is stuffed away there. I feel sorry for whoever transcribes all this

Atencio: It's me.

Drake: Well, skip anything you want.

Atencio: No.

[END OF INTERVIEW]