PROFILES OF SWE PIONEERS

ORAL HISTORY PROJECT

Margaret Taber Interview

May 12, 2003

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Margaret Taber

Margaret Taber graduated from Cleveland State University in 1958 with bachelor degrees in electrical engineering and engineering science, with an emphasis on math. She began her career in industry as an engineering trainee and development engineer at the Tocco Division of the Ohio Crankshaft Company. She earned an master's degree from the University of Akron in 1967, after which she briefly worked as a digital systems consultant for Design and Development, Inc. She also began working in academia as an instructor in electrical-electronic engineering at Cuyahoga Community College, eventually becoming an assistant, associate, and full professor as well as chairperson of engineering technologies at the college. In 1976, Taber received an Ed.D. from Nova Southeastern University and in 1979 she became both an associate professor at Purdue University and an educational consultant and writer for the Cleveland Institute of Electronics. She was the only woman faculty member in Purdue's electrical engineering technology department, was made a full professor in 1983, and became a professor emerita in 2000. Taber has designed, developed, and taught many fundamental and advanced microprocessor courses and has written several books, manuals, and articles on computer programming. A Fellow life member of the Society of Women Engineers, Taber received SWE's Distinguished Engineering Educator Award in 1987 and established awards at Purdue to be given annually to women engineering students. She is a licensed professional engineer, a certified engineering technologist, a life member of IEEE, and a member of the American Society for Engineering Education and the American Technical Education Association.

In her 2003 Profiles of SWE Pioneers Oral History Project interview, Taber discussed her experiences as an undergraduate; her early work in industry at the Ohio Crankshaft Company; leaving industry to teach, first at Cuyahoga Community College and later at Purdue University; her experience returning to school for a Master's in engineering and Doctorate in education; her involvement in SWE; and awarding and establishing engineering scholarships at Purdue.

- July 2016

INTERVIEW WITH MARGARET TABER, MAY 12, 2003

LAUREN KATA: It is Monday, May 12th, 2003. This is an interview with the Society of Women Engineers' Margaret Taber for the SWE Oral History Project. This is Lauren Kata conducting the interview. Thank you so much to participating. Can you start by establishing your date of birth and discuss your family background?

MARGARET TABER: Okay. I was born in 1935, actually April 29th, 1935. So that means that I was growing up a lot during the Second World War. And that probably had some effect on how I grew up, anyway. I was really just raised by my mother. My dad -- I was under the impression that he had died when I was about two years old. But they actually had a divorce. There was some problems involved. And so she raised me. So she had to work most of her life to allow us to have income to live on, and so I really didn't know her very well, because she worked as a department store clerk at that time, and I only saw her, really, on the weekends.

We moved to Cleveland, Ohio, when I had to go to grade school, which was the sixth grade. I did not go to kindergarten. That was the first grade. And I lived in Cleveland, Ohio until my senior year of high school, when I lived in Akron, Ohio with an aunt and uncle. And I finished school, and then graduated from South High School in Akron, Ohio in 1953.

LK: Where were you born? What city were you born in?

MT: I was born in St. Louis, Missouri. And I think we stayed there only less than a year. And my dad had an opportunity in Ohio to -- he worked as an electrician -- to get a job, and so then they moved to Ohio. I'm not sure exactly where in Ohio that they lived before I became about six years old.

LK: And were you the only child growing up?

MT: Yes.

LK: And so between elementary school and high school, do you remember what your favorite subjects were in school?

MT: Well, in elementary school, I really didn't have any favorite subjects. I remember since I mentioned the war, that I used to play with soldiers and sailors, and I guess make my own war, though I don't think I knew what war was about at that time. And I was a tomboy. And I remember I had a sailor suit that I used to like to wear, dressed up as a sailor.

In grade school, I think I was just finding myself. And of course, you have all different types of subjects. But in fifth and sixth grade, I found kind of a secret to my future education, is that if I worked hard that I could succeed. And then that carried me into junior high. Junior high was seventh, eighth and ninth grade.

And the junior high was very competitive in the sense that we had sections. And I don't know if it went from section one to section six. And I know I started off in section two, and about halfway through I moved up to section one, which I was so happy to

move up. But in junior high, I'd say my favorite subject was physical education, because I thought at one time I wanted to be a gym teacher. That just takes me from grade school through junior high.

LK: What was the name of the junior high that you attended? This was in Akron, Ohio?

MT: No, this was in Cleveland. Yes, it was a Wilbur Wright Junior High School.

LK: And the name of your high school was?

MT: The high school was South High, in Akron, Ohio.

LK: That's right. You did say that.

MT: And actually, their high school went from ninth grade through twelfth grade, but I started then in the tenth grade, because I had completed the junior high in Cleveland.

LK: And while you were growing up, do you recall having any specific experiences with technology at that time?

MT: Not as I was growing up. Sometime during high school I got the idea that I wanted to be an engineer. I had several different careers picked out. I first wanted to be a gym teacher. But when I went to high school they had physical education every day, it was a special class. And I joined that. And I found that just like some of the basketball players find, they're the top of their class when they're in high school, but when they go to a college, then they're -- well, I was in the top of my physical education class in junior high, but when I went down to high

school and joined this class, I found that, gee, there were a lot of people that were a lot better than I was. And I ended up doing a flip and breaking an ankle, so I never got to finish that year out in physical education. But that kind of changed my mind. I guess at one time I wanted to go into the military.

But what was fortunate, that sometime, I guess in junior high, I was taking piano lessons, and I decided I wasn't that good at piano. And I told my mother, "Save that money. I want to go to college." And so at least, even going into physical education, I went the right route, using college prep. Because at the time I went to school there was big emphasis whether you wanted vocational you would go one way, if you want college prep there were certain courses you had to take so that you would be qualified to go to college.

It was fortunate, in junior high I had a math teacher that, I don't know, somehow she turned me on, because I had algebra in the ninth grade. And the test that I took to go into there, I wasn't actually -- I didn't pass that test. But they said I was so good in math anyway, I should go in. But somehow in algebra, I started, I guess, getting acclimated to how you had to think for math. And I kind of worked my -- and she used -- which was bad in some ways -- she used to seat you in the score that you had on the test.

LK: Oh, my gosh. That must have been intimidating.

MT: (Laughs) Yes. But I don't know, again, I guess I had

enough competitiveness inside me that I decided I wanted to move up to that first row. And so that really gave me the start in math, because I had algebra, then, in the ninth grade. And then when I went to high school, I took three more years of math, and was very fortunate I had an excellent math teacher.

And really, math was what really interested me, I guess, in engineering. And this was one reason I picked electrical engineering, because in my survey of the different types of engineering, I felt that electrical engineering took math the furthest of all the engineering. And I guess I did think of something as a girl, I didn't want to be out in the field surveying, and out in the mud, and so I decided to stay away from civil engineering. But really, I think you really only had a choice of electrical and mechanical and civil, and maybe chemical.

I didn't have any chemistry in high school. I was very fortunate. Our math teacher -- there were two of us in class; there was a fellow and I that were really good in math. And she wanted us to have physics, because she wanted us to go to college. And she taught the physics course. She learned all the things and did the expense, because they didn't have a physics course. And so I really -- I did go back to thank her afterwards. But she was a big influence, really, on my life in high school, and actually getting into engineering.

LK: What was her name? Can you recall?

MT: No, not right now.

LK: That's okay. We can go back to that.

MT: Okay.

LK: Even after the interview, we can go back to that. You mentioned that one of your possible careers that you dreamed was the military. Did you know any other women that were in the military during this time?

MT: No. I don't know why I had that idea. Probably from growing up--

LK: During the war.

MT: As I said, I was born in '35, and really, you know, '41 to '45, during my elementary school years, we were in war. And I know -- I remember rationing, and some of the things from the war effort. And so I don't know if I just thought that that was -- maybe I liked the uniforms, I'm not sure. But there was just something about the military that interested me. But I never really pursued it other than having the thought that I would want to. I never went to a recruiter or actually sent for information to find out how long you had to spend there.

It was very fortunate for me that in high school, since I did make good grades, I did have the teachers on my side. And we might want to talk about this a little bit later. But there was a question of me going -- picking engineering as a career. But we had a lot of tests during our junior year, to try to -- both academic tests and manipulation, all kind of vocational guidance to decide what we should pick as a career. And I did very well on

those tests. They said the only thing I couldn't do was to be a writer, like a novelist. And so I wasn't interested in being a novelist anyway. So at least that showed some of the teachers that maybe I had the ability to go into engineering. But I really had to prove to them.

There was another area in high school that I had to prove. I wanted to take mechanical drawing in my senior year. And they had said the last time they had women in their drawing class was during the war. Other times they had women in, they wanted to be in there just to be in there with the boys. But I felt that this was something that I needed as a background for engineering. And so I was fortunate to get in there. And again, I had an excellent teacher. He let me go way beyond what they were doing. He kind of let me progress at my own rate, and that was great.

Though I had had a little introduction to mechanical drawing, because I wanted to get a job. This was after my junior year, between the junior and senior year. And I don't know why I just picked drawing, but I had somebody go out and buy a mechanical drawing book. And I picked up on my own, read the book. It happened to be one of the best books. It was French's book, and he was the expert in mechanical and engineering drawing at that time. And so I kind of learned that at home.

And during the summer, it was in connection with the church, I was able to get a job with a tax map department. Didn't do really much in drawing, but we had to draw out the plots of land

to scale and put the new owner's name, or change the owner, or if they changed any boundaries. But at least that drawing experience helped, and maybe that was why I wanted to take more mechanical drawing in my senior year.

And fortunately, I had gone to school -- summer school the previous summer, so I had a couple extra courses in that were requirements. Because, of course, mechanical drawing--

LK: It was an elective?

MT: -- the only way you could take that -- was not really an elective. In the college prep program -- you had no time for electives in the college prep. It was a vocational educational program. Just like in the tenth grade I took typing, and I was very glad that I took typing, in the sense that I never got a job as a secretary, but using the computer, it was very nice to know how to type and not the hunt and peck type.

LK: Around the time even before maybe that you decided that engineering was for you, did you know any working engineers?

MT: No. I don't know why--

LK: You can't recall how you decided--

MT: I just know now, looking back on my life, that it was so fortunate that I made that as a choice, because to me, engineering is a type where you are presented with a problem -- some type of a problem along that line had been solved in the past, but what you've got to do is to vary all the conditions.

And memorizing, knowing what's on the page in a book, doesn't

help. And I've never been good in being able to memorize a lot of facts. I was better when I was in college because you did that all the time. I could almost picture what was on a page and where things were. But I've always had problems trying to remember names.

Just like when I was taking tech ed courses, which I did after I got my masters degree, technical education courses to help me be a better teacher at that time, I knew what the prof. was going to ask. I could figure that out. But trying to memorize -- I used to sit down a couple hours before the test and try to write out things to help me memorize what I needed. Where see, in my engineering work, I would say at least fifty percent of the tests were open book. You could use any source of information that you had. It was -- to be able to do what you needed to do is to be able to know how to pick out the right kind of information.

And I never did any kind of thinking about that when I was in high school, or even in college, you know. Because as a medical doctor or a lawyer, I think those people have a very good method of being able to memorize and remember exactly what they saw on that piece of paper, where I didn't have that. (Laughs) But I was good in taking existing information and saying, "Oh, I can use this. Can't use that. We can vary this," and so forth.

LK: More analytical.

MT: Right.

LK: And so when you took those vocational guidance tests --

well, first of all, did the males and females have separate tests, or did everyone take the same test?

MT: I think everybody took the same test. We just had like a week -- I'm not sure if they went the whole week. They did go several days. And that was what we did sometime during my junior year. I don't exactly remember when, but I remember it was in my junior year of high school.

LK: And this was a time where there were questions about you going on and pursuing that, or was that--

MT: Right. Because at that time I had decided that that was what I wanted to do. And of course my math teacher was on my side, and I had other teachers that were on my side. But there were some that raised objections.

LK: Some teachers?

MT: Well, yes, that I shouldn't pick that as a career. Now, this was in 1953, when I graduated, so it would have been '52.

LK: Were there actual professional guidance counselors at your high school?

MT: We had counselors. I don't remember how much they knew about the various professions. Not like I know today and being involved with SWE, I know a lot of times that many of the SWE members will go out to high schools and talk about what they experience in college. And then of course they get SWE members that are out in the profession and have them come back. I think the counselors we had those days were more or less college prep,

vocation and--

LK: Or just even helping you apply to colleges and things like that?

MT: Right.

LK: So did you know by the time you were a senior that you wanted to stay in Ohio for college, or--

MT: No. I think it must have been in my junior year or between junior and senior year, I took many tests. And I guess even at the beginning of my senior year there were many tests to try to get in the various colleges.

As I mentioned before, my mother raised me. She had no other funds, and so money was very limited. And so I did take the test for like, MIT and for the big schools. They told me it was better if I would probably go to some other school. So I guess I wasn't quite sharp enough to be accepted at MIT.

But during my senior year I was in part of the National Science Foundation projects. I had a solid geometry project. And this other fellow that I mentioned that this teacher decided to teach physics for us, he also had a project. And so we started at -- I think Kent State was the first. And we had a good rating, so we went on to the state finals in Ohio. And part of that, you took tests that day. And then through that you could get scholarships to any of the schools in Ohio that supported that, mostly state schools, but there were some private schools.

And at this time I was in Akron. I was aware of Fenn College

[of Engineering at Cleveland State University], because my mother still lived in Cleveland. And they were not on this list of tests. So I came up to Fenn to take some individual tests, just like I took individual tests at University of Akron. I don't think I took -- except for the one test that was for MIT, and plus the, I guess, Ivy League schools, I did not take any tests outside of Ohio, because I knew we had no funds.

And one reason I was looking at -- it was Fenn College at that time, which is now Cleveland State University, Fenn was in Cleveland, I could live with my mother. And they were a co-op school. I did look at it that much, that co-op school, meaning that I could get some funds as I was going through school to continue school. And at Fenn, or Cleveland State, I did win a freshman scholarship, that's the maximum scholarship that they gave. But you don't start your co-op until after your freshmen year. So that's one reason, I guess, I limited my view to just Ohio.

And right now, since I taught at Purdue, a lot of people said, "Well, you must have gone to Purdue." I didn't even consider Purdue when I was considering universities, because it was just impossible to even think of getting out of the state unless I would have had a four-year scholarship. But at that time, getting scholarships was quite a bit different than it is nowadays. It just seems like if you're good in sports, or there are many different areas academically that you can apply for

scholarships. But they were very limited then.

LK: How did your mother feel about you wanting to be an engineer?

MT: She didn't really care what area I went into. I would say she didn't really support it in the sense that -- encouraged me to, but she didn't discourage me. Where I know I've heard many times in families, they're discouraged -- women are discouraged from going into engineering because they've either experienced on the job the discrimination that they would get. And I know I had a lot of kidding then, "Oh, you want to be an engineer on a railroad," and so this and that.

LK: Oh, right. (Laughs)

MT: But this was something I felt very -- once I decided to do that and the test proved that I could, and always kind of liked things mechanically, and I was good in math, that just seemed the way to go.

LK: Were there any other female students from South that shared that interest in engineering, do you know of?

MT: No, no. In fact, there were very few people that planned to go on to college. I guess I was just very fortunate that I had one of the best teachers there in the math, because as I said, I had algebra before I went there, but we had advanced algebra, we had trigonometry, we had solid geometry and plane geometry, had all the courses. And at that time you didn't introduce calculus in high school, where they do now. There was

nothing -- actually, even in college our first year, we didn't take calculus. It was kind of advanced trig and modern math, and that.

LK: So you started Fenn College in 1953, the fall of 1953?

MT: Right.

LK: And what was that experience like, your early engineering education years?

MT: Well, the first year, very similar to what it is, I think, the first year for many women in engineering nowadays. We took more math. We took chemistry. Of course we took engineering drawing. There were more of what I would call generic type engineering courses. You didn't have your specific engineering course. So if you were good in math and science, you had a good success of being successful that first year.

I know we had no electrical courses that first year, because when I went out on my first co-op, which was at the end of the first year, because we spent three -- at that time we were on the quarter system, and so we spent three quarters in school before -- that was one of the co-op options, and that was the one I was on, spending three quarters in school before I went to work. My first job, I couldn't do anything in electrical because I had never had any experience in electrical work before I went to college. I had none during the first year.

It was fortunate, since I had the mechanical drawing experience, I worked for the Tax Map Company -- it was Tax Map of

the County, both summers, the junior year, and before I went to college. And they even let me come in on Saturday during my senior year to work four hours. And then I had a whole year of engineering drawing, that what I did, I was a detailer on the mechanical drawing board at the company I went. And so it was fortunate that experience then helped me actually get my first co-op job and do things.

Many years after I got out of school I found out that my engineering drawing teacher, who was a very tough fellow, (Laughs) he used to love to have people fall asleep, and they'd end up falling off their chair, which is a high chair, and then making fun of them when that happened. But he said I was a good student, and he recommended me for the job. And I would have never expected him to make that recommendation. But one of the bosses that I had -- this was after I went with my co-op employer for full time. And I can tell you later why I made that choice. But it was just so interesting that he made that recommendation. As I said, he was kind of rough.

There was another course in my -- and I think it was in my freshmen year, where you had some machine shop, and you learned the various tools, which I did not know them. But it was a very interesting course. He was kind of a nasty fellow. He made comments in front of the class -- I was the only woman in class -- about where I would have to go if I needed to go to the bathroom. But I found out that during the year, during the time that I had

him, I proved that I was sincere and interested, and doing well. And he ended up being very supportive at the end. But he was pretty nasty at the beginning, making comments in class.

LK: But there was never any issue about you actually enrolling in that course. You were permitted to enroll in that course.

MT: Right. This is what was interesting about -- I had applied to Case--

LK: Case Institute of Technology?

MT: -- Institute of Technology, and I was not accepted, not because I couldn't make it, but they did not accept women at that time. They said they did not have bathroom facilities to be able to handle women. This was one reason when I was going on for my masters degree I was very pleased that I was accepted there though I did not go there, because they had rejected me before. It was because I was a woman. But Fenn did not--

LK: Have that problem?

MT: -- didn't seem to have that problem, because I think they had -- I know they had business administration, which has a large percentage of women in it, and some of the other courses. And so they had women on campus.

LK: Well, what's always interesting to me about that response, which, you know, has come up, it's so typical, is that secretaries, and you know, people in administration use the restroom, so where do they use the restroom? (Laughs)

MT: Right, yeah.

LK: But that's interesting that Case, you know, years later, then accepted your application. Did you ever talk with anyone there about that gap, or it never came up?

MT: No. I don't remember. I know they, of course, when I was looking at them for a masters degree, then looked at what you did particularly in math, even more so than engineering, to see whether you could go on and do masters degree work, and so of course my grades -- and I did have more math at Fenn College, I noticed that the bachelor's degree in engineering science with a math major just took a couple more math courses than electrical engineering. And so I got a second degree at the time that I got my bachelor's degree in electrical engineering. And so that math background, since I did well in it, they were very impressed with that. They seemed to think that that was more indicative of how you would do in masters degree work than -- well, I did pretty well in electrical engineering, too.

LK: But having the engineering science--

MT: Degree, I think helped.

LK: Yeah, that's interesting. While you were at Fenn, were there student chapters of technical associations?

MT: Yes. There was the Association of Electrical Engineers, which now is IEEE [Institute of Electrical and Electronics Engineers]. There was the Institute of Radio Engineers. And those were the two that actually merged into IEEE later. But I

was involved in both of them. I think I was a secretary along the way. But again, this always bothered me. And this was one thing that bothered me even in taking my courses, a lot of times I was the recorder, which is what typically a woman's job is.

But when I was going to school there were a lot of veterans coming back from the Korean War, and so those were older men, you know, because they had two or three years that they had served in the Korean War. And so they seemed to know more what they were doing, not a typical sophomore or junior, whatever, class I was taking in electrical engineering. And so I think I was on the shy side. So a lot of times I let them do--

LK: Designate you the recorder?

MT: Yeah. I ended up being the recorder. This was one thing that I worked very hard once I actually graduated from school in building Heathkits. I don't know if you've heard of Heath, but you can build your radio, you could build an analog computer. I built several of those. Of course, you're following instructions as a kit, but that gave me hands-on experience that I felt I did not have--

LK: In lab.

MT: -- yes -- like in soldering and using the meters. And I had a lot of that in school, but a lot of it, as I said, we ended up in larger lab groups, so not everybody could get their hand in the pot, not like our technology courses today, where we might only have two person teams, or even sometimes a one person team,

and so you have to do the work all yourself or you share it. We used to have three or four. And so of course, not everybody could do it. And so not everybody got the experience, hands-on experience that I felt I needed to give me the confidence that I could do that. And so I think I built an AM/FM receiver -- and at that time, they were separate -- and several pieces of equipment, just so that I could have the hands-on experience. And of course, it helped me to know how things were put together then too.

LK: So did you have like a little shop in your home, or--

MT: Yes. Well, we had an apartment, and so one of the small rooms I had a big desk that I had a drawing board that was as wide -- actually, I had that drawing board and desk from when I went to college. And again, you see the leaning towards the mechanical drawing. Nowadays, nobody does anything--

LK: It's all on the computer.

MT: It's all on the computer. But at that time, even when I was working at co-op, the first job was a detailer. And the purpose of the detailer, some of it was even tracing. You know, you had a drawing that was getting old and worn, okay, well, you had to make that drawing over again.

LK: By just tracing it?

MT: And so some of this was tracing. And then if there was a job that used this piece and this piece, you could use those pieces and then modify them. And so that's the first step, is taking something that works, and then adding something to it. And

actually, I spent three of my co-ops on the mechanical board, in the sense I was doing tracing and detailing, and then a little bit of designing small sections. They allowed me to kind of move as much as I could move. And then the last three quarters I then got in the electrical area, where I was down in the shop doing experiments. But I could not do that -- well, I think I was on the electrical board one time, where we'd actually make drawings of the circuits that were used.

LK: While you were an engineering trainee doing your co-op, were there other women working?

MT: No, no. There had been one woman that had worked for the company before I worked there. And I only can report what I heard from the men. She acted like some of the college graduates, that she knew everything. And a lot of the men were against her in the sense that she let them know -- because we had to work with union personnel to do the laboratory setups. And so of course the union personnel were not college graduates. Some of them maybe had a little bit of college. But they had many years on the job, and they knew what worked and what didn't work. But she always knew what would work, and many times it didn't. And so I had -- I kind of felt bad following her steps, because there were many people that were against her.

And this also happened a little bit when I moved over to Purdue. There had been a woman that was there before. She wasn't on the tenure track, but she kind of laid some groundwork that I

had to overcome.

LK: Do you feel that that was an unfair disadvantage when you entered either positions or both?

MT: Well, I just figured it came along with being a woman in the profession. Because I actually had a father-in-law -- and you heard Bill mention -- my husband mention, today, that he was a welder. Well, he didn't think much of degreed engineers, either. And (Laughs) he had to kind of overcome that.

But the one thing that I found in really working with men, if you respect them, and if you can know that they know something, you let them share their information, you let them get the benefit. If they did something, you give them the credit for doing it, you don't take the credit. And in doing those things, most of the men, then, would work very well with me.

LK: Well, those sound like basic rules for human interaction. (Laughs)

MT: That's right. I mean, that's true in any profession. But this was -- I don't know if this is as true nowadays, but I know in years past, since there were not as many people graduating from college, that sometimes when a person graduated from college they got a big head, because they felt that they knew -- now, this was just not in engineering, this was any kind of college graduate, because they had been successful. But that's not the way you deal with people that were not in your same profession -- or not at the same level.

Because there are many people -- and this I found true especially in my co-op job, and even in my actual job after college, there are many people that have worked their way along, they've been able to progress. And nowadays, it's just a shortcut, really, to have a degree, and then you can start at a particular point, where many of the people, and even people with college degrees had to go back and do some of the basic work so that they would learn the fundamentals.

And I know on the board, most of the people that were designers at the company I was at were not college graduates. They had worked their way up from tracer, from detailer, all the way up to actually then designing. But of course, they had to have something on the ball to be able to work their way up. It's not that they weren't sharp, it's just they didn't have the opportunity to go to school.

And I was fortunate that I would have never been able to get in the field if I didn't have the education, because the education did open the door for me. And that's all it does, it opens the door for you. You get your foot in, and then you've got to keep the door open and show that you can do the job.

LK: Right. That's a good way to articulate it. So did you want to talk a little bit about why you decided or chose to stay on at the same place where you co-oped? First of all, you were at the Ohio Crankshaft Company in Cleveland?

MT: Right. And it was the TOCCO Division.

LK: T-O-C-C-O?

MT: Right. They used the Ohio Crankshaft, the letters of that, to form their division. But their division was an industrial induction heating. It was a specialty. Their crankshafts -- they used to make large crankshafts for ships, huge, and for any large pieces of equipment. Well, they found that just using the metal the things would wear. And so they found induction heating was a process of heat-treating the crankshaft to allow it to wear longer. And so this was such an important development that it spun off a division of the main plant. And so that was the area that I worked in.

And they just didn't do crankshafts, they did anything in an automobile that had particular wear that you needed to heat treat the metal. And the frequencies were involved anywhere from sixty hertz that you have in your home up to 450 megahertz. And the frequency depended upon the depth of heating that you needed.

So this company was the company that I went to work for. And as I said, I was on the drawing board, so I got to see the different pieces of equipment that they made. And then I was on the electrical board to see the electrical controls that needed to be in there. And so I had really close to two years experience with them.

And so in evaluating -- and I did go out and interview at many companies, and I did have several job offers when I graduated, but I found that because of the experience that I had,

I started at a much higher rate, and then I had two weeks vacation coming because of the previous experience, and so I guess for these two main reasons, I decided to -- and I liked -- I knew the people, and I liked the people. And they allowed me to progress. What was important to me -- sometimes you get put on a job, and you kind of stay in that job. But what they always allowed me to do, as I learned to do something and wanted to take on something different, they always allowed me to grow on the job, and so that was an advantage to me.

I'll make one plug about co-op. I really think it's important, whether it's co-op or interning, when you're going to college, it's important for any type of an engineering student or really, any kind of a student in engineering, but I think it's so important for a woman in engineering. Because to be able to get out and work on the job, then when you go and you look at another company, you have a different picture in your mind. You can see things out there and know when they're describing what's happening what's actually going on. Where if you had never worked in industry before, I think it would be so difficult to pick that first job that you go in. And it's really lucky if you do match yourself with that job.

LK: But you're bound to have a culture shock.

MT: Yes. But when you're able to -- and nowadays so many of the students go out to California or go to Florida. I was just glad to get a job in the Cleveland area, because I could then save

all my money that I made during co-op. But to be able to actually -- when you're working, you're living in that atmosphere, and there's so much that you're learning and gaining that you don't really realize. But then, when you then go into an atmosphere that's similar, you have a much better idea of what's happening, what kind of questions to ask when you're interviewing for a job. And it just, I think, gives you more than just a one-up. So I would really strongly recommend, especially a woman in engineering, trying to get some type of an internship or a co-op job in an area close to what she would like to be in so that she can get some experience. And it would probably even be good if she would move around to different jobs.

But I didn't. I think I was not really that outspoken. In some ways, I guess I was, but since I had a job there and they let me grow, that just seemed the easier path for me to take, to actually continue with the same company on co-op, and then actually continue with them for another six years after that.

LK: And why did you ultimately decide to go back to receive your masters degree?

MT: Because I went into teaching.

LK: Okay. Let's take a step back. Why did you decide to leave industry to go into teaching?

MT: I enjoyed industry, but I found -- and I was a development engineer, which is not the type of engineer that does completely new products. We would take existing things and change

them for customer specification, or to try to make processes better for doing the things that we did in our own plant. And I also actually worked into training, where I'd have the co-ops that worked for the company responsible to me, and I would try to first employ them, and then be their supervisor while they were working.

But there was just something I wasn't -- a little dissatisfaction that started occurring. And so what I did, well, probably a year or so before I decided to make my career change, was -- at that time, it was still Fenn College, they had a technical program, not a degree program, in their night school. And so I went and a taught there, just to see whether I would like teaching.

LK: This is while you were still at Crankshaft.

MT: Right. And it was interesting, when I actually did decide to take a job in teaching, I asked one of the top managers there that I was considering doing more in education, but I didn't say I was leaving. And he wrote in his recommendation about that he didn't think I was leaving, this was one reason he would give me a recommendation that he did. And then I ended up leaving. (Laughs) But this was something that I've always kind of done, really, with co-op, experimenting. You know, really even before I went into engineering in college, is I experimented with mechanical drawing. Well, I experimented [with] teaching.

And I taught an area -- I taught AC machines, which to me is very far away from what a woman would normally teach, but I was

able to handle it. And I found enough satisfaction in that that I decided that was an area I wanted to -- I wanted to go into teaching.

LK: So what year did you officially resign from the company?

MT: Well, I worked from 1958 -- actually, we graduated -- we didn't graduate until the summer, but I was out of school in March. And I left in 1964. And it was probably in '63 -- well, I went back and took a computer course in this program, and I guess that's how I got to know some of the personnel. And I taught for a year and a half, and I decided I wanted to go into teaching. Well, where do I go? I talked to -- I think it was still Fenn College at that time. I only had a bachelor's degree. Even though at that time I did have my PE, Professional Engineering license, they were not interested.

There was a technical education program at Max Hayes in Ohio. They did not turn out degree people. At that time there was a certificate. And they were interested in me, but I wasn't quite interested in them.

In 1963, Cuyahoga Community College [CCC] -- it was the first community college in Ohio -- started. Okay, they did not have a program in 1963. Actually, in 1964 is when they started their electrical engineering technology program that fall. And so I talked with them and they had one person in mind. He taught at Case Institute of Technology. And I would say he was probably in his fifties, but he was a senior person, really, and he was a

machinery fellow, did a lot in teaching DC and AC machinery. But they were interested in him. And they were interested in me, but they didn't have a full load for me.

And my math background helped get me hired, because I could teach some basic math for the first -- I think they were on quarters at that time. But after that first initial -- whether it was a quarter or semester -- I was able to go full time into the electrical engineering technology.

But that first time -- so it was difficult saying, "Okay, I want to teach, but now where am I going to teach?" And I didn't think I would -- I guess I didn't give any consideration to leaving, because I was married, my husband had a job here, and so I didn't think of moving someplace else at that time.

Now, that was different than later in my life, when we did go over to Indiana, and fortunately my husband was able to follow. But this is one of the decisions that women have to make. And I know nowadays, many times I talk to women that are in engineering, and maybe they're married or thinking of marrying somebody in engineering. Now, who do we follow for the career?

LK: And so did CCC encourage you to go on to receive your masters degree, or require it?

MT: They required it. I remember at the -- well, I had taken some courses at Western Reserve in math. But again, Western Reserve was a science area, and so they did not do more applied math, the kind of math that you need for engineering. So I had

taken several courses there, but I had decided in the process of taking those courses I did not want to pursue a math degree. Because when I had -- in differential equations, those type of courses, the more type of courses that applied math that I needed in engineering were the ones that I was better in and that were more interesting. And so I had a few courses under my belt.

I had, at the end of the first year, when I was teaching, I asked whether it was all right that I -- when I was hired there wasn't really -- they said, "Well, it might need a masters degree," but it wasn't in writing. But at the end of the first year I got a letter saying, "You have to complete a masters degree in a certain amount of time to be able to continue teaching." And I remember when I got that I was so upset, because I didn't feel I had that much success in the math, and what am I going to do?

Well, of course, once you kind of recover from that initial shock, you set a plan. And that's when I talked to Case Western Reserve. And then I don't know how I found out about the University of Akron. And so the one advantage at the University of Akron, it was most of the students were evening students, and so they were tired when I was tired, where at Case I would have had to go during the day, and that would have been my whole -- I couldn't continue teaching. And see, at Cuyahoga Community College, they wanted me to continue teaching, but to get the masters degree. And I really wanted to continue teaching. I didn't want to give it up, but I wanted to be able to compete.

And so I was able to -- after I completed nine hours at the University of Akron, I was then able to transfer six of the hours in from Western Reserve anyway, so the work that I had done was -- at least some of it was useful.

(INTERRUPTION IN RECORDING)

LK: This is tape two for our interview with Margaret Taber on May 12th, 2003. So can you talk a little bit about when you were at Fenn College and your experience?

MT: Yeah. Most of the time I was the only woman in class. One thing that was fortunate: Fenn was a small school, so we had small classes, not like many of the classes nowadays where you'll have two or three hundred in a lecture, but it was small. There was one woman that was in electrical engineering for a while, and she dropped out. And there were only two women that graduated in engineering at the time I graduated -- of course, myself, and then there was a woman that actually had come from Germany, who was really sharp. She graduated in chemical engineering. So we were the only two women involved.

It was kind of interesting, I heard after I went to work -- after I graduated, about my experience at Fenn, in regards to Tau Beta Pi. I had heard that I caused problems for them. Since we did have a small number of students. I ended up having about a "B" average most of the way through school, and I was in that group that they'd have to consider every year. But I was a woman, and so they could not allow me to join Tau Beta Pi. But they

never knew if they could include my score with the group or take it out, because that would make a difference of another person making Tau Beta Pi or not making Tau Beta Pi. So I heard that I gave them a tough time.

But what they did do while I was in school, they awarded me a woman's badge. But of course, I got to go to that ceremony, but I didn't get to do any of the private things that I understood that they did with their regular initiates. And then I don't know if it was about ten years later or so, I actually became a member of Tau Beta Pi, when probably at the time that Tau Beta Pi decided that they needed women as part of their ranks. And then they went back and any of the women badge winners were then given a bent. And so I'm an official member, but I have a special pin, because the woman's badge was a round pin with the little symbol of a bent in there. So it was kind of interesting that I caused them so much trouble, which I didn't know I was causing them.

LK: Do you remember, though, how you felt when you were told you were receiving the woman's badge? Was it an issue for you at the time?

MT: It wasn't an issue that I couldn't be a member. I was very pleased that I was able to get the woman's badge. I was not one that went out and fought for women's rights. As I said, I learned as I went through school and really went through life that if you learn to work with people and let them get what honors are due them, and just -- well, just would be successful in any field,

that you can be successful in, and you can win. There were some professors, and actually when I worked there was one fellow that was so -- and he'd tell me to my face that I shouldn't be in engineering, I should be at home taking care -- but that's the way he felt. And so I just chalked it up to that's the way he felt. And any time I'd have the chance to work with him, I would just try to do the best job that I could do. And he was always decent to me, but he was very honest, that that's the way he felt.

LK: Was he the only person in your career who confronted you about being an engineer, or that it wasn't appropriate for you to be an engineer?

MT: I think some of the professors that I had at the beginning indicated that I shouldn't really be there. But if you could do the work and then you showed them that you were interested and that you did halfway decent in class, they seemed to then, I think, be open-minded, and not really complain too much afterwards.

LK: Do you think that women today still need to prove themselves?

MT: Yes, I do. I'm sorry to say that, but I think companies are doing more to try to help women. Lots of times now they'll assign a mentor to a woman, which really, I think they do this for men, too. And really, I don't think they're doing that much special for women, but that's really nice that a woman would have somebody they could talk to, and especially if it could be another

woman, that you could kind of share things -- some things that you really don't want to get out, but you would love to be able to talk to somebody about it.

But it might be a little easier than it was, but I think still a woman has to be prepared to be able to show that she does know her material, and that she can -- and I think she has to bend backwards a little bit more to be able to work with people. And especially if they show that they do have some prejudice. I think it's better to show that it doesn't make any difference to you than to confront the person and say -- I think it's better, because then you might actually convert them a little bit. Maybe it won't make that much difference for you, but it might make the difference for them working with another woman in the future. And so I really think that's the better way to go than to get all the women's rights groups down and say, "You've got to do this."

LK: What about things like equal pay legislation and laws that were passed during your career or your lifetime? Do you think that those helped women, or specifically women in the engineering field?

MT: Well, I think they helped in some ways, but I think in some ways, we had to do that. Just like with many of the other social issues, you have to, because other otherwise things wouldn't move. And so I think that was necessary. But it also has to be that you have to be able to earn that right, not to just -- this is the one thing that -- and I know I was overly sensitive

at Purdue about this, and I even had some of my colleagues when I became sick tell me that I really didn't have to continue to prove myself. But I always felt that I had to do at least as well, or if not just a little bit better than my colleagues, to prove that I actually earned what I get. So if it was on the job, that if I got a promotion or a raise, that it was known that I earned that raise, and that I didn't get it just because I was a woman.

LK: Right, right, because of some kind of quota or something.

MT: Right. And I was overly sensitive to this. But that's just the way I am. But I'm glad that things are moving in the right direction, but there are still not enough women CEOs, not enough women managers. But there's one thing that I think women have to be aware of, is that they have to then be as dedicated as a man, that they can't just work a forty-hour-a-week job, that if a job demands them to be in there on the weekend, and they want to move up, they've got to be able to do this. Now, this is tough when you're trying to have a family, whether it would be a family with children. And so these are decisions that I think women have to make in their career, if they want to go get up to that glass ceiling that they seemed to be getting stopped at, if they want to go past that, that they have to make the sacrifices that a man has to make. And I'm not sure sometimes if some women are willing to do that.

LK: Do you think that there's room in our society today to

kind of change the traditional views that women then need to come home and do all the housework and take care of all of that on top of doing that kind of role? Do you think our society has changed over the years?

MT: I think it's changing. And some of it's out of necessity. I mean, if you've got a couple kids and you've got to do things with them besides carry on a job that requires more than forty hours a week, you can't do it all. And so some of it -- if you're fortunate to have a husband that's willing to do some of those things, it's very helpful. I don't think if it would continue that a husband says, "Well, the wife has to do this and this and this," I'm not sure whether that marriage would last.

And maybe that's why we have almost a fifty percent divorce rate nowadays. I don't know all the reasons because I have not been interested in studying the background of that statistic. But I know there are some men that will even take on the role of being a stay-at-home dad. Once in a while you do see things in the paper. And I think more people are willing to accept that, though there are still some that feel that the woman's place is in the home. But you probably have statistics as to how many work nowadays. I don't know if it's eighty, ninety percent of--

LK: I mean, offhand, I actually don't.

MT: But like when you're trying to get a mortgage for your home, there's no question nowadays that they take both incomes. I know my mother told me when she was trying to get a home, because

she never had a house of her own until I went to college, she wanted to get a home so that I could come and live with her, that she had a very difficult time trying to get a mortgage, being a single woman and having her own income.

And nowadays, they use both people's income, so that you can take a mortgage. But what happens if one of them becomes unemployed, then how are you going to reach the house payment that you have to make each month?

LK: It seems kind of complicated.

MT: It is.

LK: Do you think that -- you commented sort of from a private perspective that it would be something that a husband and wife or a household internally would decide. But do you think that companies and universities are becoming more flexible--

MT: Yes.

LK: -- to help families deal with these types of--

MT: Yes. Well, in companies, now there are many -- just like when I got out of school, I decided that we weren't going to have children, because I wanted a career. And now, part of it is because I was raised by a mother that was never home. And I felt that if I had kids, I wanted to be home for them, but if I left engineering, I felt that I could not return. Now, through the years, I can see that if you work at it, you can -- you know, you could do this. You can provide quality time with your kids, and you can work a good engineering job. You can do that. It takes a

lot of planning. But at the time, I wasn't in the position to see that.

So I think nowadays companies -- many times you can work at home. I have some friends that actually do a lot of work out of their home. And that would allow them to help take care of their kids. You know, at least they would be there when they came home. And then a lot of them do a lot with childcare, which they didn't do [then]. And they also have flexible schedules, so that if you had two in your family working that possibly one could go in later so that one could still be at home while the kids are getting breakfast, and then the other one would be home when the kids come home from school. So I think a lot of things are happening. And I think it happened out of necessity. The companies needed people. And I think it's going to continue out of necessity.

Right now we have an extra amount of prospective employees that they're having a tough time getting jobs because of the times, but in the future they're going to need more and more technical people. And if you look at the amount of women that are in the field, they're going to have to do things to be able to attract women and to keep women. I mean, because how much does a company spend in training a man or a woman on the job if they're going to then leave in a year? If they're good, they'll want to work with them and to do things that they can keep them and have them stay with the company.

LK: Yeah, that's very interesting. Can you talk a little

bit about in your career how you were able to balance things like housework, and just anything related to your personal life with your professional career?

MT: Well, this is one advantage of being in education. And I guess this is one reason I went into education, is because I didn't have to work during the summer. And that summertime was very beneficial to me. This is why some women go into teaching, is because they can be home with their children during the summertime. But this allowed me time to -- since the one pleasure really that I really enjoyed in all my course work was to be able to develop things that were new, and then to develop experiments that would apply to the course I was teaching about those new things. Well, a lot of the lab experiments that I used I wrote during the summer. I would try to get a head start on the work for the fall, and so then that allowed a little more time in the fall to do the other things that I needed to do.

Now, this is one thing, in looking back at my life, though, I was a workaholic. And if I were advising somebody else coming into the field, I would say that it's very important if they have some outside interest, if it's music, whatever it is, that they would pursue that. Where when I had extra time that I could do something, most of the time I would be picking up a book, thinking about the course that I was working on, or a new experiment, or new this. And I really think that my being a workaholic contributed to a lot of the problems that I had health-wise.

And so I don't want people to slack off, I want any woman that's in the field to work as hard, but I think they've got to have some type of an outside interest. If it's family, that's great, doing something special with a kid when you have a few minutes, they'll remember that for the rest of their life. Not giving them a present, but actually giving them the present of your time, to be with them. And so I think it really has to require a very sharp woman to be able to do all this planning. But as I said, I think the teaching profession allowed me a little bit of freedom there.

And the same thing at the Christmas break, you had two or three weeks off, which allowed me to get a little head start into the spring semester, and so that helped me balance and to do some of the things that I really felt that I needed to do.

LK: Was it difficult when you went on -- or can you talk a little bit about going on to receive your doctorate in education?

MT: Okay.

LK: And first of all, why you decided to pursue that, and also, related to what we were just talking about, how you were able to balance that experience with working.

MT: Okay. Well, I told you before that I was required to get the masters degree. Well, I started working at Cuyahoga Community College, teaching there, in the fall of '64. And I finished my masters degree in the -- well, I got it in January of '67. And I did this part time. I think I had -- they allowed me

plenty of time to get the masters degree, but there was that stipulation that I had to get it. I kind of think back that maybe if I would have not gotten it, maybe they could have still kept me.

But one thing, at the school that I was at, they had a salary schedule that allowed me to go up this way in years of employment, but over across this way, in education. And so once I got my masters degree, I looked at the salary schedule. And so how can I improve? Well, it's to get more education.

Anyway, I liked the University of Akron, that's where I was taking my work. And so I got in kind of the habit of leaving school and going down there two or three days a week for courses at night. And then a couple summers I took some work during the summer during the day. And then I had a sabbatical, and the sabbatical under the conditions that I would not leave. Usually you can take a sabbatical where you're off for a semester, you get paid then for the whole year, or either you do part time. Well, they would not allow me to leave because they would have to then bring somebody in to take my classes. And they would not do that, so they gave me time off, so I had a lighter load. I taught the courses that I needed to teach so they didn't have to get somebody in.

And so I took a few courses then, a couple courses during the year. And so I just kept on going. I had hoped that the University of Akron would have what they called a Ph.D. or an

Ed.D. in technical education. And that was the type that you would have more engineering courses, some technical education courses plus some education courses. Well, they had talked about this a long time, but nothing ever came about.

I looked at the option of getting a Ph.D. in engineering at the University of Akron, and I wanted to continue there. You needed two languages. And they did not, at that time, except computer as a language, because they felt that they would be on the forefront, and they were a smaller university. And I had Spanish in high school, but that was not a language that would be acceptable. And I felt that I was too old to go back and learn two languages to be able to pass, even for an engineering [degree].

And what happened is, at Cuyahoga Community College -- and I don't know actually where this came from -- but there was an external degree program from Nova University in Ft. Lauderdale, Florida, that somebody heard about. And it was investigated whether it would go on the salary schedule, whether they would accept credits from Nova University. And it was an external degree program, which meant it did not count any of your post masters degree work, which I had about half the way to a Ph.D. You would have to start over because it was a three-year program that was divided into six periods -- were like quarters -- no, actually two years kind of--

LK: Trimesters?

MT: -- right, trimesters, that you would take actual course work, and then the last year would be your dissertation. And this was a degree in education. And I felt -- well, I had wanted tech ed, because I wanted to be able to take engineering courses that would continue, plus courses that would allow me to teach, and so that's why I looked at that.

And then this program from Nova University, which was in education, which had practicums each of the periods, the six periods, on something that you were doing in class, and I could tie it in with school. I thought this was ideal. And since it was accepted on the salary schedule, that meant they had to go through a lot of hoops to be able to prove... And we had national lecturers. They would come in once a month. And we would meet all day Saturday. And at that time, it was probably pretty unusual, but now there are so many different programs that are on the Internet that do things like that, an external degree. And so that's the way I went and got my -- it's an Ed.D. because it was in education.

I had continued -- I said I got my masters degree in January of '67. I continued takes courses even in -- my sabbatical was in '71, and I took them in '72. And then this program started in '73. And I finished it a little late, in '76, but the official graduation date was July of '76.

I know my mother made the comment when I got out, "Am I finally going to be out of school?" Because I almost, you know,

went to school continuously from bachelor's degree, and I did do some work at Western Reserve. And then when I started it was the summer of '65, I was just taking courses almost continuously.

But the program was good. The one thing -- they called it -- instead of a dissertation they had a different name for it. But what I was able to do for that dissertation is to do some work with individualized study, and the first-year course at the Cuyahoga Community College. And what better as to have your own students to be someone that you're working with? And so it just really worked out well.

LK: Yeah, that seems like quite an accomplishment, too.

MT: Well, really, since I'd been teaching engineering technology, according to the accreditation rules, you only really have to have a masters degree to be able to teach in that area, plus, of course, industrial experience. The doctorate just at CCC, Cuyahoga Community College, just allowed me to move up the pay scale, but it was helpful at Purdue in getting promoted, because most of the professors there at Purdue were -- you really don't teach there unless you have some type of a doctorate. And so though many of the people -- I'd say about half the people in the department that I was in did not have a doctorate.

LK: Before we talk about your time at Purdue, can we switch gears a little bit and talk about how you first became involved with the Society of Women Engineers? How did you first hear about them?

MT: Well, I was not involved with them during school. They did not have a chapter, because, of course, being the only woman in class, we wouldn't have enough women even at Fenn College to have a student chapter. So I did not know anything about them while I was in school. And I graduated in '58. And I think I joined -- they started up a local chapter in '59.

LK: In Cleveland?

MT: In Cleveland. So I joined in '59. I don't know if they heard about me and contacted me or what, but I know I belonged to the group. And I guess I attended meetings for -- I don't know if it was two or three years. But then, again, just as many chapters throughout the United States, you have a big interest when you start, and then people start relocating, and then the chapter dwindles, and then they end up becoming inactive. So I'm not sure how long I actually attended.

LK: Do you recall what those early meetings focused on when you attended?

MT: No, I don't. Sorry.

LK: That's okay. Do you remember why it was important to you to join the Society at that time?

MT: Well, it was important because of having a group for women. It would have been nice to have somebody to share some of my experiences with when I went through school. This is one of the things that -- we have a scholarship at Purdue for women in technology. And this is one thing that I put on as a requirement,

is mentoring, that you'd have a woman that had -- the scholarship contact a woman coming in as a freshman, and letting her know that you're there, and if you have a tough time, why don't you give me a call.

I think I would have really appreciated that when I was going through school, because I know there were a couple periods I was ready to give up. And I know I don't cry very often, but I know there were some times that I really had some deep sobs where I thought -- because I had done poorly in a course, or I didn't understand what was happening, and I didn't feel there was anybody I could turn to, to help me.

LK: Do you think that SWE is there now for women?

MT: I think so. And I think it's important that you do -- that they do the mentoring process, that somebody that's a junior or senior really can talk to freshmen. Because one, even just by you being a junior or senior shows them that women can make it. And then if that woman did have some tough times, which I'm sure that someplace in their career they had a tough time, that they thought, "Maybe I shouldn't be here," or, "This is the wrong course," or, "I should change," or something like that, is to be able to share that experience.

Because it's the same thing -- and I don't know if we'll talk about this later -- but I've been a long-term cancer survivor. And I'd say many of the same things go for cancer as what I'm saying with women in engineering.

LK: The support network?

MT: That support network, that it's very important if you can find somebody that's been a long-term survivor and has struggled, that you can kind of share things with, because -- to show you that life can go on, and if you're in college, that you can make it to this point. Sure you're going to have some tough time. You might have some problems with a certain professor, but maybe you can back off and kind of go around or whatever. Whatever you have to do to be successful.

Or it might be that engineering is not the field that you need to be in. I mean, there's lots of times -- and this is one thing if I were a mentor, I would say, if you're not sure it would be very important if you could get a job, as a co-op or intern in the engineering field, just to see that it's different when you're out in the workplace than it is in school, that maybe once you're out there you can see things differently, and it would make a difference in your education. Or you might find that it's not the place. Or we had some people that were engineers and then decide that engineering technology is a better choice. They're still in engineering, but it's a little different view.

So it's really great if you can talk to people that have been down a similar road. Nobody's been down the same road that you've been down. You can't really walk in somebody else's shoes, but if they have some experiences, you can tell when you're talking with them that they have suffered, and it's then kind of a bond, and it

really does help.

LK: At any time in your life have you been someone's mentor?

MT: I guess I have and not really known. I've never been actually assigned to somebody. Because in college, again, that would have been nice if they would have done that, where they had a program where the people that were junior or seniors and would contact, because I'm quite sure there were few women coming in after I came in. But that was never mentioned. And of course, I didn't have those ideas those days that something like that should be implemented.

LK: But can you talk a little bit more about how you think you may have mentored someone without officially being assigned to them?

MT: Well, I didn't really know this, but back in 1987 I was put up for Distinguished Educator for SWE. And the MAL group was the one who put my name up.

LK: The Members-At-Large.

MT: The Members-At-Large group. And in talking to them, I said, "Is there anything I can do to help?" And so they said if I could contact some of the people that knew me, and if they would write a letter. And so I contacted several people. And it was interesting; there was a group of students who came as a group. They happened to be from Purdue, but they got four or five people together and added to that letter. And they told me that if it hadn't have been for me they wouldn't have done this, and this,

and this … And I actually found indirectly some students from CCC that told me that I was very important in their life at that time, both then and then this past year, I got a Distinguished Alumni from Cleveland State University. And I think that information went out over Cleveland State's Newsletter, and so some people wrote me then and told me -- it was unfortunate, there was one fellow, he said I really made a awful lot of difference in his life, and I couldn't remember him. He sent me his picture. It was a shame that I--

LK: It's still very touching.

MT: Yes. And so that's the only way I would have known this was either indirectly they heard, and so then they were kind enough to send an e-mail, either to the school or to me, or in a letter.

LK: And what do those responses mean to you?

MT: Oh, it was very -- this is one thing that was interesting, after '87, one woman that put me up said any time I get low, I should get out my nomination and read it. And so it was very... Because I was a very tough teacher, and I've had that recommendation.

And one of the fellows at Cleveland -- at CCC did a picture of me. And they knew I was a Snoopy fan. And so the first one said something about my homework and this, and at that time it was a slide rule. And they had a picture of Snoopy doing some stuff with a slide rule. And then they did something else, but in the

end they said, "Ahh, but I got it!" You know, "I figured it out!"

LK: Oh, that's funny. Do you still have that?

MT: Yes, I have it at home someplace. Right now I couldn't put my finger on it, but I saved it when I moved.

LK: That's great. So even though you may not have had someone either in school or on the job that was your mentor, did you ever have any role models?

MT: Well, I had somebody I wanted to be a mentor to me. I mentioned when I started at Cuyahoga Community College, there was this man that was probably in his fifties, and he was a professor at Case. See, I never had a dad, so I don't know if I kind of thought he might be a father too. But I thought, gee, I'd get a chance to work with this person. And I thought, "Oh, that would be so great."

But he set me straight about the first or second day. He told me -- he said, "If you need anybody to carry your overhead projector, you've got to carry it yourself." And so he let me know he was not going to be somebody I could come to and ask questions. So that kind of--

LK: Even technical questions?

MT: Oh, yeah. So that kind of -- I shied away. I guess there were a couple times that I thought there were some, I guess, men that were important in my life. But they kind of let me know where I stood, and so I kind of -- and so it was kind of disappointing. Now, there were other faculty, because there was

my colleague that I wrote a textbook with and that, that we got -- but he was closer to my age. And he had a lot of the same ideas as far as class goes, so it went good, but--

LK: So you felt you had more peer support than support from a higher level?

MT: Right. I kind of felt that I had to prove myself every step I took. That's just the way -- (Laughs) that's just the way I felt, personally.

LK: Why did you decide when the Cleveland chapter -- excuse me -- the Cleveland Section of SWE disbanded or became inactive, why was it important to you to continue being a member as a Member-At-Large?

MT: I just thought that's an area I need to be in contact with. And fortunately through the years, the MAL group, as they call it, has been very good in trying to get newsletters out and being a part. And I was really surprised, like in '87, that anybody even knew me, and considered me, you know. In that year, actually, I got two awards from SWE. Besides getting the Distinguished Educator Award, I also was made Fellow. I just didn't know, you know, that anybody knew about me up there.

But see, I was always so involved I didn't really have a whole lot of time to be involved in other activities, because at the community college you taught a lot of hours, taught a lot of different subjects. You might teach three, four, five different preparations. This is one advantage that I felt that I had at

Purdue, we had larger classes, and so you could confine your interests.

And then I told you from, what, '65 to '76, I was going to school. And so I had very little time to be involved. So I guess it didn't really mean much, since SWE didn't continue, you know, having actual meetings. I guess it didn't bother me that much because I had other things that... When I started at Cuyahoga Community College, of course, they didn't have the professorship ranks, but then they got them in. And then I wanted to be able to move up the steps of that, and so I was involved in that. So I had enough activities, and I just felt that I had to do what I was doing.

Where maybe if I -- I know some of the women that have been involved at Purdue have gone on and been very active in other groups. And so I think it's so important to get women involved, really, while you're in school. That's the time, even though you're busy, but it seems like if it's important enough to you, you make time, and that's the time to get involved and to really know SWE.

But I've known, I think one of the women that's running for president this year, was very active in the -- and she was a very neat lady, very active in the college group. And so since I wasn't involved then, I think it was more of a symbol that I joined SWE and stayed with SWE--

LK: As a support.

MT: -- as a support, than it was where I felt that they were actually helping me. Where I feel, like at Purdue, I think the SWE women really help new women that are coming in engineering. And I think throughout the country, I think SWE groups -- and if you're fortunate enough to have a professional chapter near the university or college, if you can have a few of those women come in so that you can see, well all this striving is worth something, you know. Sometime when you're really about ready to give up in a class, if you can have somebody come in and tell you what kind of -- what they're doing on the job. And if something's interesting, you know, it gives you that extra, "Okay, I'll try it one more time." And many times that one more time is what you need to get over that hump.

LK: Do you think that student professional associations are expanding to the community college level?

MT: I don't know.

LK: Was that an important aspect of the students' time spent, for example, when you were at CCC, being involved in an organization?

MT: I would say at CCC not as important as at Purdue. CCC is an inner city school. These are people that go to school that maybe their parents have never gone to school. And many of them have to work. So I don't think the ties were -- when you're talking about a Purdue or any of the other schools that are a campus away, like Penn State, they're in the middle of

Pennsylvania, where you're on campus, and you stay on campus. I think then the activities are much more important. Where at Cuyahoga Community College, I think everybody lived at home. I don't even think they have any dorms today. And so that makes a difference. If you're just going to school just to take the courses, and then any time that you have, you're going to be at home studying or in the library studying or something, or...

LK: Do you think that there could be a place in the community college student's life for a professional organization?

MT: Sure.

LK: Either technical or--

MT: I think CCC had several groups, but I wasn't involved to know. I know they didn't have anything in engineering technology. But I would really think if there were either a professional group there, or if there were a school -- like in Ohio, you've got Cleveland State so close to Cuyahoga Community College. If some of the women -- and I don't know if Cleveland State has a SWE student chapter. Do they?

LK: Uh-huh.

MT: Whether they could kind of mentor some of the women that are in engineering technology at Cuyahoga Community College. I mean, if there weren't enough there at the school, it would be nice if they would take -- just like SWE groups take on high schools as projects, I see no reason why a four-year school couldn't take on a community college in their area as a project to

let the students there know about the school, know about them, and maybe invite them once or twice a year to their meeting, or if they have a picnic, or anything -- fun activity. I know at Purdue there's a lot of fun activities. And I know they've worked with Girl Scout groups. I don't know if they've gone out -- I think they've gone out to some of the high schools too.

LK: Yeah, that's really interesting.

MT: But I think it would be -- sure -- if the community college couldn't do it themself, I see no reason why, if there were another four-year school that was in the boundaries, why they couldn't do something. And I think it would be helpful. Just like it's helpful, now they're saying you don't recruit for college in high school, what you've got to do is you've got to go back to like fifth and sixth grade. That's when you want to plant the seed to say, "Okay, you can."

And really, in grade school, I guess some of the girls do well and they don't mind being better than the boys. But when they start getting into their teenage years, sometimes they don't want to be the best in class. And to let them know that it's all right to excel in math, it's all right to excel in science, that those are excellent fields.

I was very pleased last year. I really didn't know if I was an influence on -- we have nieces and nephews. Well, it's two nephews, my husband's brother's kids. And actually, everyone but one is in an engineering profession.

LK: Oh, you're kidding.

MT: And the nieces, there are three nieces that are -- one of them is an engineering technologist, another one's an electrical engineer, another one's in computers very deeply. And I didn't know if I was an influence, but they told they I was. I was surprised I'd made an influence -- that I did something without knowing about it. But they were very pleased when I was able to get the award from Cleveland State. And they even flew in from all over the country.

LK: That's wonderful.

MT: Well, three came from Texas, one came from Chicago, and one came from California, to be there when I got the award. And we haven't seen -- I hadn't seen one of them in ten, eleven years.

LK: Oh, that's wonderful.

MT: But I was able to -- at Purdue University they have a week program in the summer for high school students that think they want to go into engineering. And they particularly try to get a lot of girls that are interested to come. And I was able to get two of my nieces to come over at different times. And I guess that must have had some effect -- they never told me at the time, but since they did decide to go into engineering.

LK: Can we talk about how you eventually joined Purdue University, and how that experience came about?

MT: Okay. Well, I was very happy at Cuyahoga Community College. It was an area I was getting into. I was what they

called Academic Unit Leader. They requested -- which was a department head, but they wanted us to be fifty-one percent faculty, because they wanted us to have faculty status. And so you were never really what you call a full-time department head. I didn't want to move in that area, but it came about that I didn't have any choice, that they needed somebody. And so I was doing that in 1978.

It was in the latter part of the '70s that we -- I've always taught computer circuitry ever since I've been in school. And when I first started teaching, we had -- our circuits were (Laughs) -- you only had a very small part, you couldn't have a whole computer on a board or anything like that. But in 1977, I went to a workshop -- it was 1978 that I went to a workshop at Rochester Institute of Technology. And they happen to have had two computer workshops. One was an advanced and one was a beginning workshop. And it was a two-week workshop to learn about one of the new chips that came out, and everything very intense.

I was in the advanced workshop, and so I didn't know this, but my future department head was in the beginning workshop. And one of the men that I worked with in my workshop was a cousin of the department head. And I guess he told his cousin that I worked well with him as a partner, and I guess I behaved well. And so the department head then in 1978 tried to recruit me, and I turned him down. I said, "I can't come over to Purdue." But he corresponded several times.

What happened that fall of 1978, there's another group, the American Society for Engineering Educators that is very important if you're in education. And at that time they were just starting up the leadership conferences, and Purdue was involved with that. And since I was really kind of a department head at CCC and Purdue had the conference that year, I decided to go to Purdue for that conference.

Well, the department head picked me up at the airport. At that time, they did fly in to Purdue Airport from Ohio. And he wined and dined me for the next couple days, showing me what his plans were, about the expansion of the labs, and what they were going to do. And I remember walking around the Purdue campus and thinking this might be a nice place to be.

And so this was during the school year, '78, '79, I told Steve Cheshire -- that's his name, that I would be interested in coming. And well, I had to talk to my husband, because he worked for Social Security Administration, and we were very fortunate that when he had to move, Cleveland was large enough that he could move from one side to the other side to change jobs, because they always had to move to be able to get promoted.

And so this was a big decision, you know, could we go to, really, Lafayette, Indiana. And well, we decided that I should formally apply. And at spring break both of us came over. And my husband was able to talk -- we had only one Social Security office in Lafayette, Indiana, compared to six or seven that they had

around the Cleveland area. And they had -- my husband was in a field rep job, which is what -- the name is very descriptive of the job, that most of his work was done out in the field. He did radio programs; he did claims out in the field. He did much, and he liked that. He didn't want to be in the office under the control of the supervisor. But they had only one field rep at Lafayette, and he had just retired. And they were debating whether they wanted to keep the field rep position or to hire another claims rep, which would be an inside -- they both paid the same, but the job duties were different. And so he kind of interviewed them at the time I was over there, and they decided to keep the field rep job open, so he was able to follow me.

Actually, he came over sooner. He came in June, and I didn't come until after I went to another conference at RIT, Rochester Institute of Technology, another computer conference that summer. Then I moved over.

LK: And joined the faculty?

MT: And joined the faculty. And I was a full professor at Cuyahoga Community College, but they made a policy in their department that they would not bring in anybody at the full professor. They would not, because they once made a mistake about giving tenure to somebody, and they didn't have to earn it, that they would not do that. So I came over as an associate professor, without tenure at that time. And I had to -- so the first thing -- so when I came over to Purdue, I had drop running, because

(Laughs) I had to work on getting, first, tenure, and then trying to get promoted to full professor.

And I was the first woman on the tenure track in the School of Technology, at least in the Engineering Technology, but I think it's even just Technology. And then I was -- again, I had two things to do. (Laughs) Besides teaching, I had to work -- do all the things that you have to do to get tenure, so I was pretty busy. And I was also -- I don't know if you've heard of Cleveland Electronics, their home study program. I was a consultant for them for years, and I wrote for them. And I was trying to do that at the same time, finishing up some writing for them.

LK: So you weren't kidding when you said you were a workaholic.

MT: Yes.

(Laughter)

MT: But I was very successful in the sense that I was able to get tenure in two years, which, really, you don't have the two years, because they start their tenure process in the fall. So they really had a -- I was actually only there a year when they had to start the tenure process. And so, again, I was very fortunate to get promoted to full professor, and that was in 1983. I came over in '79, and so I made tenure in '81, and then in '83...

I know the dean was so happy. Well, he came down and told me that I made it through the committees. But he says, "You don't

tell anybody, because it's got to go through the board of trustees, that they've got to approve the ones that we approve." And so I was very pleased.

But it was a year later that was when they found that I had rectal cancer, a very advanced case. And I think even though it was good stress when I came over, I think a lot of that stress added to the problem. This is why I gave you advice earlier, that to really take your job serious, but find some outside interest, find something that you can get your mind off of your work, and not just work, work, work, work … to once in a while have some fun. And also, what I consider fun is sometimes looking at a sunset. Go camping, experience, look at a rose. Look at the evergreens in the spring when new life is coming on in.

I don't know, when I was younger, I never got to observe the beautiful -- of the evergreens that -- you know, they're the dark color, and in the spring you get the little growth on the end that's light, and eventually it will become the same color as the rest of it. But just to observe some of the things of nature, it's so important.

LK: Well, thank you very much for that. And I want to thank you so much to participating in this project.

MT: Okay.

(INTERRUPTION IN RECORDING)

LK: This is tape three for our interview with Margaret Taber for the Society of Women Engineers Oral History Project, May 12th,

2003. For the next few minutes, can we go back and talk about your time at Purdue? You just finished talking about how you were successful in earning tenure and full professor title. What about the work that you did with the students there, specifically the SWE student chapter? And then go in to talk about the awards that have been established there in your name.

MT: Okay. I'm trying to think of which date. I know I was involved with the Society of Women Engineers for about nine years as counselor. And it was shortly after I came there, the counselor that they had was going to go on a sabbatical for a year. And so she asked me if I would step in that role just for the year.

LK: What was her name?

MT: Violet Harris. And she was a professor in electrical engineering, and her husband was in math. So she went away for that year, and then when she came back, shortly after, she developed a brain tumor. And she died a few months later, so that's why I continued. And Jane Daniels, who was the advisor and had been the advisor for SWE for many years -- I think I got involved in the early '80s -- she came there sometime in the later '70s and started the Women in Engineering Program. And as an advisor for SWE, she's a person who's supposed to know all the school restrictions and rules about an organization, where the counselor is supposed to be more relating industry and outside activities.

And so while I was involved, we'd meet with the ODCs, which is the Officers, Directors and Chairs, every week, to talk about what they were going to plan, and kind of just listen to their plans. And if either of us had any comment to make, we would make them. And of course, then we would attend any of the area conferences. Sometimes they would decide that we wanted to have a conference at Purdue.

And one of the things that they did, well, we had a woman's advisory group once a year that would come in, and they would -- kind of like mentoring, in the sense that these were all professional women. Well, you had some men, too, but only a couple men were on the board. But we would share information of what we were doing at Purdue with them, and they would give us comments. If we had problems or questions, they would give us comments back.

One of the things that we did every year was to have an awards ceremony to provide a little bit of monetary awards and recognition for the various women in the various programs. And Jane Daniels was the one who was able to bring in quite a few funds from industry that would help support this.

For years, and I don't know how many years it was, but it seemed like only women in engineering were getting these awards, and why is because most of the women -- there were many women in engineering who were able to get an "A" average -- whether that was a 6.0 or whether it was a 4.0, whatever scale, but they had an

"A" average.

And I know that women in engineering technology could be members of SWE. We had very few members, but they were legitimate full members, not associate members. But I'd never see any of them getting an award. So I thought that we needed to get electrical engineering technology and mechanical engineering technology recognized, so that the women in engineering would know that these other fields exist. And so I started the awards. And at that time I think they were only $50 a piece, but I think it's up to, now, about $200. But my dean of the School of Technology was kind enough to continue those awards. And so they provide that support each year.

Now, every so often, we do have a woman in technology that is recognized through one of the other awards, many awards that SWE has, like from General Motors, or General Electric, or Intel. But I just felt that we needed to keep women in engineering technology mentioned.

One thing, also, that I did, especially talking about awards, I had mentioned that I've had health problems. I've been battling rectal cancer since 1984, when it was very advanced. And it did travel to distant sites, to my lungs, so I also lost a lung. But after my last lung surgery, I know I came back and said to my dean that I wanted to start a scholarship for women in electrical engineering technology. And instead of waiting until I died, I thought I would start it. And it was started in '91. And the

dean -- this was the same dean -- was kind enough to -- I think I started it with $2,000, and he added $3,000 to make it $5,000.

And during my experience at Purdue, I have worked very closely with one of the benefactors to our department. And they wanted to do something in my name, and so then they added $10,000. And so then it became -- to establish a scholarship, you have to have a certain amount to put in.

LK: For the endowment.

MT: For the endowment. And so we had enough to start one. And so that's a permanent scholarship, and that scholarship is different than the ones that are awarded at SWE. This is for the department. We're now up to -- well, my benefactors have continued to support this, and I support it each year, and so we're now up to where we're awarding four scholarships each year.

LK: Oh, that's wonderful.

MT: This past year we awarded four $1,500 scholarships for women in engineering technology. And one of the requirements there is that they be a mentor, that they do some mentoring, because the scholarships are given mostly for juniors and seniors. But we are talking now in the department of possibly recognizing an incoming freshmen and allowing it to be renewed. But this is just discussion right now. But I've felt that this is so important to be able to show recognition of the women in engineering technology, whether it's in SWE, or either to provide some financial assistance in that area.

LK: That's just wonderful.

MT: So we have some Taber Scholars.

LK: Margaret, what would you consider to be your most important contribution to engineering?

MT: I think being an engineering educator is what I consider -- I felt that -- well, I spent six years in industry, plus really two years, really a total of about eight years in industry. I felt I contributed, but I don't think I got the personal satisfaction that I've received as I do and have received in education, in two ways.

One thing that I was able to do, especially at Purdue, was to bring an idea that was new out in the field, and to be able to create an experiment, and then to bring that experiment into the classroom. This is one thing in teaching in engineering technology, at least at Purdue; we were able to teach our own labs, instead of having a grad assistant. And so one of the things that was very important, especially in my courses, was that I would coordinate the lectures with the labs, to make the labs mean something, so that they would want to do more reading or more studying about that particular activity.

And so to be able to come up with some idea -- just like -- and again, at Purdue, I was able to just work on a particular area. I taught about what is on the inside of computers, and how the computer chips work together, not so much a language. But I also taught about how we could make talking chips talk, robotic

arms move, one great experiment about making a robotic arm pick up something and do some things, how traffic rights could work being controlled by a computer.

But all ours was not learning a particular language. We did have to learn a language so that we could talk to the chips, but the idea was how do we program a particular processor chip, or a chip that would allow you to do things, like talk.

We had many experiments before they had the talking chips in pop machines and in the cars. Why they were discontinued, I guess, from the car, because people didn't want -- like to be reminded that they didn't have their seatbelt attached. But there are many good engineering type applications for talking chips. It's how do we -- what kind of a signal do we send out to that chip to say I want you to talk, and what I want you to say, and then what kind of signal do you send back. And this was the area that I worked in.

And so I was kind of like a kid in the sense that I could work with robots, work with these chips, analog to digital. How do we take a digital signal and make an analog device move, or vice versa. And so to me, that was -- I called that fun. That was an exciting part of my teaching. And so being able to take something that's out there and to be able to teach it, to have the students understand, I think was an important contribution.

Another thing that I felt that I really contributed to Purdue is that there were several people in our department thinking about

-- at the time, the early '80s, we did not have computers like you can go out and buy a personal computer that would be large enough to use in the classroom. We had to use industrial type computers.

Now, I had a colleague that went to one of the shops where they kind of put pieces together to make a computer, but it was not an industrial type. I had an idea that maybe we could get some help from industry. And I talked to Intel. And of course, you hear about Intel, you know, the Pentium 4, and everything it's created. But at that time, Intel was real big in industrial type equipment, where now I don't think they do as much. But see, you had to have equipment to be able to test and use their parts.

And so I talked to them about the possibility of seeing if we could get any kind of a grant for our particular area. Well, they would -- if we could get some funds, then they would match them. And there was a benefactor that kind of got to know our department a little bit. And I don't know how actually I met him to start with and his wife, but I kind of kept contact with them. We had a little robot working, and when they came once, I showed them this. And then I talked to my department head, and we were bold enough to go up to their area in Elgin, Illinois, to see them. But the opportunity didn't come up to ask for any funds.

But I think he knew that we wanted some funds. So when I came home, he asked whether he could help. He'd helped Purdue in other areas. And we were able to get funding. And fortunately, he and his wife have continued to support the microcomputer lab in

our department ever since then. And we get anywhere from $25,000 to $50,000 a year to try to keep that lab up to date.

And I really feel that I treated them like I'd tell you how to treat other employees, or how to treat men. It wasn't just at the time when we wanted money that I corresponded with them. If there was something interesting, I would let them know, so that we'd know that they were important, not just for money; that we'd let them know what was happening in the lab. I was instrumental in helping him get an honorary doctorate. So we've formed a real strong bond through the years. And as I said, they're the ones -- his wife is one that every so often, especially the last few years, has contributed to the Taber Scholarship, so that we're up to where we have about $100,000, so that we can just award scholarships off the interest, and keep that principal.

But I've had difficulty in trying to get my colleagues to continue to do this. I don't know why. But fortunately, the department head, if nobody else does it, does some of it. But I've taught, just like in my scholarship, one thing I want to know from the women -- we don't get to pick them, because there's a committee in the department that goes through all the credentials and picks them -- but I tell -- I want to know about that woman. And I ask them to write a letter, and I list several things. I'd like to know if they're a first generation college student, do they do any interning or co-oping, what are their interests -- you know, anything that they can tell us, and in the last paragraph,

if they want, to give us a sentence or two, thanking us for the scholarship. But the important thing is for us to get to know them as a person, not just as a scholarship winner.

LK: Right, or their GPA or something.

MT: Right. But to know some of the other things. And this has been very hard. Fortunately now I've got the department heads that will send this out and say, "You're not going to get your -- when you give us your letter, we will then award -- we will give you the money on the scholarship." So we get one every year.

And this is one thing we send to the benefactor, a copy. I say, they don't have to come up with two letters; we can change the name. But that's important. And I think even -- I know she's really appreciated that, because a couple times after she's gotten a copy of the letters, she has given us a donation. But again, it's to respect people. And somebody who does -- is kind enough to make donations to the department, to consider them not just for the money, but to consider them as a part of the department, and new things that you get to keep them aware.

They're getting too old now to come down personally to see things. But I've worked very hard on -- we have a younger faculty, he's now -- he is a full professor, and I've tried to encourage him. I say, "Anything new that happens, just drop them a line." And so I've -- that's not outside, but I've considered I've made a considerable contribution there.

They ended up changing the name of the lab. It was the

Hoffer Lab, because those were the benefactors. And when I retired medically because I couldn't continue teaching, they changed it to the Taber Lab.

LK: Oh, that's very nice. Do you ever go back to campus?

MT: Yes. What I do is when -- I usually give $1,000 in the spring and $1,000 in the fall to the scholarship. And I always personally deliver that check. And this spring it was neat. I didn't get to see the department head, but his secretary, she mentioned to this younger faculty member -- and I know him because he taught when I was there -- that I was coming down. And he says, "Well, why don't you bring her down to class?" And so we went down to see what -- because I like -- I tell them -- I don't really tell them this, but I'd like the same thing that I'm saying that they should do for the Hoffers, I'd like them to do the same thing for me. But I don't know if that's--

LK: Sure, keep you in the loop.

MT: Keep me in the loop, right. Well, and I have a couple other schools that I keep on telling them that, that they've got to let the people -- it doesn't take -- like University of Akron, I'm a graduate of that, my masters degree. They're trying to get a Women in Engineering program really going. Well, they came out with a newsletter a couple years ago. And I've encouraged them to keep that newsletter. I was told this year they can't send it out because they don't have the money. I said, "What's wrong with sending out an $8^{1/2}$ x 11 piece of paper saying, you know, "Funds are

tight, so we can't send out a newsletter, but these are the new things that are happening in the department," to keep things -- and it's just like pulling teeth to get people to do this.

LK: And also, I mean, so much business is done through the computer, which is free.

MT: Right. Yeah, they could use e-mail.

LK: For those who aren't connected through e-mail, then that's just a few pieces of paper to print out.

MT: Sure. But this is -- so this is why I say -- my experience as an engineer educator, I've explained that. And then trying to, really, to perpetuate donations, not just for -- but particularly for women, and either in engineering or engineering technology. I think I've made a little notch in that area.

LK: What does it mean, or has it meant anything to you being a woman first, or the only woman at certain times? What does that mean to you?

MT: I don't know if that is -- it's important being a woman and being able to continue doing some of the things that women do. But I don't know if I've really thought that much about...

LK: Okay, that's fair. And a question that I've tried to ask all of our participants is: Why -- or is there a need for a Society of Women Engineers today?

MT: Oh, definitely, definitely. I think it's probably just as important today as it was when it started, but there are probably different goals today. I think maybe when it was started

it was trying to get the women that have graduated, together. And I don't know how much -- it's been a long time that they've had a goal as to try to get more women to come in the programs. But I think they're focusing more on getting things down into the grade school level, getting things down and to getting -- and I think it's good to have a national organization to encourage the school organizations to get out and talk to your high schools, get out and talk to grade schools, and to have somebody that's close. You know, like if I go and I talk to a kid, I'm, you know, white hair. (Laughs) But if you have somebody that's, you know, a little -- just a few years older than you, it's important to hear from that person.

And I think SWE is trying to change through the years as they see their goals and objectives a little bit differently than they -- but you've got to provide help for women. There are many women. And if you've looked at what tuition rates are, I know just at Purdue they're talking about going up another five percent in state.

I don't know if I could go to school nowadays, because you know, I worked my way through. I had that first year scholarship, and then I -- then co-op. I stayed at home. But I was able to -- not easily, but I was able to get through school, and I didn't have to worry about any loan. At that time I think it was very difficult, because -- it was interesting. I wanted to get a car for my senior year because where I worked, the public

transportation didn't go out there on the weekends. And so we picked up an old junk. But I went to the school and said, "If I have trouble getting financial help, can somehow I get help for my senior year?" "No." There's no way. Where now, fortunately, there are now scholarships. You can borrow, and that.

But I still -- I think there is a big need for SWE. And I think they're moving in the right direction of trying to refocus and get input from everybody. What I mean, everybody, just even the kids, then the college age women, and then of course the people that are working. And I think they can even do something for the professional women that are out there.

LK: Well, that's great.

MT: Thank you.

LK: Do you have any final thoughts?

MT: No. I think I've given most of my final thoughts as we went through the interview.

LK: Okay. Well, thank you. We'll stop now.

MT: Okay.

END OF INTERVIEW