

SWE STORYCORPS INTERVIEWS

Mary Anderson-Rowland Interview

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Society Of Women Engineers National Conference

Baltimore, Maryland

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Mary Anderson-Rowland

Mary Anderson-Rowland is an associate professor in computing, informatics, and systems design engineering at Arizona State University. When hired in 1966, she was the first and only female engineering faculty member at ASU. While serving as the first female associate dean in the ASU Fulton School of Engineering from 1993 through 2004, Anderson-Rowland developed the Women in Engineering and Minority Engineering programs to help increase the number of underrepresented minorities in ASU's engineering programs. She is a fellow of the American Society of Engineering Education and the Society of Women Engineers, from which she received SWE's Distinguished Engineering Educator Award in 2002. Anderson-Rowland also received the ASU Best Teacher (Top 5%) Award from the ASU Fulton School of Engineering and the WEPAN Educator's Award in 2009, was named a National Educator of the Year in 2005 by the Society of Hispanic Professional Engineers, received the Outstanding Achievement and Contribution Award in 2004 from the Commission on the Status of Women, and in 2001 received the National Engineering Award from the American Association of Engineering Societies.

In her 2008 SWE Storycorps interview, Anderson-Rowland discussed her interest in engineering and mathematics; her experiences

studying and teaching mathematics; her ideas and initiatives for recruiting women and minorities in engineering; obstacles facing women in engineering; the future of women in engineering; and her involvement in SWE.

- July 2016

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Troy Eller: My name is Troy Eller. I am twenty-six years old. Today is November 7, 2008, and we are in Baltimore, Maryland for the Society of Women Engineers [SWE] national conference.

Mary Anderson-Rowland: And my name is Dr. Mary Anderson-Rowland. I am sixty-nine years old. I am in Baltimore for the SWE national conference. And today is November 7, 2008.

TE: I'd like to thank you for doing this interview with me, and I was wondering if you could tell me how you first became involved in engineering? What first interested you about engineering?

MAR: Well, engineering is a very interesting field, and women especially have come into engineering by many different ways. And my latest metaphor is we have a freeway of the engineering career and there are on-ramps, and there are off-ramps, and there are access roads. So I was on an access road, or running kind of parallel to engineering, and then got on the on-ramp and got into engineering. So my background is actually mathematical statistics. That's what my PhD is in, and so I'm basically a statistician. And I started out as a statistician at Arizona State University. And then through a series of

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unfortunate events, even though I had very good merit reviews, I was no longer in the College of Engineering [Mathematics]. I was fired, and found a dean that I had never met before who hired me to become an assistant to the dean. I was there for a couple of years. And then he said, "Mary, we've got to get you back in a department so you can get tenure."

And we looked around and engineering needed statisticians, and so they had me, they tried me out for a semester. I taught a course for them, and then I was invited to become a member of the Department of Industrial Engineering. And sometimes behind the biggest storms is a silver lining. And so I went into engineering in 1974, and it was the best move I could have ever made in my life. I've had so many more opportunities in engineering than I ever would have in mathematics.

And so I went into engineering in 1974 and very quickly some SWE professional members came and said, You will start a SWE student section. And I said, "Okay." And I believe it was 1976 that we were chartered as a student section, and I have been the advisor of it all those years. So that's when I was first introduced to SWE, was in 1976.

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TE: Wow. How did you first become interested in mathematics? Like, do you remember at what age you first became interested in mathematics? How did you make that choice?

MAR: I believe it was due to my father. Now, by age six I knew I wanted to be a teacher. I just didn't know what I wanted to teach. Because at that time I only thought there were three professions. You were either a teacher or a secretary or a nurse. And it was a process of elimination. I did not like shots; I didn't want to give them. I knew I was too antsy to sit in a desk all day, although I know secretaries do a lot more than that. But I thought I would then be a teacher, and my mother had been a teacher. So it was just a matter of what subject I would teach.

And actually, even graduating from high school, I had never—well, when I became a senior I just had taken my basic math, because I knew I needed that to get to college. And the math teacher came to me before the beginning of my senior year and said, "I think you ought to take another math course." And I said, "Okay." I was going to have a study hall for the first time in my years, and I can't believe that I was mature enough to say, "Yeah, I'll take math instead of a study hall." But I did. Learned I liked it. So I thought, "Well, I'll just go to teach either

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engineering or English." And then in the residence that I lived in as a freshman year, there were other people doing math, although they were doing educational math. And so I just thought I'll—and then I liked the mathematics professors.

But my initial interest, I believe, was when I was only maybe six or seven years old my favorite game that my father played with me was, he would give me all the change in his pocket and say, "Okay, I want five cigars at ten cents apiece, and I want one at twelve cents apiece, and two at fifteen." He would give me the bills and I would have to make the change. And I loved that game.

TE: [laughs]

MAR: And so my dad really liked mathematics so I think I always had a very favorable attitude toward mathematics.

TE: Okay. When you started studying mathematics in college, were there many other women in your classes?

MAR: No.

TE: No.

MAR: No. And in fact, I went to Hope College, a fairly small college. And we were, we actually had—we were the "Big 4."

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There were three guys and myself, and we were kind of a study group. And in most of my classes—and in high school, when I took the mathematics, I was the only girl, and there were six guys. And most of them, several of them it turned out did engineering. And I didn't really know about engineering, wasn't on my horizon at that time. But yes, no.

And I think that didn't bother me at all because I had tagged my dad a lot when I was a child. And I was used to being around, where he would just be talking to men and I would be there and not think anything about it. But I think I had been kind of socialized, that I didn't necessarily have to have other women around me to feel comfortable.

TE: Uh-huh. Did you find any difficulties being one of, you know, one of very few women studying mathematics? Did you find that instructors perhaps treated you differently, or were you just one of, you know, one of the team?

MAR: I have to really say I felt no discrimination as a woman in mathematics or statistics at all during my college years or graduate years. I felt only really a lot of support and encouragement. My math teacher in high school—or in college recommended that I try for an NDA (?) scholarship at the University of Iowa that I didn't know about. I applied. I

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got it. And so I went there rather than the University of Washington, where I thought I wanted to go since it was close to home.

My mentors and advisors in graduate school were very, very supportive. During graduate school I married after two years. And I told them, you know, I had gotten married. They thought that's just great. And then I became pregnant, and I told them that. And that was—in fact, I was quite pregnant about the time of my orals and defending my thesis—and they said that was just fine, except they wanted to know would I teach. And I'm not sure this was legal or not, but they asked. They said as long as they knew that I would teach sometime it was fine if I had children. But they didn't want to have put all this investment in me as a woman if I didn't do anything with my PhD. I said, I promised them I would teach. And so now this is forty-two years later, and I have been teaching the whole time.

TE: [laughs] That's great. When you first started teaching, were there many other women also teaching? Or did you feel like you were supported while you were teaching, as well, or did you—

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MAR: Okay. While I was in the mathematics department there were some other women. Now, when I went into engineering in 1974 that was a whole different story. There had been no women faculty in engineering. I was the first one. And the male faculty members did not throw a party for me. They were not happy. I was told this by friends. And it was nice for me in the fact that I was married and my husband was in the mathematics department, so I had that support. And then since there were no other women at all, I reached out to the Faculty Women's Association and made friends with women in business and in other departments, and they kind of told me what was expected and what wasn't expected.

The other thing going on at that time, though, is nepotism was still in strong force. And I was told to lay low since my husband and I were both on tenure track positions at the same university, even though we were weren't in the same department then, to lay low. That they had heard that other couples in the past had been let go. And so I took that advice.

TE: I see. I see. Did you have many female students?

MAR: Okay, when I first—I'm trying to remember. I think it was less than five percent women at that time. Four percent comes to my mind. And you also have to remember that it was

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over ten years before the second woman faculty member came into engineering, and so everyone knew very well who I was. I really think that a reason for this is that men have a false sense in that, since it was—there were only men doing engineering. There's the idea that, If even a woman can do engineering, that devalues the field and it devalues me. Which of course we all know has nothing to do with it.

TE: Right.

MAR: And I think after I had been there a few years and all of them noticed, I mean, nothing really happened. And now we've got twenty-six to thirty women faculty. There's more than one in every department. My own department has five or six women out of about twenty. So it's—no one thinks about it at all now.

I have all my life tried to encourage women to study mathematics and science and to go into engineering. And I started in earnest in 1980, getting a grant to help women come back and get a graduate degree in industrial engineering. They had to take some prerequisites, but these were often math teachers who were burned out. I would never take a math teacher away from their job, but they were burned out. They were tired of seeing their own students

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get higher advanced degrees and come back and telling them what they were doing. And so I helped these women graduate, do the prerequisites and graduate and get a master's in industrial engineering. And that was very satisfying to do that.

TE: Right. Could you tell me more about starting up the SWE section, the SWE student section?

MAR: Certainly. It was pretty tight at the beginning. I mean it was just kind of touch and go. It depended—it seemed that if one year you got a very good leader in, things went well. Then maybe one year, kind of an older student coming back to school became active in the organization, and then almost all of the students in SWE were older. And I tried, we tried meetings at all different times.

And it's kind of interesting that it happened at about the same time. Somewhere along there—I'm not sure, fifteen, twenty years ago maybe—I just decided I could not, I can't make it happen for them. The students have to decide that they want this themselves. And about the time that I realized that, the students started taking hold of it. And it wasn't that I had been running it for them, but I just worried less.

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And then, I think about ten years ago or so, an industrial engineering student became the president and she laid this out like a project management. She did a project management on it. She had books full and she had the meetings all summer and planning. And looked at the Web sites of what other sections were doing and realized that other sections had, like, twenty to thirty officers and the idea was to get as many people into office as you can. Get freshmen and sophomores in on the committee. By the time they're a sophomore or junior let them head a committee, and then they're on the leadership, the L [leadership] Board, the E [executive] Board by the time they're a senior. And she really made this happen. And then the second year, after her, the second next year, another IE [industrial engineering] woman came in and kept up that same management. And that has kept us going. I would say now we're on a very strong basis because each woman coming into the management of SWE sees how to do it.

And of course interests do ebb and flow a little bit, but the SWE—our SWE [section] last year received the award for the most active and productive student organization in our College of Engineering. So I'm very proud for that. And a few years ago we got the top mid-sized section in the

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nation at a SWE meeting [Outstanding Student Section-Medium Section Award in 2003]. That was after SWE changed from the summer meetings to the fall meetings because, usually all of the leaders in SWE did internships in the summer and they couldn't leave to come to a meeting in the fall [summer].

TE: Right.

MAR: So we're in pretty good shape now. And we just, SWE has just started the last couple years, we just held our second evening with a professor, and it has the full dean's support, and we have a top dean and an executive dean, and both deans were there. They started last year having the auction where they auction off the faculty, including the dean, and that went over very well. So they are very active, and they do outreach with Girl Scouts and et cetera.

TE: Uh-hmm. I know that you've been involved in a lot of initiatives and programs to encourage women and minorities to enter into engineering. Can you tell me more about some of those other programs, other than SWE?

MAR: Yes. I told you about in 1980 I had that grant on the reentry women. And I ran that program, the career change,

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for quite a few years, long after the money was out. And I was encouraging the women. We then got to be, have about thirty—twenty-five, thirty percent women in our graduate courses and also in our undergrad.

I think probably a big change came about in 1989. I did an internship, I did a sabbatical and went to industry and really got interested in quality control. And I had been an associate chair before that time. And then came back, and then in 1992 my first husband died very suddenly from cancer. And again, out of bad things come good. But I really didn't care too much about what anybody thought. And we had a new dean, and I had been involved in WEPAN [Women in Engineering ProActive Network] starting in 1990 because of my graduate career change program. And of course they were saying you should have a Women in Engineering program at your university or at your college. And we didn't. So I marched into the dean's office—again, I do not care what he thinks or anybody else thinks—but told him what he should do. And I said, "You need to decide which one of your associate deans will sponsor a Women in Engineering program. And you need to send that dean to a WEPAN conference so they can learn how to do, set up a Women in

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Engineering program." So he just said, "I think we're going to have to find something more for you to do."

TE: [laughs]

MAR: Like, "You've got too much time on your hands if you're coming in and telling me how to run my job." And I said, "No, thank you, I have all I can handle. That's it." And then I had another reason—there was something else I didn't like that was going on. I marched down to his office again and told him what to do. And after, like, those two visits he says, "Maybe it's a little too early, but I want to talk to you some more." So then he made an appointment and came to me. He said, "This may be premature, but I think I'm going to be losing one of my associate deans. I'd like you to be that associate dean, and you start a Women in Engineering program." And then, of course, the question right after that was, "How much would that cost?" Well, I said, "We could do it for very little." Now that's a correct answer. We could do it for very little. That was not my intent.

TE: [laughs]

MAR: I had seen the model at a college in California that I had done an audit for WEPAN. And I saw there an associate dean

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who had hired two graduate students to start a Women in Engineering program. And with that advocacy in a dean's office, I saw that is the way you want to structure having a Women in Engineering program. You've got to have dean's office support. So time passed, and I was appointed as an interim dean, and then became the associate dean.

And the reason I chose it was—okay, first the reasons against it are: you're living in a glass house; everybody's watching you; you're time is no longer your own; you have to account for all your times. That is the difference between administration and being a faculty member. For an administrator, you're expected to be in that office everyday.

But I had the opportunity to start a Women in Engineering program. And had I wanted to do that before, but knew it would have been academic suicide for me to do that. The men are already leery that there's a women in there, and then if I put my interest and activity into doing something for women it'll be all the more like, See what she's done. But as an associate dean, if that's my job, then I can appoint someone else to run that and direct it, but we get one. So I accepted the job.

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So I started right away then, and established a Women in Engineering program. I was given facilities. And he said, "I know this wasn't part of it, but you're also going to, besides this, you're also going to have to do some facilities work and some budget work." And I thought, "I don't want to do that." But little did I know the power [laughs] is in the facilities.

And so at that time, all the offices were being moved. And so what I did is I cut out a footprint on the third floor of the main engineering building and established it as a minority engineering program, with a rug, and then a carpet. And then cut out exactly the same footprint—because I know no one would object to doing that for underrepresented minorities—cut out exactly the same footprint on the second floor for women and put in carpeting. And right across from each were offices for administrators and our directors and advisors, for those two centers.

Now the question is, the dean said, "I hear you put carpeting in those rooms?" And I said, "Yes." And he said, "Why?" Now remember, at that point faculty did not have carpeting in their offices—

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TE: Okay.

MAR: —so this was of course a very big extravagance. And I said, "Because I want to go first class." And he said, "Oh." And that was the end of the conversation.

TE: [laughs]

MAR: So those were established. And little did I know—I did them as a retention center, but they were a great recruiting center. So imagine either an underrepresented ethnic minority walking in with their parents and seeing, here's a center for underrepresented minority students, plus people right there to help them. Because students in general, if they're in trouble, are not going to walk across campus to go to a counselor. But if there are people there that are mingling with them every day saying, "How's it going?" "Well, fine." "Well, how's it really going?" "Well, I'm kind of having trouble with this," and this person can help them. And so the same thing for a center for women. When parents walk by with their daughters, Hey, this school does support women. Here's a center just for them.

And granted, not all women want to be associated with the center, but a lot of women are smart enough to know that that helps them. This is akin to the book that is *Why Are*

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All the Black Kids Sitting Together at the Cafeteria Table?

[book title: *Why Are All the Black Kids Sitting Together in the Cafeteria?*] There is a need for women and ethnic underrepresented minority students to do checks every once in a while. These things are happening to me. Is it happening to me because I'm a woman? Or does this happen to everyone? And that's a reason that women need that check. And in this center, then, the SWE officers had a desk and table where they keep their files, and so that kind of solidified things between a Women in Engineering program and SWE.

So as associate dean, then, I also started writing grants to help students more. I did help all the student organizations and helped get them money, which helped more women to come to the SWE conference, as well as AISES [American Indian Science and Engineering Society], NSBE [National Society of Black Engineers], and SHPE [Society of Hispanic Professional Engineers]. Those four organizations got special allotments.

And then starting in about 2000, I started writing grants to the National Science Foundation. And I started my first one in 2002, an academic scholarship program—that was under CSEMS' [Computer Science, Engineering, and Mathematics

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Scholarships] program, and it's now the S-STEM [Scholarships in Science, Technology, Engineering, and Mathematics] program—with the emphasis on women and underrepresented minority students who had unmet financial need. And so I ran that program for about five years. And nearly sixty percent, I believe, of those students were either women or underrepresented minority students in this. So the money gave them extra help, but we had workshops, six workshops a semester. And they also, after a few years, I learned about the Guaranteed 4.0 [Learning System] plan, so they learned about that, to help them with their academics.

Also, a big emphasis of this is, go on to graduate school. We need more women in graduate school, and this ties in very well with SWE. I just came out of being the moderator for a panel [at the SWE conference] about academic leadership and the fact that we need to get more women in graduate school to become faculty members, to become leaders, to change engineering education so it is more encouraging to women and supportive of women. So my focus was on graduate school. And in that group—the national average is about eighteen percent of all students who get their engineering degree go on to, go right on full-time to

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graduate school. And so far in that program I've had forty percent of the students go on to graduate school.

Then about a year later I had a second grant from them. And this one was focused on transfer students, again with an emphasis on women and underrepresented minority students. I've run that one also for five years. And for each of them, I've had a follow-on grant so the programs are still continuing. And so far with the community college students, I've had thirty percent of them go on to graduate school. Which is quite remarkable because most of the students going to a community college do so for financial reasons. And so the fact—it's a big choice even to go to four-year school, and usually the goal is to get that good paying job so that debts can be retired. And so to convince a student that it's really in their best advantage to continue on to graduate school takes a little bit of doing.

But I have graduate student panels come and talk—and this is again in these six workshops that they have to do per semester—and talk about graduate school. I've never met a graduate student yet who regrets that they got a graduate degree. And most students feel that graduate school is only if you're going to go into academia, and they don't realize the technical expertise that our country needs at the

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graduate level. And so I bring in industry members, engineers in industry with advanced degrees, and have them talk to the students. And they can tell how much more they've been able to do in their job because they have a graduate degree. We also encourage the students to do research while they're undergraduates and to do internships. And in the internships we tell them, Look around you. See what the bachelor engineers are doing. See what those with masters are doing. And then see what those with PhDs are doing and choose what kind of a life, what kind of a career do you want to have. And that is enough to convince a lot of them that they want to do graduate level work in engineering.

TE: Uh-hmm. You've worked with a lot of women and led them into this career and led them into their degrees. What do you see as things that are preventing more women from entering the program? What obstacles have they faced, do you think?

MAR: Until being smart as a young girl in grade school is cool—

TE: [laughs]

MAR: —and until liking math or science, until that is considered cool, we have a huge barrier. Because it's not cool for a young woman to be smart. Later in years you understand, but

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young girls want to be pretty, and that's fine, and they want to wear nice clothes. But being smart is not their main goal at that time. And so what we really need is we need *LA Engineer* [like the television show *LA Law*] because look at the women flocking to law now. And now because of *CSI*, everyone wants to go into forensics. If we had *LA Engineer* and we had these women dressed in very nice suits in very nice offices, solving huge problems everyday.

[laughs] Because, I mean, as you know on *CSI*, I mean you get that sample and even though it says it takes three days to get it, you know, within that hour you get that answer and a murder is solved. So the engineer—if we have *LA Engineer* so that when young people and women could see the role models.

The other thing is most people have no idea what engineers do. You go through school. You take math. You may take biology and physics and chemistry. So that's why we have women in chemical engineering. We have women in physics. You have women in mathematics. But now we're just beginning to get engineering into the high schools a little bit. And so it's not on the radar of most young women. I know that a survey done by the Society of Women Engineers organization several years ago said that the best prediction for a young

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girl to become an engineer is to have her mother be an engineer. And there was a big correlation, and that's because then that young woman grows up and sees a woman as an engineer.

I remember not too long ago parents came in with their daughter and the mom said, "I have no idea why she wants to go into engineering." And I said, "Well, are there other engineers in your family?" Yes. Her father was an engineer. Her brothers were engineers. But still, even having that, even the mom didn't connect just because men do engineering doesn't mean necessarily that women would like to do that.

And so I think that also a misconception of what engineering is, that it is really creative and that there is the design and there is the solving of the problems, and it's helping people. And women love to do that. That's why we have more women in civil engineering, bioengineering, going on to medical school, helping people, industrial engineering because it's the most people-oriented discipline. Right now it's really hurting in electrical engineering, mechanical engineering, and computer science. At first women flocked to computer science, but from what I have read and heard, the environments for computer science,

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for computer scientists and computer systems engineers, has not been encouraging to women.

TE: Okay. When you became an associate dean at Arizona State, how many other women deans or associate deans were there in engineering?

MAR: I was the first woman to ever be in the dean's office.

TE: Okay.

MAR: As a dean or associate dean. We now have a woman dean. She came in a couple of years ago. So that was another barrier that I broke, and I'm very glad I was able to do that. But again, it was—I did it for the opportunity to be able to establish this Women in Engineering program. And also I was really fighting the whole time to keep the support for women and underrepresented minority students.

It is very easy to see that if you pull that support, the enrollment of women goes down. And that has temporarily happened at our school now. Our minority enrollment is still climbing. We're now at about nineteen percent. When I was running those programs we had it up to twenty-one percent women, and now we're back down to about sixteen or seventeen percent. So there's more work that needs to be done, again. Because of—Arizona is the second-fastest

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growing state. We have the ethnic minority, underrepresented minority at 19.2 percent, and that will probably continue to grow. Arizona State University now is the largest university in the nation. We are 67,000, and we have four campuses. Our Tempe campus is the largest in the nation at over 53,000.

TE: That's impressive. [laughs] What has been the best part of your career? Has there been a defining moment of your career?

MAR: It's hard to—well, alright. It's hard to say a defining moment. I have received six national awards, which I really feel good about because it tells me that somebody else values what I do. As I think everyone knows, the kind of work I'm doing—recruiting and retention of students—is not always valued by research universities. And I continue to publish and do research in it, so I do have a national reputation on it, and was able—I became the Distinguished Engineering Educator Award for SWE. I've been named a SWE Fellow. I am also for ASEE, the American Society of Engineering Education, I'm a fellow in that organization, and I've received their Minorities in Engineering Award. I also was very pleased, I was named the top educator by SHPE, the Society of Hispanic Professional Engineers, which

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is an award that almost always would go to a Hispanic. But I felt very pleased because we are all in this together, and I think that they recognized in that that I have worked very hard with the SHPE organization. I was the associate dean when they held a national conference there, and helped facilitate that. And so that was another. And then I was also given the engineer of the year award by the AAAS [American Association for the Advancement of Science].

But actually, I think the best feelings from my career are the students that come back. And a student will say, "I was in your class," or, "I heard you speak at a SWE meeting in Hawaii, and that did it for me. I decided to become a faculty member, and now I'm a faculty member." Or someone says, "In your class you encouraged us to go to graduate school, and now I'm doing that. Would you write a letter of recommendation for me?" I do, they go to graduate school, and then they come back. Or students in my class, even, that say, Guess what I'm doing? And I said, "Statistics?" And they said, Yes. Because I'm teaching that and a lot of students don't like that. And then another part of what I'm doing now is working with transfer students, and I have a grant from the National Science Foundation on that, also. And so hearing a woman come up and say, "You talked at my community college. Because you talked, and because I know

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you're there, I dared to come to ASU and I'm an engineering student now."

So that is the reason why all of this is worthwhile, to hear that you have helped change the life of students. And I know that I'm helping them go into a career that can be very, very fulfilling for them. And they in turn can be helping people. And they are in all disciplines, so they're helping people through prosthetics, through working in a company that is creating something that's going to help save solar energy, that we're going to have a renewable source that we can use. And so it's knowing that I've helped those students and that perhaps without my encouragement and the encouragement of others they might never have dared try that.

TE: Right. What do you see is the future of women in engineering?

MAR: I think the future for women can only be bigger and brighter. I think we have learned that—in the early '90s a lot of money was put into starting Women in Engineering programs. And it was kind of like, All we have to do is throw some money at it once, and then we'll get the women, and it'll be done. And we now know that's not going to happen. Because it was up to about twenty, twenty-one

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percent and it dropped down when that support was not there anymore.

So it's a continual effort as new generations come in. I think the more SWE grows, the more student sections we have, the more that are working with Girl Scouts, that are going and visiting middle schools, that are going back to their high schools—I see students at our college going back to their junior college, their community college, or their high school during the Christmas break. We have a load of students that drive up to the Navaho reservation and go back to their school and talk and say, "Hey, I was sitting there just like you. I didn't know what I wanted to do, and I decided on engineering. And this is what I'm doing, and this is great. I have lots of opportunity." And so it's a continual effort. It's a continual effort.

One quick story. As I think most of us know, women's brains are a little different than men. We've got more connectors. But it isn't like it's just turned off to engineering. It depends on how it's presented. And I heard a paper about one country where the way your career is decided are by tests. And so you take the test. And everybody gets paid the same. If you're an engineer, or a doctor, or street

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sweeper, you get all paid the same. And in that country, more women are engineers than men.

TE: Really?

MAR: They actually tested that the women's way of creativity, of solving problems, of taking problems and deciding what you can do with it—they were more adept to engineering than men were. And I love that story. I also like looking at Puerto Rico, where over fifty percent of the IEs [industrial engineers] are women. And they know the women learn quickly if they want to stay on the island of Puerto Rico the best job they can have is to work as an engineer in a company such as Abbott Labs. And therefore there are at least fifty percent of the women there, in industrial engineering, are women. Because they know they've got a good job.

So it's not that women aren't interested. It just is all back to how it's presented, and I think as we get more engineering taught in high schools—it's coming. I know, is it Maryland or Massachusetts, that's done a lot of that. As we get more and more engineering down so that people can understand what that is before they make up their mind to do something else, I think we'll see more women in

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engineering. But it's still, it's going to be a struggle for a long time.

TE: Okay. Well I would—I think we'll end there. I think we're about out of time. So I would like to thank you very much for doing this interview. I enjoyed it and I enjoyed listening to your stories.

MAR: Thank you very much.

Rose Gorman [facilitator]: May I ask you a couple questions?

MAR: Sure.

RG: What was the name of that country you spoke of where there's gender equality—

MAR: I've got to look at it. It begins with A. It's a country, and the letter begins with A. I'll have to get back to you. I do not remember.

TE: Okay. [laughs]

MAR: It was in an ASCE [American Society of Civil Engineers] paper in the summer of '07 that I heard about it.

TE: I'll look it up. [laughs]

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RG: And when you were in graduate school and you had been married and you had your—you were pregnant, what school was that? Was that in Arizona?

MAR: University of Iowa.

RG: University of Iowa. Okay. And you mentioned that you had joined a group of women who were in business. I'm assuming other—

MAR: Faculty Women's Association at Arizona State University.

RG: Yeah. What were some of those things that they told you that were accepted and not accepted?

MAR: Well, the one I told you was I had to lay low because we were a married couple. And by the way, after I had been at ASU about six years, a group of women at the University of Arizona who were kept at less than fifty percent, because of the nepotism, sued the Board of Regents and within a matter of months all of that was dropped. So nepotism is no longer—they had no legal stance for it, and so it's gone.

TE: Right.

MAR: I think the kind of things I learned is—I got a name, Jan Elsea, who became the president of the Faculty Women's

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Association during the time I first came there. When I first was there I was invited to go to their meeting, and it was really a tea and crumpets party on Friday afternoon. And it appeared to me that all the faculty women there were, like, really aged. I mean they were over 50, or 60, or 70. I mean, I have a different perspective now, but at that time that's what they appeared to me. And then young women came into the organization and actually revitalized it. And I became a part of that group and I was president one year.

But Jan Elsea, I think, put the courage into all of us. She talked about the discrimination that she faced in her department, because the faculty men were hanging up pictures of pinups—women pinup girls around. And she said that she felt uncomfortable about that, and she didn't think the women students appreciated it either. So what she decided to do is she hung up a very bare man on her office and within days all the pictures came down.

TE: [laughs]

MAR: And so I think one of the things you really learn is you have to attack things with a sense of humor. And this you may want to cut, but I will tell another story about Jan Elsea is that there was a male colleague that she had that

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every time he walked by her he would give her a little tap on her fanny. And she did not appreciate that. And so she told him, "Do not do that anymore, and if you do there will be consequences." And so the next time he came by and gave her a little tap, she turned and grabbed him right in front—

TE: Oh!

MAR: —and that was the end of that.

TE: [laughs]

MAR: None of us would have ever dared do that, but when you hit that, you just have to take—and I used to have a sign in my office that said, "Remember that there are millions in the world that couldn't care less about this situation." And you need to smile at least once. You need—all of this, all of this work and pressure that you get as a woman in academia—you have to keep your sense of humor. There is no other way to do it.

And I guess the other thing I would really like to add, I was very pregnant when I graduated. We got our PhDs on June 10, and twenty days later our first son was born. And then twenty-two months later another son was born. And I was

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part-time there. That was part of my problem at ASU. And those two boys now are grown men and each have master's degrees, and one of them is an engineer with a master's degree at Raytheon. And the other one was a teacher in high school who taught AP World Culture and also did journalism, and has just moved now with his family to Uganda last week, and is the assistant director at an orphanage in New Hope Mission, Uganda, where over two hundred orphans are being taken care of who have all lost their families due to genocide or AIDS. And I have seven grandchildren, and so family is very, very important to me also.

TE: That's wonderful.

RG: What's your first husband's name?

MAR: Bruce. My first husband's name was Bruce Anderson. And that's the Anderson part. And then he died in '92. And then I met a man whose wife had died suddenly of cancer in '91. And we met at the Frontiers in Education conference, and about a year or more later—the courtship was mainly done by telephone, two to three hours at a time, twice a week. And that's a great way to get to know someone. And we married January 2, 1995, and we have had a commuter marriage all of this time.

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Everything is relative. Our kids had grown. We each had our houses paid for. He had just become associate dean. He had a very good job, and we decided that we would just get together every weekend, which we do. And he's here at the conference with me. He flew in last night. So we either spend a weekend together at a conference, or I'm at his place in Kansas, or he's at mine. Southwest Airlines is great, nonstop. And to a single person this might sound like utopia. Hey, do whatever you want to do during the week, and every weekend you have this affair, this liaison, and life goes on. And so we're very happy.

RG: In what ways did Bruce support you as—a real turning point, I think, in being a female in your field. How was your husband supportive?

MAR: Absolutely. Both husbands have been absolutely supportive of my career. And so that helped a lot when I was going through some very tough times, to have my own husband as a sounding board in academia. And a husband now who is an electrical engineering professor at the University of Kansas. So I've stayed with academic husbands. And so it's very helpful to have a husband that understands what you're doing, and is a sounding board for you. And like Jim had been a [department] chair and he knows about the academic

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stuff and can give me really good advice. Both of them very supportive. And my first husband also was very supportive in there with the boys and helping. And everybody helped around the house and so I had a lot of support.

RG: Well, thank you both for coming in today.

TE: Thank you.

MAR: Okay.

END OF INTERVIEW