SWE GRASSROOTS ORAL HISTORY PROJECT

Jan Williams Interview

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This oral history interview was recorded October 14, 2009 at the Society of Women Engineers National Conference in Long Beach, California as part of the SWE Grassroots Oral History Project. A copy of the audio recording of the interview has been deposited at the Walter P. Reuther Library and Archives of Labor and Urban Affairs, Wayne State University. The interview may be used for research and educational purposes only.

Jan Williams is an engineer and manager at Sandia National Laboratories in Albuquerque, New Mexico. After receiving a bachelor's degree in Spanish from the University of California at Davis in 1978, she moved to Kansas City, Missouri and found a non-technical job in an engineering firm. Williams went back to school, earning a degree in mechanical engineering from the University of Missouri at Kansas City in 1983 while working full time and raising children. After a brief period at Bendix Aviation, the family moved to Albuquerque in 1985, where Williams was hired first as a mechanical designer, and later moved into management. She received a master's degree in civil engineering from the University of New Mexico in 1995. Williams is a member of the National Society of Professional Engineers and Fellow life member of the Society of Women Engineers, and received the SWE Distinguished New Engineer Award in 1994.

In her 2009 SWE Grassroots Oral History Project interview, Williams described how she eventually pursued engineering; the challenges of completing her degree and working while raising children, including bypassing professional opportunities; her involvement in the Society of Women Engineers at the section and national levels; and her experience on an overseas assignment in England.

- July 2016

TROY ELLER: Okay, today is October 14th, 2009. I am here with Jan Williams. She is a manager of the Weapons Integration Department at Sandia National Laboratories and she has been working there since 1985. She is a Fellow of the Society of Women Engineers and received the SWE Distinguished New Engineer Award in 1994. The interviewer is Troy Eller. We are at the SWE National Conference in Long Beach, California. Thank you for joining me today.

JAN WILLIAMS: You're welcome.

TE: To begin with, can you tell me a little bit about where you grew up and what your family was like?

JW: I am the much-younger-than-everybody-else last child in a family of six. (laughs) Grew up—born in Stockton, California, grew up in the Bay Area in a town called Alameda. So most of my siblings were high school or older during my conscious time, or gone, so I was sort of like an only in some sense. (laughs) [01:00] I am the only person in my family go to college, except later my sister got a two-year degree. But as far as, like, straight from high school, I'm the first person in my family to do that. Probably middle class. My dad was a white collar purchasing agent kind of guy. My mom did not work outside the home until I was fourteen, because she felt it was important to be home with me, and so did my father and urged her to do that, so. (laughs) And then they—and then she started working a little bit, I think to save money for college for me. So none of brothers—they're all blue collar. My sister went in the Navy for a while and married and had five kids so she has a very different life with a different generation, really, than me. So

although we love each other a lot, we never connected a lot. So that's, I didn't have a close sibling, really, at all. [02:00] I'm 10 years behind the youngest, except for me.

TE: Okay. Were you interested in math and science in high school? Or how did you develop—.

JW: I was pretty much interested in everything. I was good at writing. My English teachers liked me. I got basically all A's. (laughs) And I remember my Spanish teacher—I was ahead, accelerated in Spanish, and I remember her telling me one time, "The hard thing for you is going to be to pick what you want to do." And it was very prophetic. I did not know what I wanted to do. When I went to college I didn't have exceptionally good college counseling. Nobody looked at me and said, You know, you have a lot of across the board skills, you ought to think about math and science, you ought to think about engineering. No one said that to me. On that basis, I didn't do any career interest inventories. It's probably my own fault. But ended up going to the University of California, Davis mainly because my boyfriend went there. (laughs) [03:00]

And my dad died when I was a sophomore and I was on Social Security for dependents. And I ended up—I had been a math major and I was totally sick of it by my junior year and knew it wasn't the right thing for me. And I ended up majoring in Spanish. Graduated in '78 from UC Davis. Ended up through a long sequence of events in the Midwest. Ended up by complete serendipity and that strength of my math courses working at an engineering firm. And then after a

year or so there it was like, “Jeez, I can do what these guys do.” (laughs) And went back to school at the University of Missouri-Kansas City.

TE: Okay, Okay. What was it like to be a woman engineering student at Kansas City?

JW: This school was more of a commuter school than most. [04:00] There were not very many choices. If you lived in the Kansas City metro area you could go to Lawrence—University of Kansas, or you could go to the University of Missouri-Kansas City, which was actually accredited through [University of Missouri at] Columbia. It was not accredited for a full-fledged program on it’s own as part of the University of Missouri-Kansas City at the time when I went to it. But since I lived on the Missouri side and the in-state tuition was on the Missouri side, I ended up going there and working while I was going to school. So the first thing I did was actually picked up physics in junior college at night, because they had a night class, and continued to work full time.

Then that following year, 1980, I started taking my coursework for engineering. And I had all the liberal arts credits you can possibly imagine, so I didn’t need very many of those kinds of classes. It was just pure engineering for a couple, three years to get through that curriculum. And I was one of two women in a class of about sixty of mechanical engineers. [05:00] Some of the guys were really fun and nice to work with. Some of the guys were a little weird about it. There were some interesting ethnic situations with Middle Easterners, where they were very friendly and collected homework answers but you know, of course,

they wouldn't engage with me. I think that was probably not in their lexicon and not in their culture. (laughs)

And so—and I wasn't there on campus all the time, I was going back and forth all the time, from work to school, school to work, catching naps wherever I could in the back of my car. And, you know, working late on homework at night and that kind of thing. So it was a different experience than, say, if I had gone straight to engineering school, lived in a dormitory, you know, worked and got a degree with people my own age. [06:00] There were people from right out of high school to older than me by a lot in that class, so it was a different kind of experience, I think, than you might find if you went straight to an engineering school like Rollo or Columbia or the University of Kansas or something like that.

TE: Okay. Did you have any female engineering professors there?

JW: No. (laughs) I had to think about it because I've been to two or three schools. And because I know Deb O'Bannon, and Deb O'Bannon, of course, is a female who's there now.

TE: Okay, okay.

JW: It was a small program with actually relatively few professors anyway, so the chances in those days of one of them being a woman was slim. There might have been one in one of the disciplines like civil by the time I left, but I never had a course with her.

TE: Okay. Was that difficult for you? [07:00] Did you have any mentors who were helping you along or—?

JW: It's an interesting question. I think a lot of my mentoring came from people at work. I had a boss who was really supportive of me going on and getting this degree. And my husband was extraordinarily supportive. He knew I could do it and told me so frequently, even when it was hard. And I did reasonably well in my coursework. So, as a more mature student, you know, the second time through college and not living in a dormitory. Luckily I did not have kids yet, but having a house and a husband that felt kind of left out when you're working at homework all the time was not the easiest thing to do. But having a husband who was willing to pick up the slack and pay for tuition and that kind of stuff, you know, when I had a fairly limited income was an important factor in getting through the program, a very important factor. We've been married over thirty years now. [08:00]

TE: Could you tell me about starting the SWE section?

JW: In Albuquerque. You know, I was starting to think back of exactly what the catalyzing event was. I think that Margie Tatro and I probably started asking questions at conferences about how to start a section and—maybe around '87, '88. That would have been in the Kansas City conference and the San Juan conference. I gave a paper in '87. She gave a paper in '88. And we were both helping at the time the AT&T recruiting booth, because that's the company who

operated Sandia at the time. And she and I were actually both in the same business area of Sandia at that time as well, so we were pretty close.

And I think that we reached out and maybe got a list from headquarters of the people in Albuquerque and started contacting them and asking if they would be interested in forming a section. [09:00] And we got a hold of Ellen Hippeli that way, I'm reasonably sure. There was a woman named Deborah McIver who'd been a past president of the Golden Gate section who happened to be living in the area. I don't think she was practicing engineering at the time, but she lived there. I think we ran into Debbie Brunt that way. I think we probably found Shirley Mondy that way. There were a couple of friends that we just pulled into it that hadn't been members before. Stephanie Kuzio, a few other folks and that's. And a lot of us, a core of us were at Sandia, which made it easy to meet and talk and plan and exchange information. So that was actually fairly helpful. Even though we didn't want the section to be exclusively or predominantly Sandia, it tended to be in the beginning because of that. It helped us, I think, form the critical mass that was necessary to go through with the whole charter process. [10:00]

TE: Okay. Can you tell me about starting at Sandia? How did you come to get the job?

JW: After I graduated from the University of Missouri-Kansas City, a few months pregnant with my oldest son, I ended up working, continued to work at the place that I had been working while I was in school, Burns & McDonnell engineering in Kansas City. My husband got laid off from Burns & McDonnell and we realized it

was a risky business, you know—actually, or several people got laid off. He wasn't laid off yet, but we realized it was pretty risky having both of us working there in an economic downturn. So I started interviewing with other companies and I think I was eight months pregnant when I interviewed with Black & Veatch. And I was nine months pregnant and literally the day before I had Sean I interviewed at Bendix in Kansas City.

Bendix is part of the nuclear weapons complex. They build some of the mechanical and electrical components that Sandia designs to arm, infuse, fire, and deliver the nuclear core. [11:00] So there's an affiliation there between Bendix and Sandia. And indeed my husband lost his job and he worked another job for a while and that didn't work out and so we said, "You know, we have a very young child. If we're going to move we should do it now." And we started looking in the Southwest because we both love the high desert. We both enjoy the mountains and hiking and camping. So we targeted the southwest and we asked around at Albuquerque and Phoenix and Flagstaff and a lot of other places and it turned out because of the affiliation with Sandia I got the most interest there. I already had a security clearance, for one thing. Luckily they were looking to hire a few mechanical engineers in the facilities area that I had sort of specialized in, so. [12:00] And they're very particular about GPA and hopefully I had that, so I was able to get in there. And the rest is history. And we moved.

TE: Was it difficult for both you and your husband to find a job together in the same area?

JW: Yes. Albuquerque, and particularly at the time, you know, in a bad economic time—he's a businessman primarily, has a business degree. And he could not find any sort of equivalent job in middle management, which is where he was in Kansas City. It turns out that Albuquerque was very layered at the time, and it was a big hierarchy with a lot in the bottom in service jobs, a lot in the high-end tech jobs, and not a lot in between. You know, it was banking maybe, and not much administration unless you had the MBA, which he didn't have yet. So he ended up starting a business, which went on for some years. [13:00] Ended up failing but for lots of reasons that we know that we're not going to go into in this interview. [laughs] It's just too complicated. But he did end up having to start his own business, for lack of anything else going on, effectively.

TE: Okay, Okay. So what was your first position at Sandia?

JW: I was a mechanical designer in facilities. That meant that I was specifying equipment and piping and plumbing for HVAC applications, or for any kind of specialty piping. I ended up sort of specializing in cryogenics a little bit, cryogenic piping and that sort of thing. Did some more minor work on heating, ventilation, air conditioning and exhaust. Turns out there are a lot of laboratories at Sandia. [14:00] They have a lot of nasties. You have to make sure they're properly handled. So both toxic gases, things coming out of fume hoods, all that kind of stuff. So a lot of the work centered around those kinds of equipment and designs.

TE: Okay. When you started were there many other women working with you?

JW: Sandia was better than some places I had been. And yes, there were a few women. Some of them—I started at almost the same time as Margie Tatro and Georgianne Peek, who used to be Georgianne Huff at the time. They're both SWE members of our section. They've been there as long as I have now. Georgianne is still a staff member. Margie has risen to management levels above me to director—so it's interesting, we've had—and changed fields. We all have taken different paths. It's quite interesting. But at the time we were all in facilities and had been hired around the same time. So that was sort of interesting. (laughs) [15:00] And that was a core support group, I think, for me.

TE: Mm-hmm. Do you feel like you needed the support group as a woman engineer, or just as a beginning engineer?

JW: I think as a beginning engineer and a woman engineer. It was important in both cases. I had a mentor assigned to me who was a really cool guy, pretty outspoken, knew his stuff incredibly, and coached me not just on the quality of design but on pushing back on contractors and when they said, "We want to substitute something," and that kind of stuff. And knowing which vendors to call, how to get help out of vendors when you're looking at specifying something, but not too much help. And he was pretty helpful all around. And he was a fairly liberated guy in terms of—you know, he had a long-term partner, versus a wife. He had no children. [16:00] He was actually Austrian by birth, but you'd never know it. Very healthy eating—you know, he kept very slender. He was helping put his partner through law school at the time. I mean, he was not your typical guy. (laughs) Maybe for Albuquerque it wasn't too out of the norm. But it was

pretty much out of the norm—like, say if I had a guy like that in the Midwest it would have been unusual, I would think.

TE: Okay. (laughter)

JW: At that time, in the ’80s. So I mean—. I don’t know if I mentioned this to you ever, but the engineering firm I worked at when I first thought, “You know, I can do this—.” I went to the personnel department and told them what I was thinking of and the guy in the personnel department said, “Well, why don’t you just get your masters in Spanish and go teach?” (laughs) And my husband was furious when he heard that. I mean, he was just a good old boy and he didn’t mean any harm by it but that was your pretty typical Midwestern response at the time. [17:00] So it was a bit unusual. And that’s actually a quote from a relative of mine who happens to be a Catholic bishop in South Africa. When I told him I was studying engineering—he’s Irish—he said [in Irish accent], “It’s a big of an unusual profession for a woman, isn’t it?” (laughter) And the answer is, “Yeah.” And on top of which, you know, of course he thinks that women working is the demise of the American family because of his fairly—not only is he very Catholic, he’s very conservative otherwise. You know, even compared to American culture, generally. So yeah, he had a little hard time with that. (laughs) That’s a classic understatement from the Irish people. (laughs) “A bit of an unusual profession for a woman.”

TE: (laughs) You had mentioned earlier about working with contractors. [18:00] I’ve heard some stories about women engineers having to work with contractors,

which tends to be also a very male-dominated profession. Did you run into any problems along those lines?

JW: I would say a little bit but not as much as you would have thought. And I think it has to do with how you build trust with them and how you treat them as people with knowledge, and really important knowledge that you don't have as an engineer. So for me it worked out fairly well at Sandia, in particular. There was a point at which I transferred from the mechanical engineering and design to working in the field. So when there was a hold up in the field because something didn't fit or something in the drawings wasn't clear or the contractor had a question and asked for clarification, I was involved in going out with the inspectors who were generally, you know, really good craftsmen who had gone through the years and gotten a lot of experience. [19:00] I would go out and look at the situation with them and we would decide whether the claim was legitimate or not and how much we should pay the contractor for it, you know, and go through the negotiation. It was a very interesting job.

But I think by putting a lot of trust in these guys about their experience but demonstrating knowledge on my part—and we kind of had a mutual admiration society between us. I've had a couple times in my career, very early career, at Bendix, actually, in Kansas City. I remember walking—Kansas City is a very large plant. It's about a quarter mile long and it used to be a Pratt & Whitney engine—aircraft engine factory in the Second World War. And it had all kinds of—it's was like being underground all day, and you could just walk and walk and walk from one end. So I was walking down one of those hallways one time and

there were these two union guys, manufacturing guys on break and just staring at me as I went down the hall. And I just looked and them and said, “Hi, how are you?” You know, and they said, “Fine, how are you?” [20:00] And I said, “Pretty good.” And I had already gone past them, I’m still walking and he says, “Well, you’re pretty but I don’t know how good you are.”

TE: Oh boy. (laughs)

JW: And I didn’t even get it for like another fifty feet and I went, “Oh.” (laughs) So I didn’t bother. I just ignored it, you know. But stuff like that—maybe because I had a blue-collar upbringing in some ways with my brothers hanging around. There was a lot of cussing and chewing and smoking and in my house growing up. (laughs) I wasn't particularly sensitive. So maybe that helped me just ignore that. But I actually tended to build pretty good relationships with those folks overall, in the long run. You know, I didn’t have a lot of trouble with them, by and large. A kind of anonymous thing happened every now and then but when I got to know people they tended to be pretty good to work with.

TE: Okay.

JW: And I respected their knowledge greatly. Construction inspectors, in particular. [21:00] Very, very smart guys. Savvy. Most of the guys. (laughs)

TE: Did you run across many women in the construction field?

JW: Again, a few from time to time. They had an apprentice program at Sandia where they actually encouraged women to apply so there were a very few women craftsmen and women inspectors here and there. Not very many.

TE: Okay. Could you tell me about when you started going out in the field for Sandia, some of the projects you worked or—.

JW: Oh, sure. Some of them were small things. Some of them—a lot of them had to do with things where we were digging in the ground and things were found that weren't on the drawings. That happens all the time at a site that had its genesis after the Second World War. There are a lot of them. (laughs) And you'd come across pipes there where they're not supposed to be. And then when you were trying to work, say, a sewer line that has to have a grade on it, you can't really just go down and back up, so you have to reroute everything else and—. [22:00] Or you have to relocate the line and so on. And so those were the hardest ones, probably, to deal with, when you had in-ground utilities that had a problem of some sort.

Sometimes there were, there were easy things to look at. Like a contractor just wasn't looking at the drawing right and then you could just say, "Well, what about—just look at this, this says—" "Oh, I didn't see that." You know. But I think it was probably later in my career when I went from that into project management for construction projects that I started getting multiple larger projects—where I was coordinating a lot of other people that were doing the design and working on the project itself and in the construction area—that I had more exposure to

merger construction. You know, whole buildings being constructed and then occupied with very specific laboratories and equipment, and lots of gases, and different kinds of services that aren't real typical for commercial building. [23:00] So that would have come a little bit later, the more complicated kind of stuff.

TE: Okay. Did you plan, when you originally started, did you plan on becoming a manager?

JW: That's a good question. I would say no. But back to the thing in high school where I was sort of good at everything, I think people with those broad skills tend to have the skillset to be managers. And I started to recognize that I could do more than just sit and design, I think, early in my career. Probably the second or third year I was at Sandia I asked to take a speaking course. I asked to present a paper at the SWE conference. That was a huge step for me. I, later times in my career, asked to help to train people on quality engineering when that got to be a big deal, and that kind of stuff. And I tended to volunteer for extra stuff. So I knew I was more interested in the bigger picture of how things worked than just sitting at a desk for the rest of my life and drawing ductwork and specifying HVAC equipment. [24:00] I mean I just could never have seen myself—once I did it for a while I could never have seen myself doing design for the rest of my career. Not a chance. (laughs) I'm way bigger picture and way more interested in higher-level stuff. And that's what probably drew me first into project management and then into the management of the company, you know, after that.

TE: Okay. During this time you were raising your children.

JW: Yes. (laughs)

TE: How did that work out?

JW: Let's see. I had Sean in Kansas City, not long after I graduated, and I took three months off. And that's actually when I took the opportunity to change jobs. I had some interesting adventures in trying to work full-time and pump my breasts and store milk and so on and so forth. [25:00] I tended to use home childcare, and something relatively close to work so it was easy to get there and nurse and that sort of thing when he was young. Tended to use more chain kind of, you know, daycare later when they were older and also, you know, so they could get more formal pre-school and that kind of stuff. But, so we moved when—to Albuquerque—I think when Sean was a year and a half old, maybe. And I ended up using the Kirtland Air Force Base daycare, which presumably you had to—. If they were full you had to—like, they wouldn't give you a contract because if they were full they had to turn you down. But I took a chance and once he was ensconced they, you know—well, they never actually told me, "We can't take him today, we're too full." So I got lucky. (laughs) And he ended up going to preschool there for a couple years and he actually went to their kindergarten and then onto private school for a while, then to public school to deal with learning disabilities. [26:00]

This was a hard time in my life because my husband was fully ensconced in running his business, you know, practically 24/7. It's a slight exaggeration, but not much. (laughs) I mean he probably dreamed about it when he was asleep,

and then didn't sleep much. So I got to deal with figuring out there was something wrong, talking to doctors, talking to therapists, talking to all these people to try to figure out what was going on with him. And it took probably a good three years of, you know, talking to people and reading about things and going to different kinds of folks and finding out that he had this sensory integration deficiency, where auditory processing was very poor, tactile system was very poorly underdeveloped, underdeveloped or poorly developed and a couple of other coordination issues. He couldn't ride a bike, that sort of thing. [27:00]

So I spent enormous energy outside of work hours getting him into occupational and physical therapy, finally taking him out of this private school he was in because he just couldn't function. He needed all the help that he could get from special ed. And he was in a—and lucky for us they had a very special program at the time called The Twice Exceptional Program, which could deal with kids who were both gifted and learning disabled. And they were training teachers at the local university, and he had wonderful teachers, and it was funded by a federal grant that kind of went away about the time he didn't need it anymore. So it all worked out for us. But it was a hard time just dealing with all that. And it's one of the reasons we waited eight years between kids. We were just dealing with a lot.

TE: Right. Were you the primary caretaker of your children at this time?

JW: Yes, absolutely. (laughs) Yeah, my husband was totally sucked into this business. And he—no way was he very available emotionally or physically.

(laughs) [28:00] So I don't think he would think it was unfair for me to say that. (laughs) He is putting in his time now because he's a decade older than me and he's actually retired. So he's like—there's no caregiving at this point because we have a teenager. But I mean the last—since we went to England in '06, pretty much he's been the person who took the kid to school, picked the kid up, you know, dealt with a lot of things. So tables turn, you know, throughout a thirty-year marriage. (laughs)

TE: Right. Being the primary caretaker early on in your career, did that inhibit your career at all? Did it prevent you from progressing more than you could have, do you think?

JW: I think any woman who says it doesn't is probably kidding herself unless she really is superwoman. And I'm not. (laughs) [29:00] I know that male managers have—behind closed doors say, "What about so and so?" "Well, you know, she's got that young kid." And I'm not saying that in a mean way. They're just—they're trying to be helpful, in fact, by not putting too much on you. And I am very—I'm a stickler now as a manager about saying, "You know, guys, you ought to give her that choice." (laughs) Because I wouldn't, you know—. And they did at times give me choices where I said, "No, I'm sorry, this is a really bad time."

A prime example was the first time I got asked to bid on a management job. It was right after Ryan was born. I was working part time. I was nursing him. And they wanted me to be the manager of all those group inspectors doing the field work, weekend work, Christmas break work. And I called the director and I said—

you know, and I was on the maternity leave at the time. And I said, “It’s a great idea and I’m really flattered but the timing is bad and I just don’t think I could put a hundred percent in for you on this kind of a job, so I have to say no.” [30:00] He said, “Well, I was afraid you were going to say that but I thought I would ask,” which I always appreciated. I just couldn’t be anything less than honest with him or myself at that point in time—a newborn that was nursing, you know. There are some jobs you can get away with it, especially nowadays with more telecommuting and that kind of thing. And we didn’t have that in those days like we do now. So I think I did the right thing by postponing.

The other thing is, I think I did myself a favor because at Sandia you really have to have a master’s degree. You really have to have a master’s degree to go anywhere. And had I not gone ahead and opted for a program a couple years later that allowed me to work part time while I went fulltime to graduate school and finish in a year and then went into management, I don’t think I ever would have gotten back to it. And I would have been stuck in facilities. I wouldn’t have been able to migrate to different parts of the company like I have. So I’m really excited that, you know, in retrospect I can say it was the right decision and I’m glad I got the master’s degree before I tried to do management. [31:00] Because there’s no way, once you’re a manager, to go back to school. It’s very, very hard.

TE: Okay, okay. At the time were you happy with that decision? Or was it difficult balancing everything?

JW: It was disappointing in a way because I really wanted—I knew I wanted to be a manager someday. But I had to be true to myself, and I'm just the kind of person that has to do a really good job. I'm not a halfway person, so. (laughs) And I knew I couldn't. I would be too obligated to leave right as soon as 4:30 came or whatever. And I just didn't want to do that to myself or to them. So it's probably too strong to say I was resigned to it, but—I mean that conveys too much acquiescence to the decision. But it was a realistic view, I think, instead of "ever-the-optimist," which is what I usually do and then commit to too much. (laughs) [32:00]

TE: So while you were working and raising your children you were also very active in the SWE section. (laughs)

JW: My husband has a joke about being a SWE widow during the time when we went to the '97 conference. (laughs) Or widower, I should say. But yeah, I always felt passionate about that and I think it's a function of being a re-entry student in engineering and not having had an appropriate set of advice early on. Debbie Brunt and I both shared that. We both had different degrees and we both went back to school to get engineering degrees. And we both happen to be mechanical engineers, too. But she is now the director of the New Mexico Gas Company's, you know, all their engineering. So she's done really well. [33:00] But we both feel strongly that, man, I wish somebody would have told us sooner about this and in a way that we could grasp and understand.

I mean somebody—I think my dad actually may have mentioned engineering to me. The only engineer I knew was a guy who sat in front of a drafting board at his office and it was like, that doesn't sound like fun, you know. (laughs) So I just didn't—and I just didn't have a clue what engineering was and what engineers did or what I'd have to do to get there, any of that. Nothing like that had been ever presented to me in any way, shape, or form, so. And I had no role models in my family, obviously. I didn't have any people who had college degrees, so it just wasn't easy, you know, straight from high school for me. And I wished I'd had more of that.

So HEOP came along, the Higher Education Outreach Program. We latched onto that as a section and did a lot of work on that with bunch of girls, taking them from eighth grade all the way through high school. And to try to influence them, make them understand, you know, give them some understanding as to what engineering really is. [34:00] It's problem solving, it's using your talents in math and science and applying it to cool problems, you know, that need to be solved. So kids don't get that, you know. They're getting a lot more now. I have a great-niece in Florida who's in a gifted program in the second grade and they have an engineering unit. We're talking—it's very cool because then she'll understand. I'm sure they're not going to—my sister said, "Well, what are they going to teach her? Rah-rah-rah." And—that's her grandmother, you know. And I said, "Well, Judy, they're not going to have her do engineering problems or anything, but they're just going to probably introduce principles like, Where does power come from? When you turn on a faucet where does the water come from? How do we

know it's okay to drink?" You know, those kind of concepts of—there are people that are making your life safe and secure and livable, you know, comfortable. So most—the public doesn't get that. [35:00] Engineering has a real problem, I think, generally, with its public image. In fact, with my work with the Environmental Scan Committee, there's actually an article about that, and how people are trying to improve it.

TE: Yes, okay. What other projects did you work on in the SWE section? In your—.

JW: Certainly certificates of merit. One of my first things that I ever did was in the Kansas City section. Right after I graduated I helped do a career day where we brought students in from several student sections. And we bussed them around to different companies and showed them what the companies do, and it gave them some background for thinking, What do I want to do when I graduate? So that was—and Region I, so the University of Missouri Columbia came, KU came, K-State. Seems like we had somebody even from Nebraska or Iowa that came down for that. [36:00] It was pretty cool. But just doing all the arrangements and logistics and calling companies, and getting to hostess was part of that gig. (laughs) That was my very first kind of career guidance experience, I'd say, as far as putting on an event.

TE: Okay. While you were at Sandia, how did they support your involvement in SWE? Or what did they think about—?

JW: So when I was a junior designer I had to go strictly by the rules, which were you had to give a paper or be a committee chair, you know, really a national

committee chair to get your way paid to a conference. So that's how I ended up going to the '87 conference, my first one. I said, "Okay, I'll do a paper." (laughs) "I'll meet the letter of the rules." And they sent me, and even though the training money was sort of limited. But that was how I got to my first one. [37:00] I ended up working on the recruiting in '88 in Puerto Rico, but the optics of it were very bad. And Margie had written a paper and she was already getting her way paid. And they just couldn't deal with that, two people going to this conference in Puerto Rico. So I actually talked them into—not paying for it. I paid for it myself but they actually, you know, gave me credit for being out of the office on business because I was helping with the recruiting, if I'm remembering correctly. Then I was effectively traveling for the company, just not asking for reimbursement. Something like that.

So, and then from then on it just got easier, depending on where you were working, at a more supportive—things just got different by the time I became a project manager. It became actually a better idea to go and network at these things, I think. And I also had a more supportive boss who was really—he had daughters. [38:00] We'll talk about that. (laughs) Bosses with daughters are very supportive, especially daughters who they want to aspire to something and, you know, and really have a lot of potential and are very smart. And many of them are because they often have at least one PhD parent, if they're the daughter or son of a Sandian, so. (laughs) It's an interesting phenomenon, but a lot of the most, the best mentors I've had and the most supportive managers I've had have been men with daughters.

TE: Okay.

JW: I'm not sure I finished the last question, sorry. Kind of sidetracked.

TE: (laughs) Sandia supporting your—

JW: Right. It just got easier, and when I became a manager I could just say, "I'm going." Pretty much.

TE: Okay, right, right. How did attending these SWE functions and participating in SWE events and leading your SWE section—how did that affect your work, or affect your skills, or—? [39:00]

JW: I think it was the reinforcing agent for, I have this broad skill set that I think I can do more with. So I think it helped lead me to the management track, for sure. And not only acquired the basic skills. I just realized, Hey, this is my strength area. I really need to follow my strength area. I don't even remember which year it was, we had this woman who came and talked about her book, *Soar with Your Strengths*. That was very—my mother bought me a copy of the book. My mother was at the conference with me. She came to several conferences with me. She had no idea what I did for a living, but she was so proud of me. (laughs) You could always count on mom, you know. She was probably my biggest cheerleader.

TE: Right. (laughs)

JW: Anything I chose to do, you know, she was very proud of. So it was way cool. But she bought me a copy of that book and I realized, You know what? I need to do this and my strengths are not sitting at the board doing this design. [40:00] I mean I can do it, but so can a lot of other people. I can do more. I can do broader. I can see bigger pictures than most engineers can see. I can write better than most engineers. I mean you can ask Anne [Perusek] if that's really true, but I think it is. (laughs) She's published my work enough, I think she'd probably admit that. (laughs) It's often hard to find engineers who can write worth a darn, so I knew that was probably where I wanted to be.

TE: Mm-hmm. Okay, okay. You were involved in a lot of other organizations, too, outside of SWE. Can you talk about some of those organizations?

JW: Well, first of all, I think professionally it always was important to me to be in NSPE. Or, you know, whatever society of the state I was in. You know, the NSPE affiliate, because I wanted to—I was very, very proud of passing the P.E. exam and it was my credential, my only credential until I actually got a master's degree, honestly. [41:00] And so even though I've never stamped a drawing in my entire career, I've always been extremely supportive of that organization. And there are ties between that organization and SWE that we've taken advantage of. There's the New Mexico Engineering Foundation, then, is the heart of that in a way, in that they're the 501(c)(3) entity that handles some of our scholarship funds, actually, that we raised through the '97 convention, among other things. And then, so I got on the board of that and was involved in that. It was a natural kind of progression, I guess you would say, and a natural affiliation.

Then there were some real outliers that had to do more with what my kids were involved in, like the Cub Scouts. (laughs) And the Albuquerque Boy Choir and things like that. I thought, you know, if my kid'' going to be in these things I want to contribute as a parent. So I tended to get involved, maybe more than I should have in some instances, but that's—. [42:00] I tried to do at least one thing like that and engage with my kids, in a way, so that they saw what responsible parents do, I guess. And maybe it was—I don't think I consciously role modeled that for them, but I needed them to understand that if they were going to be involved in something I was interested in being involved, too.

TE: Mm-hmm. Okay. Were you involved in, oh, the New Mexico Engineering Foundation?

JW: Foundation, yeah, that's what I was talking about being the, it's really the—it's affiliated with the New Mexico Society of Professional Engineers, but it's the 501(c)(3*)* entity that handles scholarship funds for a number of, you know, a lot of the different engineering societies in New Mexico, and individuals who want to just contribute yearly as a memorial scholarship or whatever. And that was—you know, because SWE had—. So my whole vision about the conference in '97, back in '91 was, You know what? We are a new section but if we aspire to this it'll help us grow and it's a real good opportunity in that sense. [43:00] And Albuquerque's a great place and if we can help the community and—you know, because it had this big convention center. And all these things, you know, in my mind. See, I'm always thinking up there and these are—.

I don't think, I may not have thought through all the pain and agony of what it was going to take to actually put this conference on, but—. (laughs) Which at the time, although Jeanne Elipani and Show Management were involved, they weren't as involved as they are now. And we didn't have the conference programming board that we have now and so on. So we had a different, less and less overarching organization. They talked about things but they didn't set policy and set schedule and set all that stuff. We had a lot of more leeway, and in some ways a lot more decision-making to put on that conference. It was quite challenging. So I was like the visionary and we had the triumvirate, was Debbie Brunt and Margie Tatro and myself. (laughs) [44:00] And Margie was the doer and the go-getter, and Debbie was the money person, and I was the visionary that—. The career enhancement series thing sort of started that year, that we put a name to it and started marketing it, you know. And looked at, you know, How do we give credits? And I don't think we ever finished it, but I mean that concept got started that year. That was '97, was the first year we did that. So that was the kind of stuff I was always, you know, throwing these new ideas out there and trying to get these new ideas going. And then let someone else implement it. (laughs) I'm sort of famous for that. (laughs) But yeah, I do a lot of talking to people to get them to do this convention.

And Margie was up for it. Debbie was up for it. But I remember getting this card from Ellen Hippeli after we finished. She was our protocol chair. Perfect person for that, having been in the Air Force, and really, protocol's very important there. She wrote me this note that said, "You know, when you first suggested this I

thought you were crazy, but I have to tell you it turned out really, really well." [00:45:00] You know, she was—she would never have said that to me beforehand, you know. But she said it afterwards, which I was like, "Are you kidding? Really?" (laughs) And she went along with it. She was great. But it's kind of funny, I got that from her afterwards. I wish I'd kept that card, I don't think I have it.

TE: It's in the archives.

JW: Is it really?

TE: It is in the archives. (laughs)

JW: That's fantastic.

TE: I can send it to you. I'll send a copy to you. (laughs)

JW: Oh, I'm happy to hear that.

TE: Yes. (laughs) So you were talking about the career enhancement series. Why did, or how did you get the idea to do that? Why did you want to start?

JW: Well, I think because, partly because other societies were doing it. And SWE suffers a little bit—it has in the past, at least—as a kind of a secondary organization, you know. Partly because it is 501(c)(3*)*, and it's not quite seen on the same par as NSPE and, you know, certainly not IEEE and ASME and ASCE and those sorts of organizations. [46:00] And I thought, you know, if we're going to provide the service to people—we want to make convention attractive. There

were lots of reasons. We want to be more, you know, one of the players. We want to be on a par with what other people are doing. And by the way, Betty Shanahan, having been on the ’95 planning committee, I was starting to affiliate with her, you know, in the years leading up to our conference by virtue of her involvement in the ’95 conference in Boston. We met each other. Her, Anne O’Neil, some other people. There were a lot of really powerful connections that were made during the planning for the conference, leading up to it from ’91 all the way—when we worked on the San Diego conference all the way up to the one now. So it was kind of interesting. Oh God, I lost my thread again. I hate this.

TE: It’s the planning series and why you wanted to start it.

JW: Yes, the career enhancement series. And so there’s credibility, and reasons for people to come to conference, and something they take back to their employers and say, Look what I got out of this, and all of those things. [47:00] And just the whole marketing aspect of conference. That was sort of a seed that was planted by virtue of having worked with these previous planning committees and with Jeanne Elipani and with Betty, you know, as a consummate marketer and planner. So I think all those things just kind of came together and I said, you know, “Well, why don’t we just formalize this and then we can charge for them.” (laughs) I mean, we’re not charging as much as other people are charging, but we ought to charge for this. These are good sessions, and professional sessions. And it just has continued to kind of get honed and get more and more professional and so on and so forth.

TE: Okay. I have listened to oral histories that were—of women engineers who said that in the 1970s and 1980s there weren't really any other places where they could go to get more training and upward mobility, more training on progressing into management positions. [48:00] Do you feel like that was the case when you came up with this series? Or—.

JW: I didn't have upward mobility particularly in mind. I had—generally there's certain skills that cross disciplines that may not be available at, say, an IEEE or an ASME or an ASCE [conference] that we could—that could be our niche market. I think I maybe thought of it in that way. Not so much as women in particular need this. Although I'm sure in the thinking, as we've thought about the courses, which you know, I guess I'm not the doer, somebody else was doing it, you know, helping think up the courses. Shirley Mondy was way involved in that, for example. They probably realized, you know, we probably should—you know, there's a unique niche here that we can fill for women that aren't getting this.

You know, and then a few years later it's like, We don't have enough mid-management or mid-career stuff. And so we started putting more mid-career stuff in. [49:00] So those are the kinds of things that came up, I think, at the predecessor of the conference programming board, and then the conference programming board. When people were looking back and seeing what worked, what didn't, and what else should we be doing, that probably folded into the thinking for the next year. Hey, you know, we're talking to young people and early career people, and we don't really have anything for mid-career and late-career people to do at these conferences. (laughs) We ought to be addressing that.

And so I wasn't responsible for that thought pattern. But I think just setting it in place, you know, it gave you a formal mechanism. And then with formal feedback from the conferences you could start seeing, okay, we have gaps here. We have members that aren't being served. So I think that probably helped. It was a seed, not anything I brought to the table specifically. Or, I was not motivated by that particular thing in the beginning.

TE: Mm-hmm. You've also volunteered on several committees for SWE and Magazine Editorial Board, and served as director. [50:00] Why did you volunteer to get involved in national SWE and running the Society as opposed to doing outreach? Why was that important to you?

JW: That was partly interest and skill set again, and looking at what do I really like to do? Where can I really have an impact? So every job I've ever had at Sandia, I always asked myself, "Do I have a unique skill set that brings something to the table that other people can't bring or don't bring as well as I could?" And that's always been important to me when I take my next job. Like the gig in England. There are very few people who had the right background and experience at Sandia that do what they wanted done, and so that was really exciting to me. And that's how I pick my SWE jobs. (laughs) There's a pretty unique skill set, and I'm sure Anne will tell you this as well, of people that sort of get identified to be on the editorial board. [51:00]

There are a couple, three, four committees I think that are like that in SWE, where we don't just take volunteers. We sort of actually ask people or screen

people or realize that there's a fairly specific perspective and skill set that needs to be brought to the table to do that job. And those are the jobs that I have targeted. First, by generally writing for the magazine early in my career and getting comfortable with that. And then later sort of by virtue of knowing Sue Parsons and Alexis Swoboda, who were chairs from past, saying, "You know, I think that's something I could do and would like to do and could add value." So I would position myself and say, "Okay, you know, if you're interested I'm interested." And it all worked out. (laughs) So I've done a couple, three different committees. [52:00] They tend to be strategic and broad in perspective, because that suits my general job preference in my real life whatever, my professional life. So this is part of my professional life, and the skills I acquire here can complement that, and the skills that are part of my job can complement this, and it all works out.

TE: Okay. Have you been active in ASME, or—?

JW: I have not. I had a bad experience in the Kansas City section early on when I was a student. "Bad experience" is probably a strong word. I had a less than thrilling experience from the good old boy network when I went as a student to some of their meetings. I tried going to the meetings even before I graduated, because they tended to invite our student section. I was in the student section of ASME. And I actually did join it, I think, for a year or two after I graduated and I just realized, you know what? I don't get anything out of this. I don't connect with this. [53:00] I'm not doing straight mechanical engineering anymore. I'm just going to drop this.

And then when I was in the civil engineering program for my master's degree I tended to be affiliating with ASCE for a while. And once I actually stopped doing the construction stuff I didn't feel much of an affiliation with that, so I sort of—. And they were, ASCE has a hard time balancing, I think, all the different kinds of civil engineering. The local ASCE section doesn't always give a lot of view to the construction end of things. They're more into maybe the consulting, highways, transportation, kind of the end of things that doesn't, you know, spend a lot of time emphasizing construction. They've gotten better about that, but I just didn't find a lot to connect with.

The NMSPE, which had a variety of things and more global topics, and SWE have always been more attractive to me in that sense. I've belonged to different technical societies through my career. [54:00] I belonged to PMI for a while, Project Management Institute. My employees are encouraging me to join INCOSE now because I've got a bunch of system engineers in my group now and I'm personally not trained as a systems engineer, formally. So I may do that. But, you know, because it's the right thing to do because it helps with, you know, some of the linkages we're trying to make in bringing expertise. But I haven't ever felt as comfortable in those straight technical societies as I have in SWE and NSPE.

They're kind of—you know, you can look around the room and think, "Man, this is an old boy network, too," but it's changed a lot in the last 10 years in Albuquerque, the Albuquerque section at least. And they've always been very egalitarian and cool about having women around. They've had women presidents

of their board in New Mexico and all kinds of stuff, several. (laughs) So I think we've found it beneficial, as SWE people, to be affiliated with that group in many ways, because we have a lot of similar goals. [55:00]

TE: Okay, okay. Could you tell me a little bit—you've mentioned going to England, was that two years ago?

JW: Yeah, I went in October of 2006, came back in July of 2008.

TE: Oh eight, okay. Could you tell me a little bit about taking on that assignment?

JW: Yeah. That was another sort of event of complete serendipity, or that's the way it felt at the time. Sometimes I think things happen for a reason. But through my career at Sandia I have worked for a man named Don Cook. He was a director of several things, including at the time the nuclear weapons infrastructure program. Sandia gets a pot of money in from the Energy and Water Appropriations Committee, and then it's allocated for various things. One of the things that the nuclear weapons program is responsible for is maintaining the infrastructure and all the capabilities that they need to do their work. [56:00] So there's a connection between what kind of work you have to do and what kind of facilities you need to do it, what kind of utilities you need to have to underpin that backbone.

So that's the kind of work I was involved in for about the four or five years before I went to England, was in the nuclear weapons business area, working infrastructure issues on behalf of various directors. And he was one of them for a couple of years. Great guy, put a lot of faith in me. Basically made me his deputy

and said, “Go take care of that.” (laughs) And I think I probably did a reasonable job. And he ended up first on a bid team for Lockheed Martin to bid on the Los Alamos contract, which they lost. So he was an executive without portfolio at that point, because he was supposed to have been a named executive on the Los Alamos team if they got the contract. But he’d already resigned from his other job at Sandia and he was actually working just for Lockheed Martin, straight Lockheed Martin, parent company. [57:00]

And at the time the atomic weapons establishment was looking for a managing director and they hired him, and he started there in February of 2006. At the point at which he was getting there, Parliament was just deciding that they were going to refurbish their nuclear weapons infrastructure. In fact, we’re the only declared nuclear power that hasn’t refurbished its 50-year-old infrastructure completely. (laughs) Yeah. So Congress has some issues, and they’re entitled to get answers, and they’re waiting for some of those answers before they’re ready to move forward. They want to know what the stockpile really has to look like before they want to put a lot of money into it. I got that.

But Parliament had made a decision. They were talking about a 17 billion pound investment over twenty years. And basically we have eight sites in our nuclear weapons complex across our nation. [58:00] Six of them—the capabilities of six of those sites are represented on two sites ten miles apart in Britain. It’s a less complicated infrastructure because they only have, really, one active weapon in their stockpile, but we have several. So granted it’s simpler, but they’ve managed to figure out how to consolidate infrastructure a lot more than we have. We had

ours spread out for lots of reasons. And then politically it's pretty hard, you know, to tell the senator from Tennessee, "Sorry." Or the senator from California, God forbid, you know, "We're going to shut your site down." That just doesn't work anymore. (laughs)

But at any rate, so they had these two sites very constrained geographically and hemmed in by development that had come since they had been nothing but an airstrip in the middle of nowhere, in West Berkshire. And they were going to build one of everything, but they hadn't given very much thought to logistically how they were going to do that. [59:00] How they were going to bring in truckload after truckload after truckload of concrete during a pour. How they were going to interconnect the buildings. How they—you know, were they going to face each other? Is there going to be a standard architecture? What's the plan? How are you going to make the site look? What's the twenty-year objective for what you want this site to look like after you invest all this money? Not a clue. (laughs)

And it's not that the people there were incompetent or anything like that. It's just that they hadn't built anything new in thirty years. They didn't have the people on staff to do that kind of thinking and that kind of work. They had a planning group that had no architects and no urban planners. Not one by degree. You know, they've learned through osmosis. But they had certainly had no one who had been faced with a major capital reinvestment opportunity to do an urban re-planning, urban redevelopment, essentially, we'd call it. A campus redevelopment. It's very much like a campus, you know, on like a technology park or something like that. [1:00:00]

And it's a very foreboding looking site. I mean they have this above-ground steam pipe with steam leaking from it going all around and this double, triple fence around it and people look in and go, "Hooo." It's creepy, you know. It's just flat creepy. (laughs) And nobody had thought about what that looks like. They have people that drive their cars onto the site every day. Every employee drives their car right onto the site every day. Why aren't they parking in the perimeter and reducing the threat? Just strange things, just from habit and of not having to think about these things and not being in a growth mode.

And then there's the whole sustainability picture of energy consumption. If they built one of everything and never thought about the big picture of how it all went together and started, you know, collecting like functions and figuring out how to leverage the waste heat from one, you know, to power another, then—the local utility actually can't provide that amount of power. (laughs) [1:01:00] I mean, they just don't have the infrastructure to provide that level of power for all the onesie-twosie buildings they wanted to build, if you just add up all the energies to do each one. You need a different paradigm going in before you build these things. So that all came together in the plan that I helped put together the years I was there.

I mean, will they ever actually build everything? Will they ever actually do that? That's the bane of planners and why engineers almost universally hate planning, because—and architects do better at that kind of job because engineers like to see the results of their work and it drives them insane that you think of a hundred things and only two of them ever get built. (laugh) I don't have a problem with

that but most engineers do. So it's odd for an engineer to be in, actually in that kind of field. That level of site planning, which is a job I had done at Sandia specifically. It was one of my first manager jobs at Sandia, but on a smaller scale because there was only one site doing only certain things in the nuclear weapons complex. This was two sites doing everything we do in the nuclear weapons complex, and in the United States. So it's a totally different perspective. [1:02:00] A smaller scale, but much broader scope.

TE: Okay, okay. I think we're getting—well, we're past an hour now, so I think we should wrap up. Is there, I was wondering if you could tell me the story about your son wanting to know—. (laughs)

JW: Could men be engineers? (laughs)

TE: Yes. (laughs)

JW: So my son—so in the old days, meaning when I first started going to SWE conferences, they were held in June after school got out. And I often took him with me to these SWE conferences when he got to a certain age because his father was busy and, you know, I was off doing my thing, and it was just easier to take him. There were some that he came with me, some that he and my mother came with me. He and my mother and my aunt came with me on one. You know, it was always this big party, I guess, from—so let's see, what year? [1:03:00] Eighty-eight he actually stayed with my mom. My mom babysat him along with my brother in '88. But probably in '89—he was about six—was the first one that he actually walked into and looked around and attended for a little while. He

didn't—I had stopped into the '89 conference, I had relatives, you know. I didn't stay at the hotel actually while I was there until later in the week. And I had other relatives that were watching him so he didn't come to the hotel with me full-time or anything. But he came into the hotel, which was in downtown Oakland, and looked around and saw people and stuff.

And let's see, the next year—no, he didn't go to Oakland in—. Or New York in '90? No, '90—what was '90? It was New York. It was New York because we did the pre-publicity for '91. He did not come on that one, but from '91 on he came to many. So from a—that was San Diego, of course. [1:04:00] And I remember he was hysterically laughing in the aisles when the hypnotist worked with—there was an opening event in the evening where they had a hypnotist come in and do some fun stuff. And he just died laughing. And so he and my mother and I shared a—and my sister was around because she lived in San Diego and we all hung out together. And he went to that one. He went to—'92 we missed because Ryan was born. Ninety-three he went to Chicago, so I took the baby because he was still nursing. Jean Hoppert's daughter babysat for us, because it was Chicago and they lived there at the time. She was still at Mars, M&M Mars working. She wasn't retired. And we had a great time. We had so much fun.

I think I was Achievement Award coordinator that year. So I sat head table at the Achievement Award banquet. [1:05:00] The baby woke up when I went back to the room after that, so I put him in a baby carrier and here I was in this evening dress, had him in the baby carrier and went to the Over-the-Hill suite. (laughs) He loved it, you know, thought it was great. (laughs) So it was kind of fun. We had

fun stuff. And that was the little guy, you know, with Sean in tow. So he and his brother went to, he went to ’91, ’93, ’94 —’95 Boston, ’94 was Pittsburgh, right. Started going to major league ballgames when we were in these towns that had major league stadiums. Ninety-six, Portland, he and my mother. Ninety-seven, Albuquerque. He was actually a volunteer. He helped stuff all the bags. (laughs) Ninety-eight, Houston. ’99, Phoenix. 2000 Denver. He took care of his brother quite a bit at that one. Two-thousand-one, D.C. That one, he also took care of his brother at that one. (laughs) [1:06:00] Two-thousand-one. Oh, that was 2000. Two thousand was DC. Two thousand one was Denver. Two thousand two?

TE: Detroit.

JW: I think he stopped coming at that point. But he’s been at a couple of regional conferences in Albuquerque. So we had this icebreaker, you know, where he—this is another story. I’ll get to the other one in a minute. But I think he has probably, had been to three or four of them, two or three of them by the time he said, “Mommy, can men be engineers, too?” (laughs) He was—Shirley Mondy had designed this icebreaker bingo thing, and one of them on there was “Have been to 10 or more SWE conferences.” And he was like 17 or 16 at the time and he actually qualified. (laughs) So he was going around doing the social icebreaker thing going, signing that square for people and they were just like, “Really?”(laughs) So that’s bizarre, that’s another bizarre little story. [1:07:00] But so Ryan didn’t get to do that because they changed the date and he didn’t get to come to nearly as many. He doesn’t remember being at the ones he was at too much but he’s—. (laughs) He’s not quite as indoctrinated in the way Sean was

and, you know. He knows Anne O'Neil from that, you know. He actually won the door prize at one of the ice cream socials and it was a beautifully tapestry-decorated Day-Timer and he was, like, twelve, you know. "What am I going to do with this?" (laughs) Anne O'Neil bought it off him for twenty bucks, so he was very excited about that trade.

TE: Oh that was nice. I'll bet he was. (laughs)

JW: Because in those days they didn't, you know, we didn't have Outlook on the web, you know. Most people didn't have any kind of computer calendar or Blackberries or any of that stuff. So that's what people had. They had those Day-Timers. (laughs) Or Franklin Day-Timers or whatever, yeah. So yeah, she was happy, he was happy, good trade. (laughs)

TE: Okay. [1:08:00]

JW: It's kind of fun the stories that have come out over the years.

TE: Mm-hmm. Is there anything else that you want to share before we wrap up?

JW: Let me think about it for a minute. I think I want to re-emphasize how important it is, the support I got from my husband over the years. That's just been extraordinary. I think he realized he got a good deal out of this. He got to retire at sixty-two, because I'm still working, bringing home the bacon, you know. (laughs) And he gets to play with photography and that kind of stuff, so he's—it worked out well for him in the long run. It was a good investment on his part. (laughs) Keen businessman.

But I really appreciated him allowing me to go to school, and you know, encouraging me to go to school, more correctly. Where when my sister got her two-year degree, it's kind of like her husband "allowed" her to go to school. He's southern, he's a very nice man, believe me. Southern upbringing. [1:09:00] Oldest in his family of nine, or something like that, and the oldest male. And Southern family, you know, is very—a little bit authoritarian, you know. And she has a very different kind of—she's from a different generation and so I recognize that, and I want to make that clear, too, because he is a great guy. But when it came time for her to think about going to school on the VA bill, because she'd been in the Navy, she had five kids in school and they—she had to not leave before 9:00 and be back by 3:00, and you know there were rules involved in letting her do this, you know. It was subtle but it was, to me, weird in my generation. (laughs)

And I didn't have to deal with that, even though my husband's quite a bit older than me. He was happy for me to pursue that. He knew it would be a good idea. So I give him a lot of credit for that, you know. Kind of a traditional guy raised in the Midwest but was—he didn't have any trouble coping with that, thank goodness. I remember, I think, Millie Dresselhaus, something I heard her speak at, said, "Choose your spouse wisely." [01:10:00] It's one of the best pieces of advice she could give women, you know. I thought that was kind of interesting.

I would do it again. I did it sort of the hard way. (laughs) I just—that's why I'm so passionate about women having the opportunities at least presented to them. The community that I live in, it is heavily Hispanic, it is heavily traditional, in terms

of culture. I know people that, I worked with a guy who talked to me about how he was so upset that he'd wanted his son to come with him to the do-it-yourself store and he didn't want to go. He was more interested in staying home. And his daughter said, "I'll go." And he said, "No, no, you stay home with your mother." And I went, "Ahhh!" (laughs) If she wants to go let her go, you know. Like she's interested, you know. Foster that.

And the other thing that I noticed, I just read the other day that New Mexico has the second highest teenage pregnancy rate. [1:11:00] And the pattern that I see in a certain part of our culture in the state is women get pregnant, get married, end up being the primary breadwinners in the family, you know, and the husbands are the ones that have trouble staying in work and, you know, that sort of thing. It's a weird pattern. And so they end up with all this responsibility but not very good wages and they really have to pull themselves up by their bootstraps. Or they could also be very dependent. They have a lot of kids and they're dependent on this guy to bring home the bacon and—. (laughs) I think the thing that engineering brings to women and cultures like that, you know, women of Hispanic background, is that level of independence that they just don't naturally experience or get encouraged to pursue or exposed to, generally. You know, I hate to stereotype but there are—that stereotype is pretty prevalent in our state and I mean I've seen it firsthand so I think I can, I feel comfortable saying that without prejudice. [1:12:00]

And I just think what engineering brings to women is a certain level of independence, of—I can drive the car I want. I can buy something if I want it. I

don't have to ask permission. I can move anywhere I want to. I can—it's an incredible independence that a lot of women don't even dream of. And I'd like to continue career guidance in whatever form, whether it's working at the national level of the Society or working directly with young women, which I still do—more one-on-one now, with NAPPR(??) girls, and with girls that go to the school that my son goes to or that sort of thing, work with the college counselors there, that sort of thing—more than doing certificates of merit and some of the MATHCOUNTS or that stuff. I tend to not do those group things because they're on a specific day and I may or may not be in town and so on. [1:13:00] So I do my own thing kind of more, and more individual one-on-one. I've got a lot of great-nieces growing up now. I hope to influence them. So that's I guess why I still do it ,and I'll do it probably for the rest of my life and be involved in SWE.

TE: Okay.

JW: That okay for a summary?

TE: Absolutely. (laughs) Thank you so much. I've greatly enjoyed it and—

JW: Me, too. Thanks for asking.

TE: Absolutely.

END OF INTERVIEW