SWE GRASSROOTS ORAL HISTORY PROJECT

Jill Tietjen Interview

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This oral history interview was recorded as part of the SWE Grassroots Oral History Project on October 14, 2011 at the Society of Women Engineers WE11 Annual Conference in Chicago, Illinois. 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.

TROY ELLER: Today is October 14, 2011. This is an interview with Jill Tietjen. This interview is being conducted at the Society of Women Engineers National Conference in Chicago, Illinois. This interview is part of the SWE Grassroots Oral History Project, and the interviewer is Troy Eller. Jill is a senior life member and a Fellow of the Society of Women Engineers. She served as the Society's president in fiscal year 1992, and received a SWE Distinguished Service Award in 2002. Jill is the owner and CEO of Technically Speaking, Inc. She also advises the University of Colorado at Boulder on matters related to the recruitment and retention of women engineering students. She serves on numerous corporate and nonprofit boards, including the National Women's Hall of Fame. Thank you for joining me today.

JILL TIETJEN: Good morning, Troy.

TE: Good morning. Could you tell me a little bit about where you were born and grew up and about your family?

JT: Sure. [00:01:00] I was born in Newport News, Virginia, and grew up in Hampton, Virginia. My father was a PhD engineer for NASA at the Langley Research Center for his entire career. I'm the oldest of four children—I have a sister and two brothers—and we were always expected to go to college. And we were expected, actually, to go to in-state schools, because Dad was a federal government employee. And so for me that meant my choice of institutions was either the University of Virginia or Virginia Tech, because this was in the early seventies. And fortunately for me, by the time I was ready to go to college the University of Virginia was actually admitting women as undergraduates. And I actually entered the University of Virginia in the third year that women were admitted as undergraduate engineering students. My class was the first one in which there was not a cap on the number of women admitted as undergraduates. I entered in the fall of 1972, and I graduated in 1976. [00:02:00]

TE: Okay. How did you become interested in engineering, or—you studied applied mathematics?

JT: Well, there's actually quite a story to that. Even though my father was an engineer, even though I loved math, no one ever encouraged me to even consider engineering as a career. And I started as a mathematics major in the College of Arts and Sciences. Halfway through my first semester, I realized I was in the wrong place. And I had placed out of calculus and English on advanced placement tests. And I went to see the dean of the college of engineering—it was actually called the School of Engineering and Applied Science—and made all of the arrangements that were required to transfer to engineering. Applied mathematics was a degree within the School of Engineering and Applied Science. I actually minored in electrical engineering. [00:03:00] No one ever actually encouraged me to double-major, which I could have done at that time, and so I graduated with a degree in applied math with a minor in electrical engineering.

One of the reasons why I've spent, now, thirty-five years of my life encouraging young women to pursue engineering careers is because no one ever encouraged me. No one ever even mentioned it to me as a career possibility. I've had such a wonderful career, engineering career. I think that any young woman that has any aptitude at all in math and science needs to be exposed to the idea of engineering as a career. One of the things that I say often when I give my talks—and in the book *Changing Our World: True Stories of Women Engineers*—I'm in the electric utility business. My business is to make electricity. And I fly all the time. [00:04:00] And when I'm flying over the US, or any country, and I look down and I see those lights—that's what I do. And I just don't understand why everybody doesn't want to be an engineer. (laughs) People make fun of me for saying that, but I just don't understand it. I think it's such an amazing career. I mean, in my very close circle of friends we clean up the world's water, we provide electricity to the world, and we help defend our country. I just love engineering.

TE: When you started at the University of Virginia, did you know what you wanted your career to become?

JT: Oh, I had no idea. And I'm not sure that in this particular tape that I want to tell some of the stories that I tell when I give talks. I had no idea what engineering was, except that that was what Dad did. I never met a woman engineer before. I'm one of the first ten women to graduate in engineering [at University of Virginia]. [00:05:00] My career, initial job choice was based on the fact that I was engaged, and that my first husband and I wanted to get married and we wanted to be in the same place. And the company that offered us both jobs was Duke Power Company in Charlotte, North Carolina. And that's how I got into the electric utility industry, an industry for which I am completely well-suited, that is congruent with my values, providing service—community and service, which was Duke Power's motto at the time I was there—and providing electricity, one of the basic requirements that we now have as a society. So I guess the answer to your question is no, I had no idea. I had no idea. I just knew that I loved math. And by the way, I actually hate chemistry. I do not care for biology. And I really like physics. [00:06:00] Electrical is very, therefore, attractive to me. I know so many young women, particularly today, who go into chemical engineering and biomedical engineering because they love the sciences, but I love the math.

TE: Okay. You said that you were in the third class that admitted women at University of Virginia. What was that experience like?

JT: It was very interesting (laughs) because the male professors—it was particularly the male professors in my case. And I should mention I have two younger brothers, who still today are—their sense of humor is somewhat warped, and they can tease my sister and me both unmercifully. So the joshing that I took—or the whatever it was that we want to call it—from the other male students, I knew how to deal with that. I have two brothers. [00:07:00] The male professors were just uncomfortable. I went to see my thermodynamics professor right before Thanksgiving one year—and my maiden name was Stein—and he said, "Oh, Miss Stein, hah-hah-hah-hah, you're the top man in the class, so to speak." And then he told me that I was using too many significant digits in my answers. But he didn't even know what to say to me.

But other professors—at the University of Virginia, at that point and still today, in order to graduate with a bachelor's degree you have to do an undergraduate research thesis. And my statics professor hired me to be the research assistant to his graduate student, who was testing surgical sutures, and surgical tapes, and surgical staples, to make sure that they were good enough to be used in human patients. [00:08:00] And that therefore was the topic of my undergraduate thesis. I had a lot of encouragement. I actually went and visited high schools to talk to them about coming to the University of Virginia and being in engineering. I had a really wonderful experience.

I didn't know that there weren't women in engineering. I just thought because the University of Virginia had just admitted women as undergraduate students, and I could see that there were more students after me in engineering and on grounds at the university, that there just wasn't a critical mass of women in engineering yet because of the demographics of the university. And at the SWE conference in Houston in 1998, one of the other of the seven women who were in my class was at that conference. And she and I sat down and talked for an hour and a half. And her name was Katherine, but we called her Cass. And I said, "Cass, did you know there weren't any women in engineering?" [00:09:00] And she said the same thing I did. "No, I just didn't know there weren't any women in engineering at the University of Virginia." And we just thought that was part of the process.

It was only after I got into the workforce, and then I graduated in '76, I found the Society of Women Engineers. I did campus recruiting for Duke Power, and I found SWE at North Carolina State University doing on-campus recruiting at a card table in the gymnasium at a career fair. And I walked up to the table and I said, "Who are you and what do you do?" And they told me, and I took an application. I lived in Charlotte, North Carolina. There wasn't a section there. There wasn't an active group. We actually formed—Jaclyn Spear, another past president, and I actually formed the Charlotte-Metrolina Section when we were both there. And then when I moved to Denver, Colorado in 1981 I became very active in SWE.

TE: Okay. [00:10:00] I assume that you didn't have female professors yet. Is that true? (laughs)

JT: That was a story I actually went through in my mind and then I forgot to tell you. I had one woman who was a graduate student for one of my electives as an instructor; I had no female professors while I was at the University of Virginia. Now I found out later that Doris Kuhlmann-Wilsdorf—who received the 1989 SWE Achievement Award—was actually at the University of Virginia while I was a student. I actually got to know Doris as—. I was assigned as her escort in Oakland [California, at the 1989 SWE convention]—or I asked to be assigned as her escort in Oakland—when she received the Achievement Award, and got to know her then. And we actually became very good friends over time. [00:11:00] And in 2007, I believe it was, the University of Virginia dedicated Wilsdorf Hall, which was dedicated to Doris Kuhlmann-Wilsdorf and her husband Heinz. Doris actually said in her remarks when the hall was dedicated that only the first twenty-five years were hard, because she was pretty much the only woman on campus. I mean, there were women in the nursing school, there were women in the graduate school, but there weren't undergraduate women. It was just not very accommodating. But as I said, I have two brothers. (laughs)

TE: Right. Do you think any of your other female peers had trouble? That you didn't have trouble, but do you think any of them weren't prepared to deal—

JT: I know other women dropped out, but of course men drop out of engineering too. [00:12:00] And I served as the Director of the Women in Engineering Program at the University of Colorado later in this process, and the retention rate is around 65 percent, or was at that time, anyway. And so I don't know the reasons why anyone who didn't stay in engineering didn't persist. The University of Virginia at that time—actually, not anymore, but at that time—really wasn't very accommodating in general to its undergraduate students. You just kind of—you either learned to swim or you sank. And it wasn't gender-specific, it just was. And

so I think that there were probably quite a number of students who didn't persist in engineering for many different reasons.

TE: Okay. [00:13:00] Can you tell me about being a new engineer at Duke Power, or maybe what were some of your experiences entering into the profession?

JT: I had a wonderful experience at Duke Power. I will tell you though that there was something that happened during my first week which has always stuck with me. During my first week on the job my boss, whose name was Bruce, actually took me to visit all of the power plants—or most of the different power plants—so I would get an idea about what the business was. And at one of the power plants we went on the turbine floor—it was a coal-fired power plant—and then we took the elevator to the control room, toward the control room. And when we left the control room, we were actually in the men's locker room. Fortunately there was only one man in the men's locker room and he was dressed, but that was just a big eye-opener for me in general about the business. Now I've been told, since I've told this story many times after and I have spoken with individuals at Duke Power, apparently that's quite no longer the case. [00:14:00] They reconfigured the power plant.

But my experience at Duke Power was wonderful. I already mentioned my values were aligned with the company. I have fit very well into this business. That works very well for me. Duke Power gave me so many opportunities, trained me as a speaker—which has been very important for the rest of my life and career. Sent me to do on-campus recruiting where I found the Society of Women Engineers, which was a life-changing and formative experience for me. I spoke all over to many different community groups, had many different opportunities, learned so much about the business, and had excellent mentors—actually individuals that I'm still in contact with thirty-five years later.

TE: Okay. Can you tell me about how your career progressed—how you made decisions to move to new companies and how you wanted to form your career? [00:15:00]

JT: Oh, well, it's very interesting. I think at one point in time maybe I did have a five-year plan, but I am now at a point in my career where I can't tell you what's going to happen tomorrow. After five years at Duke Power Company—during which time I actually earned my MBA at the University of North Carolina at Charlotte, which Duke Power actually paid for—my first husband and I decided that five years in Charlotte at Duke Power was what we were interested in. And we actually began looking for jobs at about three and a half years out. And we also started skiing, snow skiing in North Carolina, which is kind of a contradiction in terms. And we looked around the country and decided that Denver, Colorado was where we wanted to locate. [00:16:00] In the early eighties there was a booming energy industry—we wanted to stay in the energy industry—and there was phenomenal skiing. And the cost of housing, although quite more expensive than in North Carolina, was not at the level of the California market.

And in 1981 I went to work for Mobil Oil Corporation's mining and coal division in Denver, Colorado. I survived three layoffs because the energy industry then turned. There was a recession, and the price of oil skyrocketed and then fell, and things just really didn't look very good in that industry anymore. And after surviving those three layoffs, I actually answered an ad in the *Wall Street Journal* and went to work for Stone & Webster Management Consultants. I was at Mobil from '81 to '84, I was at Stone and Webster from '84 to '92. While I was at Stone & Webster I actually met the president of a competitor who every six months for four years called me to come to work for him, and in 1992 I went to work for a firm called Hagler Bailly, where I ran the utility planning practice. [00:17:00] In '95 I came back to Stone & Webster, where I managed the Denver office of Stone & Webster Management Consultants. I was there from '95 to '97.

Now during all of this time, from 1981 on, I was very, very active in the Society of Women Engineers. I joined the national board in '88. I was national president in '91-'92. In '93 I became a member of the corporate advisory board for the Women in Engineering Program at the University of Colorado at Boulder, and in '97 I became—my job became the director of the Women in Engineering

Program at the University of Colorado at Boulder. I was trying to determine at that point if my avocation, which had been SWE, needed to become my full-time vocation. [00:18:00] I had a wonderful three and a half years at the University of Colorado at Boulder, during which the program actually won the WEPAN Award for the Women in Engineering Program. And I decided that a 46-mile commute each way, as well as the fact that I had basically fixed the program—I had institutionalized the programs and practices that they're still doing today—and that I wanted to go out on my own.

So in 2001, I went out on my own, formed my own company, and have been doing engineering consulting work. Actually, even while I was at the University of Colorado at Boulder there's something called the one-sixth rule, which allows faculty and staff members to consult a day a week. So I actually was continuing my consulting practice while I was at CU Boulder, and then I formed my own company when I left in 2001. [00:19:00]

In the interim I also started writing books. It just becomes very convoluted. And by 2002, two of my books had been published. In 2003, I met Charlotte Weissman, with whom I've now written *Her Story: A Timeline of the Women Who Changed America*. And today, people say, Well, what is the percentage of the time you spend on the book—which is taking over my life—and what is the percent of time I spend on consulting and the other things that I do? And the answer is that it varies. I serve now on two paid corporate boards. I serve on quite a number of nonprofit boards. I have my consulting business. I do motivational speaking around the country associated with the book, *Her Story*, and all of the other activities that are therefore associated with it. And so the answer is I don't know what the percentages are. Whatever today demands. [00:20:00] Whatever has to be done right now, is what I do.

TE: Why did you decide to go into your own consulting business rather than going back into industry?

JT: I went out on my own for any number of reasons. I actually now consider myself unmanageable. I used to say unemployable—I'm not unemployable. I'm unmanageable, but it's more than that. I want the flexibility to do the things I want to do. I want to pick my clients, and I do have wonderful clients. My two primary clients, I've worked for for over twenty years. Actually, both of them I started working for when I was at Stone & Webster Management Consultants. [00:21:00] I worked for both of them when I was at Hagler Bailly as well. And so they came with me and they are my clients—long, long-standing clients. I have relationships with the CEOs of both of those firms, and I do work for them. I do work—a number of the people I worked with when I was at Hagler Bailly have now also established their own consulting firms, and we do what I call the movie studio model. They use me when they need me for a project. I use them when I need them for a project. We each have our own firms, we each have our own areas of expertise, but then when we need other outside consultants we bring each other in. So I'm actually working on projects like that right now, as well.

And then I didn't really know that I was going to write a book. I love to speak. I just love to do it. [00:22:00] And so I thought I was going to be a motivational speaker in 2001, realized that I was going to have to have a platform—now I have a platform. I've been asked to come to work for one of my clients several times recently, and what I told them is, "I don't have time." I serve on two corporate boards. There are travel and time requirements with both of those—they pay me to do that. I want the time to travel around the country and speak. I want the opportunities to serve on my nonprofit boards. And so yes, I do actually work a lot, but it's my choice.

TE: Okay. I'd like to talk more about the University of Colorado. [00:23:00] You talked about how you instituted some changes in the Women in Engineering Program. Can you talk more about that?

JT: Sure. The University of Colorado's Women in Engineering Program had been established in 1988 by a woman who was a friend of mine. And then she moved

on to other areas, and another woman was brought in as the director and some of the momentum of the program stalled. So when I went out as director of the program, I instituted a number of programs. I actually helped raise additional money for scholarships. I instituted departmental lunches—just programs that would help build a sense of community among the students. Most women in engineering that are undergraduate students do not see a value for a Women in Engineering Program. [00:24:00] What the statistics showed at the time—and they might still today, I'm just not familiar with them today—was that women's performance and retention rates were higher at universities that had Women in Engineering programs because of what that meant in terms of the overall climate and acceptance for women engineering students. So I instituted a faculty advisory board. I changed the structure of the corporate advisory board. I instituted a lot of interactions with the members and the corporations who were on the corporate advisory board. Raised quite a lot of money, as I mentioned, for scholarships. Got to know a lot of the women alumni personally. Instituted a quarterly newsletter that actually reached out to the women alumni and the corporate sponsors—did programs like that. [00:25:00] It was all with a sense of developing relationships and building community, so that there was an affinity for the program among both the women who were current students and then women alum.

TE: Okay. I'd like to talk about your experiences in SWE. So you said that you first discovered SWE while you were recruiting for Duke Power. What drew you to SWE originally?

JT: What drew me to SWE originally was the fact that one of the organization's main thrusts is the outreach program, career guidance program for young women to encourage them to be engineers. Since I had never been encouraged to be an engineer, that was part of it. [00:26:00] The other part of it was—that we've already actually discussed—that I have a degree in applied math with a minor in electrical engineering. And my first husband and I—although we were not yet married at the time—both took the fundamentals of engineering exam when we

were seniors in college, in April of our senior year. And then we moved to North Carolina and we got our letters from the Commonwealth of Virginia. And his letter said “Congratulations, you’ve passed the test. Your certificate is in the mail,” and my letter said, “Congratulations, you’ve passed the test—when you demonstrate two years of increasingly important engineering experience we’ll send you your certificate.”

I should also tell you that when we started at Duke Power, he started as a something-something engineer and I started as an analyst. Because I didn’t know it then—I mean, I didn’t know it until after I graduated—that I did not have an ABET-accredited degree. [00:27:00] Which is very ironic since I spent ten years as an ABET accreditor for electrical engineering. But I didn’t have an ABET degree. And so the discrimination that I experienced because of that degree just made me incredibly determined to advise young women—anyone, really, any young man or young woman that has math and science interests, but particularly young women—if they have that aptitude and if they have that interest then they need to go get an engineering degree.

So that is what originally attracted me to SWE. And then I met so many people like me. When you are a woman in a male-dominated industry, you spend a lot of your time proving yourself over and over and over. [00:28:00] And what I found in the people that I met in SWE was instant acceptance, what I now categorize as a family unit. Women who, like me, had to prove themselves over and over and over, and in SWE I did not have to prove myself. I was accepted. That was very important to me. Plus, then I got to do these really fun career guidance programs. I got to give back to the community, which is part of my value system. And there were also professional development—I know they’ve changed the nomenclature, but what we called then professional development activities. So there were opportunities for me to learn at the beginning of my career things like time management, and stress management, and how to dress, and how to network, and to develop all of those other skills outside of the technical skills that

benefited me. [00:29:00] And I've just had a wonderful SWE career. And if you want me to talk about that—

TE: Absolutely.

JT: —I'll just keep right on going. In 1981 when we—well, before, from '79 to '81 when I was in Charlotte, North Carolina, the SWE section was actually based in the research triangle area, which is about two and a half hours away. I probably was at two or three meetings during that time—it was a long way to go. So I was pretty determined that when I moved to Denver, that I would get involved. And in fact, at the time the SWE magazine, which was called the *US Woman Engineer,* used to have a little insert. And in that insert was the contact person for each of the sections. So I had kept the insert, and a week after I moved to Denver I called the contact who had been listed in the magazine, whose name was Alexis Swoboda. [00:30:00] And I basically said, "I'm here and I'm ready." Alexis and I have since become incredibly dear friends, started many programs together in the section, and I will talk more about her, I'm sure, in the course of this interview.

But that was the start of a very, very active SWE career in Denver. I chaired so many different committees. I worked on the newsletter, did the mailing labels, served as treasurer in 1985-86. I was the president of the Denver section, rewrote the bylaws to rename it the Rocky Mountain section, et cetera, et cetera, for that section. And then Connie King, who was in the Denver / Rocky Mountain Section, I thought asked me if I wanted to serve on the [national] awards and recognition committee. But actually what happened was I was named chair. [00:31:00] How are we doing?

TE: [checking audio recorder] Good.

JT: Good. Okay. Then I was named chair. I was approved by the board of directors as chair of the awards and recognition committee, which meant that I had to go to the conference in Puerto Rico. I had avoided going to the national conference

because I knew I would fall in love with it and then I'd always have to go, and I wasn't getting any corporate support at the time. So anyway, I was the awards and recognition chair, and then I was encouraged to—. I guess, I don't really remember—but I know that I applied to be on the board of directors. And that year there were six candidates for the three vice presidential positions, several of whom were already members of the board. So I thought, Okay, that's fine. I put my name in, there are many well-qualified people, I won't have to worry about this. [00:32:00] (laughs) And then I got elected. (laughs) So I went to my first national conference in 1988, when I was awards and recognition committee chair, but vice president-elect. And I've been to every national conference since then.

And then what also happened—and I'll just do the very brief part—was then I served as secretary. I had a conversation in a cab going from the Atlanta board meeting to the Atlanta airport with then-president Suzanne Jenniches—who tells this story differently than I remember it. But I asked her in the cab if she thought that I should run for president. What she will tell you is that she refused to allow me out of the cab until I agreed to run for president. (laughs) But then I was elected president-elect, served as president in '91 and '92, and past president, and have chaired numerous national committees and task forces and et cetera, et cetera since then. [00:33:00]

But when Suzanne Jenniches was president—my first board meeting, she held up the nomination forms for the National Medal of Science and the National Medal of Technology. SWE headquarters had received the call for nominations. Seventeen women in that room and no one raised her hand. I looked around the room—nobody was raising her hand. And I just didn't see how we could let an opportunity like that go by. Because Suzanne really was—I mean, it was going to go in the trash. So I raised my hand. And at that point I nominated a couple of the women who were Achievement Award recipients.

I should also say that prior to this—because this is really important in the chronology—in 1987 Alexis went to the national convention. It was called the national convention then. [00:34:00] And she came back to Denver with the idea for an outreach program, a Great Women in Engineering and Science essay contest. And Alexis always found great ideas. I told her it was a great idea, but in 1987 I knew one historical woman in engineering and science anywhere in the world, and that was Marie Curie. So in order for us to do this essay contest, which we actually implemented in 1988, we had to start researching all of these historical women in engineering and science. Which, I can't believe that here I am all of these years later, that the seed—and that's what Alexis actually calls it—the seed that Alexis planted in 1987 has become so many successful nominations and books that resulted from all of that research effort. [00:35:00] So as Alexis and I are continuing to do our research on all of these historical women, in 1989 it occurred to me—or it became obvious to me, actually—that if I did a good enough job on the nomination for Admiral Grace Murray Hopper, that she would receive the National Medal for Technology.

So two years I worked on that nomination. I contacted the current Secretary of the Navy, the previous secretaries of the Navy, Senator Warner of Virginia. I found many of the early pioneers in the computer industry to support her nomination. There was a wonderful man named Tropp [Henry S. Tropp]—T-R-O-P-P, I think; it might have been Troop—in California who just provided me with amazing amounts of information to support the nomination. Jean Sammet told me when I called her that she would help me on the condition that she had final say on what the nomination said. [00:36:00] Because she did not want me misrepresenting Admiral Hopper's role in the computer revolution, and that Jean Sammett had been there herself, and so she knew what that was. And as long as I allowed her to do that she would help me with the nomination, which I agreed to. And just before I was actually installed as national president [of SWE] in late June of '91, I got the news that Admiral Hopper was getting the medal. At that point in time I couldn't tell anyone, because I couldn't upstage the first President Bush, whose prerogative it was to announce that. But Admiral Hopper

actually asked me to receive it for her, and so I went to the White House Rose Garden in September of ’91 and received that medal for her. [00:37:00]

Then Alexis found the National Women’s Hall of Fame in Seneca Falls, New York. And as we looked at the women who were in the Hall, we found that there was a gap, a pretty big gap. That most of the scientific and technical women that we had now researched—and we’d written how-to guides, and we’d done all kinds of things for the Society so that other sections could replicate the program—those women weren’t in the National Women’s Hall of Fame. And that became our mission, to get them in, because girls who are seeing role models need to see the abolitionists and the suffragists and athletes and nurses and doctors—and engineers and chemists and biologists and all of the scientific—physicists, all of the scientific fields as well.

And our first successful nominations were Admiral Hopper in 1994 and Maria Mitchell. I nominated Admiral Hopper and Alexis nominated Maria Mitchell. [00:38:00] And the Murray family asked me to receive the medallion at the National Women’s Hall of Fame. And that was our first time at induction, and I’ve been at every induction since 1994. In October of 2011—not very long ago, two weeks ago tomorrow—four of my nominees were inducted in this class in 2011. And those were my eighteenth, nineteenth, twentieth, and twenty-first successful nominees. I’ve nominated more people to the National Women’s Hall of Fame than anyone, period. And actually they changed the rules of how you get elected to the board of directors of the Hall, because they asked me to agree to be elected to the board, and at that point in time the rule was you couldn’t nominate women if you were on the board. And I said, it’s more important to me to nominate the women than it is to be on the board. They changed the rules. (laughs) [00:39:00] So now I can nominate, and I’ve been on the board since 2009. And actually at the induction ceremony on the first of October, I was given two names. I mean, people now direct individuals who have candidates that they want to nominate to me, and either I help them prepare the nomination or I prepare the nomination myself, if I think the woman is a viable candidate.

So, I mean, it all started with SWE. And in the interim I've nominated many women to the Women in Technology International Hall of Fame. I've nominated many women within SWE for the SWE Distinguished New Engineer, for the Distinguished Service Award, for the Achievement Award, for the Upward Mobility Award, for the Entrepreneur Award, for Fellow. And I am training others to do that as well. [00:40:00] Two of my very dear friends and now excellent award writers actually successfully nominated me in 2010 to the Colorado Women's Hall of Fame. So I'm now both on their honorary board and an inductee. And it all started with an essay contest as an outreach program in the Rocky Mountain section for sixth graders in Colorado and Wyoming. (laughs) Which I just find amazing. I call it the snowball effect.

TE: Can you tell me why do you think it's so important to nominate women for these awards, both within SWE and for these national awards?

JT: And I also forgot to tell you that I will be at the White House next week, on the twenty-first of October, when Yvonne Brill, a SWE Achievement Award recipient, will actually be awarded the National Medal of Technology and Innovation—which is what it's now called—by President Obama. [00:41:00] And Yvonne and I will both tell you that the reason why it is so important to nominate women for external awards—we'll just start there—is because in general men do not nominate women for awards. Men do not think of nominating women for awards. And so if women are going to get these kinds of awards, we have to do the nominating.

And within SWE, when I nominated Mary Petryszyn for the Upward Mobility Award, which she received in 2005—when I started talking to her about the award, Mary was very humble and said basically that what she'd done wasn't all that significant and she didn't really think she needed—. Well, she didn't A, think she deserved the recognition, and then B, that what was it going to—it wasn't of value to her. [00:42:00] And what I said was, in so many cases getting these awards is putting women forward as role models, so that other people can see

that this level of career success—or personal success, or whatever kind of technical success, whatever it is—is achievable. And so I actually had to convince her to help me with that nomination, and finally she did. And it was very beneficial to her.

There's an award from the American Association of Engineering Societies. I think it's called the John Fritz Medal. And in 2007 Annmarie Connor, who was the chair of the awards and recognition committee, told me—since I serve as the external awards coordinator or whatever my title is for SWE, and have for many, many years—that we should probably think about nominating someone. [00:43:00] And so we put together collectively a nomination for Kristina Johnson, who I believe at that point in time was the Dean of Engineering at Duke University. Yes, she later became a Deputy Undersecretary of Energy, but this would have been before that. And she was selected. So the next time it came time—and there are very, very few women that have gotten the Fritz Medal. But men that have gotten it include Thomas Edison, Alexander Graham Bell, George Westinghouse, Tesla—I mean, an amazing group of men.

So in 2008, when it was time to do that nomination, I actually thought, Okay, well if Kristina got it for her work in photo optics, then Yvonne Brill and her invention of the hydrazine/hydrazine resistojet engine, which actually powers every communication satellite that is aloft—I ought to do a nomination for Yvonne. [00:44:00] Because Shirley McCarty and I had done a Women in Technology International Hall of Fame nomination many years before, ten years maybe before. So I put together this nomination for Yvonne and she was selected. She actually—she sent me an email or she called me, and I can't remember which one. And she said, "Jill, I'm at this meeting in Washington, D.C., and somebody just told me that Yvonne Brill has been selected to get the Fritz Medal. Is there another Yvonne Brill?" (laughs) I went, "No. How many Yvonne C. Brills do you know?" I said, "It's you. You're getting the medal." This was April of '09. So it's early April. She asked me to come to Washington, but I was not available.

But I started thinking, Yvonne just got that medal. [00:45:00] That means that what she's done is really significant. And Yvonne lives in New Jersey, and I know that there's a New Jersey Inventors Hall of Fame. I wonder what their deadline is. So I searched the internet, found their website, their deadline for nominations was May 15th. This was about the 9th of April. I submitted her nomination. In June or July, Yvonne and I got the letter the same day. And I was outed on this one, because this letter says, "Dear Yvonne, your nomination, submitted by Jill Tietjen—." (laughs) "You have been selected as an inductee into the New Jersey Inventors Hall of Fame. The ceremony's going to be in October, and we'd like for you to come."

So this is June. I'm thinking, "Hmm. [00:46:00] I wonder when the deadline is for the National Inventors Hall of Fame." This was the New Jersey Inventors Hall of Fame. And I had served on the selection committee, very secretly, for fourteen years or thirteen years as the SWE representative to the National Inventors Hall of Fame selection committee, where it requires an act of God to be selected to the National Inventors Hall of Fame. I wonder when their deadline is. So I don't remember when their deadline was, but I submitted the nomination pretty much the day I heard that she had gotten selected by the New Jersey Inventors Hall of Fame. Which, by the way, I later found out that she was the first woman inducted into the New Jersey Inventors Hall of Fame.

So I submitted her nomination to the National Inventors Hall of Fame. I mean, how much could it hurt? And they never pick anybody the first time. I mean, it took years and years and years—the man that invented Velcro? I mean, that took forever. [00:47:00] Anyway—and I'm not sure he's even in still. So I went with my aunt to the New Jersey Inventors Hall of Fame dinner. We pulled up, we were there a little bit before the Brills arrived, and then Yvonne and her husband came in. And Yvonne said, "Hi Jill, I got a call today from the National Inventors Hall of Fame. Do you know anything about that?" (laughs) I said, "You heard from the National Inventors Hall of Fame?" I was floored. That meant that she was selected the first cycle, which meant that this invention is really significant.

So she was inducted into the National Inventors Hall of Fame, and that occurred in 2010.

So then I looked online and said, “Hmm, I wonder when the deadline is for the National Medal of Technology and Innovation.” [00:48:00] And it was either January 31st or March 31st—I can’t remember—of 2010. So I submitted it. And then in October of 2010 the recipients received their medals. So I actually emailed—(laughs) I’m sure he thinks I’m a real pain—I emailed the man at the U.S. Patent and Trademark Office, who I had interacted with because he couldn’t read some of the letters of recommendation and he needed me to resubmit in different formats. And I said, “Okay, so she wasn’t submitted [accepted] in 2010. When do I resubmit?” And he said, “Hold on, Jill. Patience is a good thing because she was submitted in 2010, which means she cannot even be considered until 2011. That’s how long the process takes.” I said, “Okay, I’ll just calm down and wait.” [00:49:00]

And then in June of 2011—which is twenty years later, but it’s the right timeframe, early June—I’m actually in Austin, Texas, driving to my brother’s house. And my phone rings, and it’s Yvonne. And she’s gotten an email from the White House. And they want some personal information from her. And so she says, “Jill, is there any reason that I would be hearing from the White House?” Because I don’t tell Yvonne. I just nominate her. I mean, she actually helps me, because I email her and tell her what I need. I don’t tell her why, and she now no longer cares and she just sends me all the information that I need. “Is there any reason that I would be hearing from the White House?” And I said, “Yes, you better be hearing from the White House.” And so they were getting ready to do the FBI background check and needed this information from her. And so I’m delighted that she will be receiving it next week—incredibly deserving. And of all the recipients next week who are receiving the National Medal of Technology and Innovation, she is the only woman.

We have to do it. [00:50:00] If we women do not nominate the other women who are deserving of recognition, then it's not going to get done. And Yvonne has spent years and years putting nominations together for SWE awards, for election to the National Academy of Engineering, for AIAA Fellows, Honorary Fellows—I don't even remember, there might even be another category in AIAA. But I wouldn't be surprised if almost every Honorary Fellow who's a woman in AIAA is a Yvonne nomination. And across the aerospace industry, many, many, many of the nominations that have been successful are Yvonne nominations. And New Jersey Section nominations for SWE awards that have been successful are Yvonne nominations. [00:51:00] So it is actually my pleasure to nominate her for any award. She is A, deserving, and B, humble, and C, has done so much to advance women herself that it's just a pleasure for me to do it.

TE: Can you talk a bit about the SWE awards that you nominate people for? How do you discover these people, and how do you think it's important for them to receive these SWE awards?

JT: I think that pretty much every SWE award that there is—Distinguished New Engineer, when a young woman receives that award—because of course it is a young woman, normally, less than ten years into her career, although she could be a reentry student and get it a little bit later in life—there's a tremendous amount of recognition that she gets through her company. [00:52:00] I mean, if her company or her organization, whether it's a government organization or whatever, sees that she has been recognized for this kind of effort, what they then understand—if they didn't already recognize it, and I suspect in most cases they had—she's a fast-tracker. She is highly motivated. She is a doer. She is an achiever. She gets things done. That's particularly Distinguished New Engineer, but it applies to pretty much every award, because—. And the statistics that I've seen may or may not be valid, but what I've seen is about seven percent of individuals actually get involved in activities like SWE or community activities. [00:53:00] So that shows the motivation of the individual, that shows the

leadership potential or leadership achievement already of that individual through all of the awards.

And what often happens is that companies then give individuals promotions, they give internal awards, there's recognition in company organs, whether it's newsletters or press releases or—. I mean, almost anyone that gets a SWE award in the academic community, there's a press release from the institution. And I think—well, actually, I know what people want most according to surveys is not money. They want recognition for a job well-done. Well, almost all of the SWE awards are given for work that could almost be considered under the radar. I mean, it's not what you do as part of your job. [00:54:00] It's what you do outside of your job. Although my belief, very strong belief, is that everything that you do in a nonprofit organization or in some kind of extracurricular activity, even if it's coaching a soccer team or playing on your company baseball team, all of those things actually add to some level of skill enhancement. So for me, so many of the leadership skills that I have were developed through SWE. And so I think that that is a recognition. So I think it is very important.

Plus the role-modeling part, so that all of our thousands or tens of thousands of collegiate members see that it's actually possible that SWE members can do—. And I don't like to use the word extraordinary, because the ASCE project, Extraordinary Women Engineers—the girls said they couldn't aspire to be extraordinary. [00:55:00] If we can show that we are normal people—although some people would debate whether I'm normal, but that's another thing—that we can show that we're normal people that have achieved these things. I mean, the women who are Nobel Laureates that I've researched, many, many, many of them, you know, they still come home and do the laundry. They have husbands, they have children, they have significant others, they have parents, they have pets. You know, they still go grocery shopping, they still do the laundry, they still clean house, they still do those kinds of things. We are all just people. And to enable younger women to understand that they can aspire—one of SWE's words—to do these things is in my mind very important.

TE: Okay. I'd like to step back and talk about your experience as SWE president. [00:56:00] Can you tell me, what were your goals as president? What did you want to accomplish?

JT: I don't remember whether or not I had goals or not. It was a very interesting time in SWE's history. We had an acting executive director at the time. We had a very significant decision to make about the location of SWE headquarters. Those are—I mean, those are two of the business decisions that I remember that were pretty consuming during the time that I was president. [00:57:00] We hadn't yet gotten ourselves to the point where we were ready to do the executive director search, but we did have to go through the entire decision process for space and where we were going to locate.

Of my remarks that I remember, I remember talking about Admiral Hopper and the bookends that were for my presidency. Because I found out right before I was installed that she was going to be receiving the National Medal of Technology. Then she died, January 1 of '92. And during the remainder of my presidency we raised, as a board—the board actually led the fundraising effort to establish the first Admiral Hopper Scholarship. And I believe there are now some multiple number, at least five, Hopper Scholarships that are awarded. [00:58:00] So those were the kinds of things we were working on. I mean yes, we were working on the strategic plan and we were always doing strategic planning, but I don't remember—. It wasn't as well-defined then as it is now in terms of how that office is approached and how it's expressed as a business. It was much less at that time.

TE: Okay. Could you tell me more about the decision to move the headquarters?

JT: SWE was in the United Engineering building [United Engineering Center] in very cramped quarters. And the lease was up, and as I recall—and I could recall this incorrectly, but as I recall someone else, one of the other societies, wanted our space. And we went through a process of evaluation as to whether or not we should stay in New York City. [00:59:00] There was a very significant component

that wanted us to move actually to Washington, DC, or that area. And then there was another contingent that thought that we could actually be almost anywhere in the country including, say, Oklahoma or Kansas, where the cost of living was much lower. But we did actually, in the end, settle on New York City—staying in New York City and relocating to a different location that was found that was available in the New York City area. And there was a fascinating process by which that was done, first from hiring the firm that was going to assist us in what was called the Headquarters Relocation Study through the process of actually finding a location and moving there. And I think during my term, we got as far as the decision to stay in New York City, and I think it was actually during Anna's [Anna Salguero's] term that the relocation happened. [01:00:00]

TE: Okay. At that time you were working for Stone & Webber?

JT: Webster. Stone & Webster.

TE: Webster, sorry. Did they support your term as president, or did they support your work?

JT: Yes. Prior to my agreeing to run for the president-elect position, I got a commitment from Stone & Webster. At that time there was no board funding of any kind for any officer. I got a commitment from Stone & Webster for the travel component of both president-elect and past president—time component—and admin support component as well as the dollar component for my time as president. Actually, I had met the CEO of the company and he was very supportive. [01:01:00]

TE: That's quite—why do you think that the company would support your tenure as president? How did the company benefit by your involvement in SWE?

JT: Well first, I benefited tremendously from a skillset development perspective. I also believe it's somewhat comparable to what I discussed earlier, with regard to the climate and the environment for women at an academic institution, a college of engineering, when there's a Women in Engineering Program. When a

company states publicly that they are going to support a woman in an engineering field or an engineering company to serve as president of the Society of Women Engineers, what they're saying is that they have a commitment to diversity. And so that was felt to be a very significant way to enhance their reputation in the business and to attract many qualified women engineers. [01:02:00] I think that that was a smart business decision, and it certainly did benefit me in an amazing way. I developed so many skills, and there have been—I mean, I can see in my professional career so many opportunities that have resulted as stepping-stones from my term as SWE president.

TE: Okay. What are some of your most favorite experiences as president, or from your involvement in SWE generally? Because you've been highly involved for decades.

JT: Well, I've mentioned one of them already. I mean, being at the White House with the first President Bush to receive Admiral Hopper's National Medal of Technology, that all came about because of SWE. Being at the launching of the destroyer Hopper [USS *Hopper*, US Navy Arleigh Burke-class guided missile destroyer] at the Bath Ironworks in Bath, Maine. Meeting her family—I mean, all very important. [01:03:00] The people that I've met—the entire linkage with the National Women's Hall of Fame—all of that is because of SWE.

Now the funniest memory I have of SWE is there is a tradition within SWE that on one of the nights during the SWE national conference—or it was at that time—which was at the end of a president's term, there's effectively a board roast. And so I was quite roasted at my board roast, including—at that point in time I didn't really wear makeup, I didn't have pierced ears, which I have now. And so I got plastic earrings and I got—and this was in Orlando, Florida—I had a pink Mickey Mouse visor. They gave me lipstick and makeup and I had paint on my face. [01:04:00] And I have had a problem for many years of volunteering to do things, so I actually got a little tank top that said, "No no no, just say no," and it was all upside down so that I could read it when I looked down at it. And my instructions

after the roast was that I needed to then go pay a visit to the Over the Hill Suite—which of course is quite a tradition within SWE at our national conference. And so this is about 11:30 at night on a Friday night, and I get in the elevator by myself—attired in this manner and with war paint and plastic earrings and Mickey Mouse visor—to go to the Over the Hill Suite. And there are two gentlemen in the elevator, and they look me up and down and they say, "You must be very far from home." (laughs)

TE: (laughs)

JT: So. [01:05:00] Within SWE I have so many dear friends. I really believe, as I said earlier, SWE is a family unit for me. I have so many wonderful memories and wonderful experiences.

TE: Okay. What do you think are some of the challenges that SWE is going to face in the future?

JT: SWE faces some challenges that are widespread for nonprofit organizations in general. There is something that's now referred to as episodic volunteering. I'm a lifetime Girl Scout. I was chair of the board in Denver for Girl Scouts for four and a half years. This was one of the biggest problems that the Girl Scouts faces, which is that there is a difference in availability of volunteers. There's a difference in mindset in volunteers. [01:06:00] Instead of making a commitment for SWE—which is for many people a lifetime commitment, but certainly an over-a-span-of-time commitment that they're going to get involved, and that's something they're going to do and spend time doing every month, or every week, or over a very long period of time. What we're seeing in nonprofit organizations is episodic volunteering, which means there is an event. It's on a certain date at a certain time. I have a responsibility that might require me to do something leading up to the event, I have a responsibility at the event, and then I am done.

And so, I mean, for Girl Scouts it's a huge issue. But it can be for SWE as well, because if there is less of a mindset of, "I'm going to be a committee chair for a couple different committees for a couple of years, and then I'm going to run for an office, and I'm going to maybe even do the secretary-treasurer-vice president-president—." I mean, you're looking at a six- or a seven- or an eight-year commitment, which doesn't jibe very well with the episodic volunteering commitment. [01:07:00]

People are so busy.There are so many different pulls that everyone has on their time. And so where do people spend their time, and how are they going to spend their time, and is that going to be for SWE? And there's always going to be a monetary issue. There are so many nonprofit organizations, so many important different goals and objectives and needs of the community. And so is the money going to come to SWE, or is it going to go somewhere else? I think those are pretty big challenges as we move forward.

TE: Okay. [01:08:00] The landscape for women engineers has changed quite a bit since when you first began, and I wonder—how do you think that things have changed for women engineers, and maybe how have things stayed the same?

JT: One of my books is a history of women in engineering. And one of the things that's contained within that book and that I've done the research on is the numbers. The percentage of women in engineering, getting BS degrees in engineering, reached 1 percent in 1972. I graduated in 1976. There was a very positive, fairly steep percentage increase in the percentage of women in engineering from about 1972 to about 1985. In 1985 it reached approximately 15 percent. This is 2011. [01:09:00] And from 1985 to 2011 the number has gone from 15 to 16 to 17 to 18 to 19, back to 16, back to 17, around 18—I don't know what the number is now, but I still don't think it's 20 percent. And that's the percentage of women receiving BS degrees in engineering. The percentage of women in the engineering workforce is still around 10 or 11 percent. And so sometimes I think that I'm actually beating my head against that wall and saying,

"Okay, so if I've been doing this for thirty-two years and the numbers haven't changed as much, then we're obviously not doing the right things."

I do want to tell you a story, and that is that when I was at CU Boulder, the dean told us a story one day. And he said his daughter was in the engineering school, and they were having a conversation—at the engineering school that he was dean of. [01:10:00] And he was saying, "Oh, isn't it exciting that we're up to 20 percent women in the class?" And her response was, "Dad, it's only one in five." So she still felt that we hadn't made progress, whereas he was looking at the progression that he had seen over his career and remarking on the progress.

I believe there are still significant societal issues and biases—that are probably somewhat covert—that still need to be overcome. In addition, there is the entire value proposition, meaning that most women select a career based on the value that it brings—the making a difference in the world, the changing the world. [01:11:00] And the statistics showed ten years ago—and I don't know how updated they are—that approximately ten years ago, 75 percent of American women didn't know what engineering was or what engineers do, and over half of American men didn't know what engineering was or what engineers do. And those, of course, are the primary influencers of those young people, either as their parents or as their teachers are in the community.

And so if the lack of knowledge about the value that engineers brings is that significant, then how are these young women going to understand that we engineers bring them the electricity that powers their iPods, and make their iPods and their iPhones and their iPads, which they don't actually understand either. And the telecommunications systems that Yvonne designed the rockets for, the engines to power the satellites—that engineers do that. That we bring them clean water. [01:12:00] That we provide the roads and the airplanes and the cars and the trucks. And that without the infrastructure that the country has, we wouldn't be able to have, oh, strawberries in Chicago when they're grown in California, or grapes right now that come from Chile.

And so with that lack of understanding, I mean, I still think there's a huge communications challenge, a huge education challenge to get more women into engineering. And so I don't know that that's the answer. I mean, so much research has been done. The National Center for Women in Information Technology, which is established—centered at the University of Colorado at Boulder, does a tremendous amount of research to try to figure out why women aren't in the information technology fields, which have even fewer women than in engineering. And I'm such a supporter of that organization, because I believe that when they figure out that answer we'll know the answer for why aren't there women in engineering, and why aren't there women in physics, and why aren't there women in the hard sciences, and even in some of the soft sciences. [01:13:00]

TE: Okay. I was wondering if you could tell me about some of the other external organizations that you are involved with—organizations other than SWE, because you're—.

JT: Right. I served on the Colorado state board of registration for professional engineers and professional land surveyors for the maximum eight years—that, thank God, I was term-limited off from. And then I was actually the western zone vice president for the National Council of Examiners for Engineering and Surveying for a two-year term. I was an ABET evaluator and then a member of the engineering accreditation commission. That was a total of ten years. I've been an outside director for Georgia Transmission Corporation since the corporation was formed in 1997. [01:14:00] I've been on the board of directors of Merrick & Company now for two years. That's a firm that's actually an architect engineering firm based in Colorado. I did serve on the WEPAN board for many years. I'm a founding board of advisors member and now chair of the board of directors for the Colorado Coalition for Gender and Information Technology.

I serve on the board of trustees for the School of Engineering and Applied Science at the University of Virginia, and was previously on the equivalent

organization, which is called the Engineering Advisory Council, for the College of Engineering and Applied Science at the University of Colorado at Boulder. I'm also on that same equivalent organization at Walla Walla College—excuse me, Walla Walla University in Walla Walla, Washington. And I'm sure there are others. [01:15:00] I mean, there have been many over time. Oh, and I did serve on the library board for the Arapahoe Library District. And there have been many other organizations—I was the first female president of the Rocky Mountain Electrical League, which is my trade organization. It's now called RMEL. I was a founding board member, wrote the scholarship application for the RMEL Foundation, based on the SWE scholarship application form that I had previously written. And I'm chair of the board of Girl Scouts and on the Girl Scout board in Denver.

TE: Why do—why have you decided to become involved in so many of these organizations?

JT: I developed a personal mission statement in 1996. And one of the things that I realized was that for me, the three key words are women, engineering, and education. [01:16:00] And so I felt that where I could make the world a better place and I could help—. I mean, in the engineering profession, we do have a very strong inclination to give back to the profession, to help advance others in the profession, and so that's part of it. I feel very strongly about being involved in the community. I feel very strongly about being a role model. I learned. I learned so many things. I love to learn, I love to experience new things. I feel that I have been blessed. I have skills and talents and abilities that I need to use in a positive way, and so I give back. I'm so ingrained in the Denver community at this point. It's actually very fun, and I really enjoy it. And I have met so many wonderful people and have so many good friends through that process. [01:07:00] I think it's incumbent on me to give back to the community.

TE: Okay. I'm wondering about work/life balance, because—. (laughs)

JT: (laughs) Oh, that one's a little humorous. It's actually—people who don't know me very well, first, don't think that I sleep, and second, don't think that I have any work/life balance. I work out every morning that I can. I have a reconstructed left knee from tennis. I still play tennis, I still play singles, actually, every week. I work out every morning because of my knee. And I have dinner with friends, I have lunch with friends, I go to plays, I go to opera, I go to music, and I work hard. [01:18:00] And sometimes I work more than I want to, but I also spent a week this year in London with my brother. All right, I did check my email in the morning and the evening, but during the day we had a wonderful time. I spent a week in Aspen, went to a family destination in Mexico. I'm going to the Galapagos with two SWE friends in December. It's not all work, even if it does look to other people like it's all work. And some of it doesn't feel like work anyway. My clients are happy with my work, and I'm—I mean, I'm not going to do a job that I don't think is a well-done job, so whatever it takes to do that is what it takes. But there's still time for family and friends and other activities in life.

TE: Okay. Is there anything that you would like to add?

JT: I don't think that I've left anything out that I really wanted to say. [01:19:00] I think I got almost all—I think I got it all in.

TE: Okay. Well, thank you very much for doing this interview.

JT: Oh, you are welcome, Troy. It was fun.

TE: I'm glad.

JT: It was very fun for me. I love to do this.

TE: All right, and this is the end of the interview.

[END OF INTERVIEW]