

SWE STORYCORPS INTERVIEWS

Christine Law and Patricia Law Interview

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Society Of Women Engineers National Conference

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This oral history interview was recorded October 26, 2007 at the Society of Women Engineers National Conference in Nashville, Tennessee as part of StoryCorps, a nationwide initiative of Sound Portraits Productions to record and collect oral history interviews. 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.

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Patricia Law and Christine Law Buckler

Patricia Law is a structural analysis engineer at The Boeing Company. Prior to taking her position at Boeing, she worked as a structures engineer at Teledyne Technologies for 23 years and Pratt and Whitney for three years. Law received a B.S. in mechanical engineering from Penn State University, an M.S. from Rensselaer Polytechnic Institute at Hartford, and is registered professional engineer in Ohio.

Christine Law Buckler is a module engineer at the University of Colorado at Boulder. Prior positions included working as an operations group manager at Anheuser-Busch InBev and as a process engineer at Ball Corporation. She became a member of the Society of Women Engineers while a student at The Ohio State University, and received a degree in mechanical engineering in 2008.

In their 2007 SWE StoryCorps interview, Patricia Law and her daughter Christine Law Buckler discuss their college and work experiences; their career influences; work/life integration; and their thoughts on women in engineering.

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Christine Law: My name is Christine Law. I'm twenty-two. Today is October 26, 2007, and we are in Nashville, Tennessee. And I am Tricia's daughter.

Patricia Law: My name is Patricia Law. I'm fifty-one years old. Today's date is October 26, 2007. We're in Nashville, Tennessee for the national SWE [Society of Women Engineers] conference. And I'm Christine's mother.

CL: And I am a fifth-year senior at Ohio State University. I'll be graduating in mechanical engineering in about six months. And I have done three internships at Fitch, M Retail Engineering, Honda, and Honda Research and Development. And I currently have a job offer for Anheuser-Busch in Columbus.

PL: Can you tell me a little bit about your job responsibilities at each of your co-op and internships?

CL: At my first internship at Fitch I was responsible for learning AutoCAD [computer-aided design software] and part drawings, and I also ordered parts and helped with the assembly for our project. At M Retail Engineering I learned the fundamentals of heating and cooling design. And then at Honda I worked in the side impact crash safety group and helped with the test protocol and set the dummies.

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PL: What do you see your job responsibilities at your new job that you've accepted?

CL: I will be a group manager in packaging and operations and I will be responsible for two of their lines and three to eight hourly workers. And I will be a process engineer to make sure that everything stays running.

PL: Did you always know that you wanted to be an engineer?

CL: Yes. What did you think about my decision to become an engineer?

PL: Well, I'm very proud of you because you set goals for yourself, you worked hard, and you accomplished your goals, soon to be to graduate from mechanical engineering. I will support my children in whatever profession they choose, but I think there will always be something special with you because we're both engineers, because you chose to do the same thing that I'm doing.

CL: Did you encourage me to pursue engineering?

PL: I would like to think that I provided a good role model for you. That I let you believe that you could do whatever you put your mindset to. You had an aunt that once described

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you as having a lot of spunk and she couldn't wait to see what you were going to do with your life.

CL: Which aunt was this?

PL: Your Aunt Jean.

CL: Tell me more about your family?

PL: Well, my dad was an electronics engineer. He worked as a civilian for the Navy. He had a bachelor's and a master's degree in engineering. My mom is an amazing woman. She raised six kids. I have three brothers and two sisters, and we all graduated from college and are working in our chosen profession. I was born in Philadelphia, Pennsylvania. And my parents always let us know that education was very important. Probably as a result of that I was the top student in my eighth grade class and I went on to a private girls' high school.

CL: Was there a particular moment when you realized that you wanted to be an engineer?

PL: It was probably more of a combination of conversations and events and observations. I originally planned to go to a liberal arts college and major in psychology. And at the last minute I changed my mind to go to Penn State

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University and major in engineering. I almost gave up engineering because I failed a midterm in physics. So I went to my counselor and asked for his advice and he suggested to stick it out. So I did and I passed the course and went on to graduate with a B average in mechanical engineering from Penn State University. I guess that was the decision point for me to continue and keep at it.

CL: Were there any co-op or internship opportunities when you were in college?

PL: I don't think that co-ops and internships were as popular as they are today. I earned fifty percent of my college tuition by working as a waitress in the summers and working at a bookstore on campus. But I did spend one summer at Saginaw Steering Gear. It was a product development engineer position and I worked on improving steering gear mechanisms.

I can tell you a little bit about my college experience. Penn State was often referred to as "Happy Valley." And a university is just a wonderful place. You have so many opportunities to learn and to meet people. And when I attended college there were a lot more guys than girls in my classes. And I did join the student chapter of the local

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SWE group, and it really helped me to get to know other women that were in the same pursuit as myself.

CL: I'm also the only woman in two of my classes. What kind of job opportunities were there when you graduated?

PL: When I graduated I had two job offers, personally. One was with Boeing in Philadelphia, where they make helicopters. And the other was with Pratt & Whitney Aircraft in East Hartford, Connecticut. I ended up working for Pratt & Whitney. They made gas turbine engines for commercial applications for the planes that we fly in. And I believe I chose that place because I felt a link to my ancestry. My grandparents and great grandparents came over on a boat to America from Poland, and a lot of my relatives settled in that area.

CL: What were your job responsibilities at your first job?

PL: I was involved in preliminary design of gas turbine engines' components and systems. And that involved finite element analysis, materials testing, and some component testing. I remember we had to punch out the computer commands on long computer cards. And we would have to take our box of computer cards, walk downstairs to the one computer, and then about an hour later you would have to go

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down there and pick up your box of cards and read them in to get the results. So it was quite a tedious process.

CL: What kind of people did you work with?

PL: The year that I was hired in Pratt & Whitney had a large group of new hires, recent college graduates. They quickly became my second family. We even celebrated Thanksgiving together. And it's where I met the man who would become my husband. I remember telling my boss that I was going to get married. And he said, "Oh, to the boy back home?" And I said, "No, to that guy right over there." (laughs) And he laughed and he said, "Oh, okay." And we talked a little. He said, "Well, just don't be throwing computer cards over the cubicles when you have an argument." So it was very unusual for both of us, as a married couple, to be working in the same office. But at that time at Pratt & Whitney there were a hundred people in just the structural analysis group. So even though we worked in the same office, we did not have occasion to work on the same project or go to the same meetings.

CL: Did you pursue any higher level of education after college graduation?

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PL: Yes, I attended classes at night towards a master's degree in mechanical engineering. At that time it was called the Hartford Graduate Center and later became Rensselaer Polytech Institute [Hartford branch of Rensselaer Polytechnic Institute]. I also obtained my professional engineer's license about that time. And one of the other things I did was I joined the local SWE chapter as a professional. And as it turns out one of the friends that I met there twenty-five years ago is now married to the vice president of the company that I work for now. So you never know how things are going to end up with people that you meet early on in life.

CL: What other jobs did you have?

PL: Well, after about five years I went to work for Teledyne in Toledo, Ohio. Their product was small gas turbine engines for military applications. My job responsibilities were very similar, structural analysis of components and engine systems. We were the first couple to be hired in to that company. So that was rather groundbreaking, to have both of us working there. And also there were seven or eight other couples hired in right after us, so we had a nice group of people to work with. In that situation there were about twenty people in the mechanical design group. And we—my

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husband and I—coexisted but again we did not go to the same meetings or work on the same projects. But had a very lot in common to talk about, shared a lot of stories from work.

CL: How did children affect your career?

PL: Well, after my first child was born—that would be you, Christine—I worked part-time, twenty hours a week. And after the second child I was a stay-at-home mom. Eventually we had four children and I was out of the workforce for twelve years. It was my choice to be a stay-at-home mom, and although it interrupted my career I don't regret that decision for a minute because I felt that it was very important to be with my kids.

CL: Did you return to work?

PL: Yes, I found myself in a position that I had to support myself and return to Teledyne to work part-time again. They were very flexible about working hours. Working at an engineering job and getting a good salary enabled me to move forward with my life. A lot of things had happened over twelve years. The company had gone through two different computer systems, there was a new finite element analysis code, we all had PCs at our desk. So there was an adjustment to be made.

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CL: How did your family impact your work status?

PL: Well, I've been working part-time for seven years, now. And there's been quite an increased workload with the new business that has come into the company, and there's been some pressure for me to go full time. We have no family, extended family members in town and I've been the primary caretaker of the children. So my preference would be to stay working part-time as long as possible to be available for the children.

CL: How do you feel about your job now?

PL: It's a very exciting time to be working at Teledyne right now. The new business has resulted in several new engine designs, and I've been involved in the preliminary design from the beginning and been able to get involved in all the aspects of engine design: the stress analysis, critical speed, material testing, component testing. There are several advanced design concepts with advanced materials being explored. There are a lot of challenges and that means you don't know the answers, yet. And sometimes it seems overwhelming with my new responsibilities, but at the same time I feel like I'm part of the team. I'm right there in the thick of things.

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CL: How do you feel about your job now? How do you balance work and family?

PL: Well, it's been very difficult to balance work and family. I make sure I'm at work when there's an important deadline or presentation. But typically I walk out of the office at three o'clock and if someone asks I tell them I'm going to my second job. Most of the men that I work with in my office go home to dinner on the table and a wife that handles all the responsibilities of children and household maintenance. I need a wife. (laughs)

CL: (laughs) Are there any other women engineers in your office?

PL: Yes, there are. There are seventy employees in the company, of which fifteen are women, and there are three women engineers. One is a recent college graduate and the other has worked over twenty years for Teledyne. And she chose to work full time even after having three children. She has a very supportive husband who's there at home right after school. We have children just about the same ages, so often times we're comparing notes on what one or the other is doing. And I believe we're each happy with the choice that we've made.

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CL: Who inspired or influenced you in your engineering career and what kind of lessons did they teach you?

PL: There is one special person that has influenced my career, and it's my coworker now. His name is Jerry and he's worked over thirty years with Teledyne. At one point when business was slow a few years ago he was laid off as a cost-saving measure. And I was kept on a cheap part-time employee with no benefits. He has since retired and actually come back as a contractor. Throughout most of his career there were no PCs and he did all hand calculations and a lot of it was—involved judgment based on experience. He has been a great mentor because there has never been a dumb question and he's never said, "You should know that." He just patiently explains how the basic design engineering principles apply to gas turbine engine design. And he's treated me with respect when it was so important to me on a personal level. I told him that and I told him I appreciated that, and later I realized that's the way he treats everyone in the office. He's a true professional.

CL: What about the mission of your company and working with, making engines for the defense section? Do you think that challenges your ethics or morals?

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PL: I think about that a lot, and my conclusion is that if it helps to keep our country safe then it's a worthwhile endeavor.

CL: What is your definition of success as a woman engineer?

PL: My idea of success for a woman engineer would be that she do the job well, that she's happy doing what she's doing, and also that she lets the strengths of being female complement her job and how she does her job.

CL: And what are examples of strengths that are complementary?

PL: Being sensitive to how information and decisions and judgments are made. Paying attention to details. I think women have very good organization and communication skills.

CL: And did you face any resistance in becoming an engineer?

PL: I did not experience any harassment or bullying for myself. I've experienced a good working relationship with the other employees in the office as well as in the union.

CL: Do you think it's easier now for women to enter the field?

PL: I think it's more acceptable for women to graduate from college and go to work, versus just being a mom. And for example, you still have six months before you graduate and

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you already have a job offer, which is wonderful. And your job offer is comparable to my salary now. And I think employers recognize that to attract bright, talented young women they're going to be compensated on a fair basis as men. In some ways it is easier.

CL: What is an example of a way that it's easier?

PL: I think that men's thinking, and the younger people that are in management positions now, are more open and accepting of having to work with another woman.

CL: What about advancing as an engineer? How do you feel—how difficult do you think it is for women to advance in engineering?

PL: At Teledyne, right now where I work, there are no female managers. And I think there's a combination of factors that is necessary to advance in engineering into management positions. And they include your ability, your self-confidence, ambition, and commitment. On a personal level, for myself, childcare has been an issue. And I think that's true for a lot of other people, also. And it's an individual decision for each woman engineer as to what their goals are and how they're going to accomplish that.

CL: Do you have any advice for me when I start working?

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PL: My advice to you would be to be honest and respectful. And that's something that can be applied to any profession. And when it comes to engineering, it would be nice if we were all brilliant, but there's a lot to be said for being motivated and having perseverance, and your organization and communication skills will help you a lot. And lastly, keep learning because things are always changing. Especially in engineering, someone always has a better idea, and to be open to those new ideas.

CL: Do you have any other goals as an engineer before you retire?

PL: I enjoy what I'm doing now, and if I can be the best at what I'm doing now I would be very happy. I would like to remain a technical-oriented engineer.

CL: Do you have any other goals in other areas of your life?

PL: I would like to win a blue ribbon in a quilt show. And another thing would be to be certified in computer maintenance.

CL: Thank you very much.

PL: Thank you, Christine. Love you.

CL: Love you.

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END OF INTERVIEW