(Intro Music)
Introduction:
This is life invented. Invent the life you want to lead. Invent the life you want to lead. Be compassionate, be creative, the possibilities are limitless. Go Broncos.

Narrator: Welcome to the Life Invented podcast presented by Santa Clara University. From campus life to what it means to learn in the Silicon Valley, we explore how to be a Global Citizen in an era of change. This is: Life Invented.

Moderator:
It's a beautiful day in Santa Clara and on this episode we'll find out what it's like to learn in an environment with one of the largest percentages of female STEM staff in the country. Dr. Tonya Nilsson and 2017 graduate Cynthia Le are two women who join us to share their experience as women in STEM at Santa Clara University.
So, Dr. Tonya Nilsson, please dish yo' deets.

Dr. Tonya Nilsson (TN):
Hi, I'm Tonya Nilsson. Dr. Tonya Nilsson, known as Dr. T here at Santa Clara. I actually grew up in the middle of the Mojave Desert out in a tiny little town called Twentynine Palms, but I am definitely, definitely a Northern California girl today. I am a civil engineer that focuses in structural engineering and really, really love looking at non-conventional building materials like bamboo, straw bale, earth bags. How we can build frugally and help in developing countries. But outside of the university, my big passion is anything that gets me outdoors. I'm an avid trail runner and my husband and I have been rock climbing together for 26 years.

Cynthia Le (CL):
I'm Cynthia. I'm a senior Computer Science and Engineering major, Dance minor, here at Santa Clara. I am a part of the millennial generation and my family, I'm Chinese American. My parents grew up in Malaysia and immigrated over to America and I grew up in Boise, Idaho. I'm really passionate about dance and the other thing would be food. So eating and dancing, my two favorite things.

Moderator:
Can you share when you realized that STEM was your thing or was there a person or an experience that helped you figure that out?

CL:
I grew up in a sort of engineering family. My brother is a Bioengineer. He's 3 years older than me and my dad is an Electrical Engineer so it's always around me and I feel very fortunate because the company that my dad worked at, they had a lot of outreach for young people in STEM as well as specifically women in STEM and girls in STEM. So I think since elementary school, all the schools that I went to had really great programs that brought students and STEM

together, and science and math always came easier to me as well. So I think all of those things came together to sort of always have it in my mind.

TN:
I was always very, very fast and good in math. That's where it really jumped out for me. My mother was a librarian, my dad was a Marine. I didn't know what an engineer was, I had never heard the term. I was very, very lucky in that I had a high school--female--high school counselor who saw my test reports and saw where my aptitude. I was very left and right brain creative and so she pushed me into design engineering as a way to engage the creative side but still have my math and science. And it was ironic, I then decided I wanted to take drafting my senior year. This was before computer aided drafting, mind you, and the male high school counselor forbid me to do. He said girls don't take drafting. It's a generational thing. It's a societal thing but when you say the word engineer we don't picture a female. You know it's just not what...we have still some roles and so that's one of our biggest problems is just breaking that down and having more and more role models. If you have a role model it's much easier to see yourself going down that path than if somebody says, Oh that's not normal.

CL:
So for me personally I require that push sometimes to, sort of be that first motivation to get out there and put myself out there. But then once I'm out there it's sort of that ramp up, right. And I'm on the hip hop dance team here on campus and I've noticed that it's always the guys that are ready and go out there on their own without a push from anybody. And I feel like that's in class too. It's always a guy raising their hand eager to speak their mind, whereas for me personally I feel a little bit more shy of saying the wrong thing or my answer will get interpreted the wrong way. Same thing with I'm not sure if I really want to go out and show my dance moves right at first, but if my friend pushes me out there then that’s, like, what I need to be able to get confidence to go and same thing in the classroom. It's that first initial confidence.

Moderator:
I grew up in a family of boys so I've witnessed firsthand how men and women approach situations differently. Are there times when you really see the difference between how men and women approach a situation, and do you feel like it affects you personally?

TN:
I would say, you know, it's funny because it's not a flaw and I don't know if it drives me crazy more out of jealousy. And they’ve done studies on this, they've shown this and it gets back to what Cynthia was saying about confidence and how guys will just speak up. But they've definitely shown that guys are like “let's just go try it.” And if something goes wrong, it's not because they made a mistake; it's because the process was bad. Where women tend to, if something goes wrong, we internalize it. Sometimes it drives me crazy how like “aagh just whatever. And if that didn't go right it’s not my fault, we’ll just fix it” and I’m thinking “Ahh. If you had just listened to me.”

But, but I have to take ownership of that because maybe I didn't speak up or I'm the one that's not necessarily willing to speak up as much because I want to think it through because I'm going to internalize my errors, and it's just a difference of gender style. So, I mean, I have to say it's hard for me to think of stuff now because here at Santa Clara it's such a supportive environment.

(Music)

Moderator:
Which parts of Santa Clara do you think best show why women choose Santa Clara University to pursue a future in STEM?

CL:
I feel like in the Computer Engineering Department specifically they do great within women in engineering outreach. So, at the end of every quarter they hold a lunch and that's catered for all of the women in computing to get together and just share a meal. They also sponsor, I think, up to 20 or 30 students to go to the Grace Hopper Conference every year. So, the Grace Hopper Conference is a celebration of Women in Computing named after Grace Hopper who basically, like, invented Computer Science. She's an incredible woman, Admiral Grace Hopper. And I was fortunate to go this year and I really wish I had taken advantage of it every year prior because it was really inspiring to be surrounded by women from the whole world all interested in computing. We took a bunch of classes, there's a lot of networking. The biggest takeaway I got was making connections and I went to this random talk on a whim because I had an extra 15 minutes. I sat down. There's was a woman next to me. So I introduced myself, “Hey, I’m Cynthia. I'm from California. How's your day going?” She's like “Oh wait, I'm California too.” And I was like “Oh I went to Santa Clara University” and she goes “I just graduated two years ago.” And it was so cool because she actually works at Google. So I talked to her a lot about her experience and we sort of shared stories about what it was like for her just two years ago being a woman in computing. She told me like “Oh this conference when I came, only the school only sent like five people” and now they sent 30. It's really cool to see the amount of growth that's happened in just the last two years and that sort of was echoed a lot through the conference.

Moderator:
So let's look ahead to what's next. It feels like collectively we're in this period of taking stock and building awareness of the current state of the gender gap. So what do you think, Tonya, are the next steps in making fundamental advances for Women in STEM?

TN:
I know there's definitely faculty who are very, very interested in pedagogy, which is the methodology of teaching and we've definitely found female students, really underrepresented students, they tend to do much better in a class that engages them in collaborative work as opposed to just a lecture format. A lot of faculty and this was my own experience when I first started teaching, very interested in what is this active learning, what is this way to do it. And

then of course there's, there's seminars that have a lot of QA and interaction of “Okay, what did you witness? What was this about? How would you do this? What are baby steps? What are bigger steps to help faculty move into that?”

CL:
Engineering one is a class that we all have to take, all engineers have to take. And they've made a section for women in Engineering, right? I think I would've appreciated that because right from the beginning first year you get to meet a bunch of the other female engineers and form those bonds right from the beginning. I don't think I met all of the females in my class of Computer Engineers until, like, this year. (Laughs.) So I think that's really cool because once you form those bonds then you know more faces in class and you feel that connection. I feel that that's half the battle is, I feel a lot more comfortable speaking out when I kind of know the people around me.

TN:
We currently have in Civil Engineering a really strong cohort of women in the senior class, like the top students want, you just go down the list. Female, female, female, there's one student who's male who's wonderful and he actually studies and does everything with this strong female cohort. But I think it's eight women at the top plus this one male student. And it's just, that’s a really dramatic example but what we've really found is, and employers are really aware of this, because female students aren't necessarily encouraged in high school to go into engineering, you have to have a lot of personal drive. And so it's because you're going to be more driven to come into an area where maybe it's just not “normal” quote unquote for you to be there.

CL:
I think, like what Dr. T said, the environment here really is very collaborative and really supportive and I don't feel like my opinion or how I do is based off of my gender which has been something I've thought about before. Just like “Oh, did I get this position because I'm the minority in engineering.” But I always have to think back of “Oh I do have the grades, Oh I do have the experience.” Like what Dr. T said, it's not someone telling me these things, it’s just sort of self thought and I think there's an aspect of needing to prove yourself too that fuels that drive. Like they don't expect us, because we're women, to excel. So it kind of is that fuel to the fire too. But I want to prove them wrong. I want to show that I am capable and I might be better. (10:19)

Moderator:
Let's talk about the culture here at Santa Clara for women in STEM. What kind of support is available on campus for women who want to pursue careers in STEM? Additionally for students who haven't been encouraged in high school or maybe feel like they're not naturally adept at STEM areas of study, what kind of environment is Santa Clara creating for those students?

TN:
Well, I think unfortunately it's still a lot of that stereotype--you know girls aren't good in math. That's a bigger picture. I mean that's a long-term sort of getting where those stereotypes are

being infused into our children at the younger ages to get that out to these STEM outreach. That sort of thing is a huge part of it. And I would say, you know, at Santa Clara one of the things, once kids are in, one of the things that's so great is the mentoring that the upperclassmen female students do of the lowerclassmen. So whether it's through Women's Computing Club, whether it's through the Society of Women Engineers, there's a lot of big sister type mentoring and that it's organized. You know it doesn't just happen organically, it's an organized effort which is really amazing. Also at this university we used to have the highest percentage of female faculty of any engineering school in the country. Then Smith College, which is an all girls school, got an engineering program. *Sighs humorously* So I don't know where we're at today but we have a very, very high percentage. One of the highest in the country. And so that role modeling to help girls see that it's OK. But to get into the programs, it's really about outreach whether it's in the sciences with the AWS group, the American Women in Science, or with the computing club or with SWE (Society of Women Engineers). They do a lot of K through 12 outreach. They're getting out there and showing these kids and letting the girls play because that's when they say "Oh it's fun. I could do this. I can." For me that's I think one of the biggest things is that exposure early on because you've got to sort of build that. Unfortunately, you do have to build that belief that I could be here. And I think that outreach from girls that are doing it is when they learn and they know you're fine. Come on and try it.

Moderator:
And for you Cynthia what's next for you as an engineer, a dancer, and a woman working in the STEM field?

CL:
So I'm actually, this is a question I feel like a lot of seniors dread hearing but I'm really happy because I have my job after graduation lined up. I'll be working at Google as a technical consultant. So I interned there this last summer and it was really cool because I got to interview after the summer was over and convert to a full time job. My hopes, my plan right now is to go work for a couple of years and then go to grad school and get a Master's degree. Not sure what else yet and I still am playing around with how I'm going to continue dancing. Just promoting the arts in general for engineers specifically, engineering is such a stressful tough job and it requires so much work. I feel like for me, dancing has been such a great stress reliever and I see some of my friends in class. Oh I wish you could just come to dance class with me and release some of that stress!

Moderator:
Indeed. Thank you Cynthia and Tanya for sharing your stories and experiences. It's always a great time to come together and take a moment to think of all the women who've led the way quietly with excellence and to honor the role models that we've had on our personal journeys. It feels like now's the time to think about what limits we're seeing being subtly set for women and how we can shine a light on those issues. To think more about what women need in the classroom, in the workplace to make the best future possible. Here at Santa Clara University,

we're doing all that we can to make that happen. Thanks for joining us on this episode of Life Invented.

CL:
Thank you so much.

TN:
Thanks for having us.

Narrator:
You've just listened to the Life Invented podcast presented by Santa Clara University and there's so much more to explore. Visit us at scu.edu/podcasts and learn more about Santa Clara's commitment to innovation and inspiring opportunities.

(Outro music)