Living Histories Series

Transcript

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When I was a kid, my family moved around the U.S. a lot. My parents gave me an appreciation for good tools because we renovated the houses we were living in. Building that equity gave my parents the financial stability to send me to college out of state.

Last week, there was a great Story Collider featuring André Isaacs and Joey Jefferson. Their paths are very different from mine, but we do have some shared feelings. André talked about education being a ticket out. Joey talked about not belonging. I definitely wanted out of where I was – I didn’t belong.

So I went on a quest to find a place I did belong. But I’m getting ahead of myself.

In college, I became a physics major both because my lab classes were like playing with toys, and because I had a vague notion that I could support myself if I did something sciency.

In my sophomore year, I was excited to be chosen to be on a team of students going to Fermilab. My very first paid science job was cleaning birdshit off the calorimeter in the picture. After painting the calorimeter, I spent the rest of the summer soldering 4-micron wires 4-mm apart on a drift chamber. It was mind numbing. It was also lonely – I somehow wasn’t allowed to live with my peers because I was the only woman on the student team.

So particle physics wasn’t as much fun as I had imagined it would be. Neither was astrophysics. My professor kept hitting on me. I did not want to enter a field in which I’d ever have to interact with him again.

For one year, I studied in Britain, where I again loved my lab classes, but I was put off by overhearing a professor talk about what a shame it was that there were so many women in that year’s physics class. No one experience like this was devastating on its own, but in their sum, they rattled me, even though I was so privileged in other ways. I cannot imagine how tough it was for the generation before me to succeed in science, and I cannot imagine how tough it still is for people who endure additional forms of prejudice.

Back in the U.S. as a senior in college, I helped organize the first Take Back the Night march at my university. Then I met with university administrators to implement ways to make our campus safer. Seeing that change happen was really satisfying, even though it was way too slow.

I was still a physics major on paper, but my real major was college radio. At the time, I felt all the things I was pouring my time into (documenting the station’s broader impacts in the community, helping to file federal reports, public speaking) were orthogonal to any future career. Looking back, they were great job training.

Now, around this time, I figured out that you get paid to earn a PhD in physics! This blew my mind! Now, I tell this to students in every class I teach. At the time, I had no idea how to turn a physics degree into a job, and going to grad school seemed like an honorable way to avoid having to admit that I felt lost.

So I was shocked when I was accepted into some strong graduate programs, including at Princeton. This acceptance was the start of a case of imposter syndrome that I have not shaken off to this day. The feeling of being an imposter was only heightened when a dude in my class felt the need to tell me that the only reason so many women were admitted to our class was because of our gender. My imposter syndrome said that he was probably right about me. But I knew he was wrong about the other women in the program. Deborah Kuchnir Fygenson had just won the Apker Award. Vikki Kaspi would go on to win the Shaw Prize in Astronomy!

If any of you out there struggle with some of these same issues, some things I’ve found helpful are Delia Saenz’s research on the effects of tokenism, or a recent thread-story by Dr. Kimberly Manning about how the feeling that you have to represent your demographic can be a weighty burden.

When I then failed the 1st year graduate exam, I might have felt like I was the only student who deserved to do so, but at least when I did, I was not representing all women in physics, because the other women in my class were brilliant. Of all the students in my class, 1/3 of us failed. We banded together, taught each other the material, and passed the exams.

At the end of my 2nd year in grad school, Sol Gruner, a biophysics professor, was just being polite and asked me what my plans were for the future. I surprised him (and myself) by saying, “I thought I’d join your group!” He said something like, “Maybe you should come talk to me about that.” I made an appointment. He showed me every piece of equipment in the lab, like this x-ray beamline. Then he asked me why I wanted to join the group. Uh oh. I got brave and told the truth. I said that I didn’t know anything about biology, but whenever I walked by his lab, the people in his group looked like they enjoyed each other and loved science. And I love science too. Sol looked thoughtful, then said that’s how he got into biophysics too. He made it clear that we’d have a trial period and that I had a lot of catching up to do. But now that I was in a group of people I clicked with, the work was a joy.

We made an early discovery that the activity of a particular ion channel is related to the spontaneous curvature of the lipids that surround it, and I was off and running.

Toward the middle of grad school, a bunch of us women in the department met with the Chair. We wanted some basic changes like removing pornography of naked women from the machine shop. We also wanted to know why there were no tenure-track women on the faculty. The Chair told us that hiring a woman would be very difficult because she would have to be unassailable, so that no one could say she has been hired just because she was a woman. I interpreted that to mean that she had to be better than nearly all the men on the faculty. That’s when I stopped thinking I could ever become a professor. The Chair did say that some of the women in the program were strong contenders, and he was right. My housemate Suzanne Staggs later joined the faculty and was recently elected to the National Academy of Sciences.

Even though I felt that a career as a professor was of the question for me, I love universities. I thought that an interesting career could be running an instrumentation facility. At the time, few groups were doing cryo electron microscopy on membranes. One of them was Joe Zasadzinski, who was at UC Santa Barbara. I asked around and heard he was a good mentor. I wrote a proposal about the experiments I wanted to do, and I landed a UC Presidential Postdoctoral Fellowship in Joe’s lab.

This is where the love line intersects with the career line. Shortly before defending my PhD at Princeton, two important things happened that affected the trajectory of my career. First, I did not marry the wrong person. It was a close call. Shortly after, I fell in love with the boy in the lab next door. He and I spent the next ten years following career paths that finally landed us in the same place.

A couple years into my postdoc, my love wanted to go to a conference in San Jose. My officemate, Ka Yee Lee, had worked with Harden McConnell at Stanford. Because San Jose is near Stanford, I decided to meet this Harden person. By the end of our conversation, Harden had offered me a 2nd postdoctoral position, which I had accepted on the spot. Then I landed an NIH Fellowship to do that research.

In Harden’s lab, I was researching liquid-liquid phase transitions in lipid monolayers, thinking about stripe phases and critical phenomena. I was also generating most of my own research directions. An idea crept back into my head about maybe becoming a professor.

I loved working with Harden and the group, so I was not desperate to go. So that year, I decided to apply only to universities in cities where I was sure my partner would be happy. I applied to only 3 universities, but submitted 8 applications, in every plausible field. That’s how I became a chemistry professor at the University of Washington with no change in my research focus.

My luck didn’t stop there. The first graduate student to join my group was the brilliant and driven Sarah Veatch. We happened to be doing the right research at the right time. We were trying to find large-scale liquid-liquid phase separation in model lipid bilayers when the first paper showing how this behavior could be achieved was published in 2001. We were hot on their heels with our papers in 2002 and 2003, measuring transition temperatures and tie-lines. That 2003 paper has been cited over a thousand times now.

Sarah convinced her fantastic friend Ben Stottrup to join the group. I might have initially taught Sarah and Ben about phase behavior in lipid membranes, but they got me tenure and taught me how to be a run a group. They and many other students “mentored up”, and I am so grateful.

Nationally, several other women in membrane biophysics were hired at that time. One year at a Biophysical Society meeting, I ran into Erin Sheets and said, “Where are the rest of the Membrane Chix?” Erin said, “the WHAT?!” and promptly printed all of us t-shirts. We didn’t have an Old Boys Network, so we became our own network. We shared stories about which colleagues you could trust and which you should not share preliminary results with. We also noticed that some outstanding senior women in our field had not won major BPS awards. We ganged up on them and encouraged them to apply. Almost to a person, these amazing scientists said, “What, me? Are you sure?” Did some of them feel like imposters too?

As our groups grew, so did our network. Now we are senior women in our field, and we badger each other to apply for awards. A few years ago, I was badgering Ka Yee Lee to apply for Fellow of the Biophysical Society. She said no, but to make me apply, she said that if I applied, she would apply the year after. I said “Fine! I’ll apply, and I won’t get it, but I will make you apply, because you deserve it.” And I got the award. So did she, of course. Co-mentorship through this group is one of the highlights of my year.

Since then, I’ve been so lucky to work with many talented trainees who are also really wonderful people. If I had more time with you today, I would tell you about each one of them and their discoveries. Maybe at a future talk. Thanks for listening.