Building the Bionic Woman

I was shielded from stereotypes during my young and impressionable years. I didn’t realize they existed until maybe middle school, and by then, I’d already decided I wanted to build the Bionic Woman. I was always drawn to ‘techy’ stuff, but I also liked what people would consider typical girly things. I would just as quickly ask for a RadioShack kit as a Betty Crocker oven, and get both. I learned to solder at the same time I was playing with dolls (not necessarily Barbie, although I did collect them for a while and have some that are quite valuable). In the third grade, I started programming in BASIC on a Commodore 64 computer in the basement.

My parents were large influenc- ers in my life. From an early age, I loved math, puzzles, computers, and gaming, and I seemed to have a knack for them. I would watch anything that was science fiction. There was one show I particularly liked: The Bionic Woman.

Middle school was the time when everyone started to ask you, “What do you want to do in life? What do you want to be?” I wanted to build the Bionic Woman!

At first I wanted to be a doctor, like the ones who put Jaime—the Bionic Woman—together, but then I took biology and hated it. I believe it was a science teacher who suggested engineering—after all, doctors didn’t build the bionic implants; they just did the operation.

College is when I learned about stereotypes. “The only reason you’re here is because the school needs diversity.” “Maybe you should think about applying to graduate school at XYZ University; they are trying to bump up their minority numbers.” When you hear comments like that and you’re no longer getting straight As—and when you don’t realize you’re actually doing well because everyone else is barely passing—you begin to doubt yourself.

What kept me hopeful was a series of summer internships at NASA’s Jet Propulsion Laboratory (JPL). I remember getting some simple, menial task that first summer. I rocked it in less than a week, and they gave me more challenging tasks. I kept hearing, “She can figure out anything. She’s great; we’d better not lose her.” After the summer I’d go back to college, sit in class, and feel dumb again.

I decided to work at JPL while going to graduate school because I knew I would need that ego boost. When I made a straight 4.0 GPA my first year, I thought I was lucky. When I received a Ph.D. fellowship, I thought I must have been the only one who applied.

I was 1 year out from earning my Ph.D. and had just won my first NASA grant. I arrived at my team-kickoff meeting to find one guy sitting in the room. “They moved the secretaries’ meeting down the hall,” he said. I held out my hand and said, “Oh, you must be so-and-so. I’m Dr. Howard. I’m running this meeting. Welcome to my team.” I had my confidence back.

I started outreach programs for K-12 students and undergraduate women. Every summer, I hired and mentored undergraduate students at JPL; almost all of them continued on to graduate school. Students came to me and said, “I was about to drop out, but I think I can do it now,” or “I want to grow up to be a scientist like you,” or “You’re the coolest.” Such unbiased, unfiltered expressions of gratitude, hope, and admiration—they turned the tide for me.

I’d never thought of myself as a mentor, but I realized that, just as past words had punched holes through my soul, I could patch holes for others through my own words. In return, my own holes were filled.

Today I’m a full professor, holding an endowed chair. I’m associate director of research for the robotics institute at Georgia Institute of Technology in Atlanta. I’m chief technology officer and founder of a startup. I still run outreach camps for K-12 students, even a robotics camp for children with disabilities. Every so often, in the dark of night, I still get those twinges of self-doubt. But now I can just close my eyes, breath deep, and tell my own self, “You’re the coolest.”

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