I got into engineering totally on a whim. I wanted to be a veterinarian, but I didn't know what to major in for undergrad. My parents said, "Just get an engineering degree then you can major in anything you want."
After nine years at UC Santa Barbara, Kimberly Turner has just been appointed Chair of the Department of Mechanical Engineering?at just 35 years old. She earned her B.S. in Mechanical Engineering from Michigan Technological University in only three years, graduating in 1994, and received her Ph.D. in Theoretical and Applied Mechanics from Cornell University in 1999. She joined the department of Mechanical & Environmental Engineering (since redesignated the Department of Mechanical Engineering) at UCSB in August 1999, where she is continuing her research in the areas of MEMS and nanosystems. Her research group comprises six Ph.D. students, three undergraduate researchers, and a postdoc.

Turner is the recipient of an NSF CAREER award, and her work has been published in Nature, Nanotechnology, JMEMS, and multiple other publications. She is a member of many technical societies including IEEE and ASME, is currently Chair of the ASME MEMS Division, and is General Chair for the 2010 Americas Workshop on Solid-State Sensors & Actuators.

The newly-appointed department chair talked to Convergence about her vision for the department, her research, her experience as a young woman in a male-dominated field, and why she doesn?t fit the ?girl engineer? stereotype.

How did you get into engineering?

I got into engineering totally on a whim. I wanted to be a veterinarian, but I didn?t know what to major in for undergrad. My parents said, ?Just get an engineering degree then you can major in anything you want,? so I did that and I got my undergrad degree in three years. Then I started looking into grad schools and I realized I was going to have to stay an extra year to do all that biology (for veterinary school). At the same time I had applied for national fellowships and I got a National Science Foundation fellowship for engineering.

I did my Ph.D. at Cornell. I got into MEMS (microelectromechanical systems) while I was there and just loved it?although there were moments when I wondered if I?d made the right choice. I used to sneak into the vet school and go to lectures because I was still really interested in that and I?d learned a tremendous amount on my own. I was really into it but now I?m glad I have dogs as a hobby. Engineering suits me because it?s very creative.
I didn’t think initially that I’d fit into academia. To be brutally honest, I thought I was too diverse. My dad is an academic, and engineering is one of his few interests. I didn’t see myself as that narrow, so I thought I would get a job in the industry and work on research and I’d just do all the things I wanted to do on the side. But my Ph.D. advisor said, ‘I think you’d be a great academic. You really should give it a shot.’ I didn’t want to be a postdoc because I was tired of being a poor grad student and I didn’t think I could do that lifestyle anymore, but he said, ‘You might not have to.’ I applied to Berkeley and UCSB, and I got the job here right away. I didn’t get the Berkeley job; they hired someone much more senior who was already well into his career. I was really impressed when I came here. There were people that I interviewed with that had a big vision. They really seemed to want to go into new and diverse areas. I thought that that was the kind of place where I’d want to be. Someplace where change is happening, a place that’s growing and moving at an exponential rate.

I told myself when I decided to go into academia that I had to do research I would enjoy doing and to make sure I didn’t stress about tenure. I saw too many young academics completely stressed out and just ruining what seemed to be the best years of their lives. I thought, I’m going to do what I want and if they’ve happy with me after five, seven years and I get tenure, that’s great. I didn’t stress and I got tenure after five years. I didn’t know if academia was right for me, but now looking back I can’t see myself in any other job. My schedule’s flexible. I work a lot but I work on things I want to work on, I can ride and race my bike and I can show my dogs and I can live in Santa Barbara at the beach. I mean, what’s not to like?

You were just appointed Chair of the Department of Mechanical Engineering. Did you have any hesitation about accepting the position?

A lot. You hear people say, ‘Don’t do it. You really need to just focus on your research.’ But I’m not a 100 percent focus on anything kind of person. I’ve enjoyed the diverse challenges and the responsibilities that I’ve taken on over the years.

I love my research program and I like the way my lab functions; it runs like a little machine. I don’t really want to mess that up, but I think with good time management and good support from the rest of the faculty that I can do it. But yes, I was worried. I felt like ideally it would have been good to do this a year or two from now, but I always said I would never do it before I was full professor and before I felt like my research career was firmly established. Those have both happened, so that’s OK.

I have great colleagues here who are doing research which, quite literally, will change the world.

As chair, what’s your vision for the department?

I always said that if I became department chair I wouldn’t want to just slog through the
day to day stuff. I want to take on a mission and do something really good for the department. I want to improve the undergraduate labs. I also want to increase the visibility of the department, because that’s what improves rankings and rankings improve graduate student quality?it’s just a big circle. If the department does well overall we’ll all do better. You can be the smartest person ever, but if you don’t have smart grad students and postdocs you’re dead in the water.

Our department has hired some amazing people in the recent past, and I am very excited to see it grow and change. I have great colleagues here who are doing research which, quite literally, will change the world. We need to support the careers of the young faculty, and continue to provide a dynamic environment in which to teach, work, and collaborate!

**You involve undergraduates in your research, which is somewhat unusual. Why do you do that?**

I like to have undergrads in my lab for a number of reasons. One is that they aren’t jaded by academia. They have not learned how to be close-minded and so they’re often more creative. They think outside the box because they still don’t know what’s possible. I feel like it’s also beneficial to undergrads to see what research is like and get into real products. It makes learning more active and I think that’s always a good thing. It’s been fun. I’ve worked with about 30 undergrads and I involve them in the whole process. They’re not just lab rats. They publish papers and they present papers at conferences if it’s mostly their work. I want them to see what’s going on outside my lab and conferences are a great way to get a huge survey of what’s going on in the field and hopefully motivate them to want to go on to grad school.

**You’re only 35. Do you feel like your youth has been a problem professionally?**

Although I have been here for over nine years, people still call me a junior faculty member. Also, I’m often compared to some of my colleagues who have been around for the same time, but people will tell me, ‘Oh, you’re too young to be department chair.’ They won’t make those remarks to someone who is literally at the same career step, maybe five years older than me. It shouldn’t matter how old you are. That does bother me sometimes. to be thought of as too young to do things. It never really hurt in the long run, but it does bother me. But I’m not willing to try to look older or more conservative because of that. It doesn’t bug me that much.

**How has your experience been as a young woman in engineering?**

I’ve always felt like a minority. When I was an undergrad there just weren’t very many women. I’d be in a class of 50 and look around the room and there’d be two of us.

I also felt like a minority in terms of my diverse interests. I’ve always felt like I didn’t really fit the typical academic mold, but it’s worked out fine. There are many ways to manage your career and there’s no one right way. I actually think that being a female made that part easier. Because there weren’t any others to model myself after, I could kind of create my own existence. It would have been great to have women colleagues to talk to and have someone else to go through the process with, but at the same time, if anything, I was able to spread my wings on my own. That’s not to say there weren’t
negative things, but I try not to dwell on them.

I also think that I don’t fit the female engineer stereotype—there’s this mistaken idea that if you’re a girl engineer you somehow have masculine interests. People would be horrified if they knew that I like to read fashion magazines and that I like to shop at Nordstrom. I really am kind of a girly girl. I like makeup and shoes and all those things that girls like. One time on a course evaluation I actually got that “Professor Turner is a really good dresser.”

For a look at Kimberly Turner’s research and to see why the “Dude” (above) is involved, please see Very Small Research [2].

You say you have diverse interests. Tell me more about them.

Cycling and my dogs are my main outside interests. I really like to handle show dogs and train show dogs. And I race my bicycle—I ride for Team Chicken Ranch. I did probably 20 races this year and that takes a lot of travel and training time, although I can involve my students in that too. We’re probably one of the fittest research groups on campus. Sometimes I’ll have weekly research meetings with my students as we climb Old San Marcos. We’re pretty hard-core.

I’m also musical. I play the piano. I’m not very good but I just play for enjoyment. I’m an avid reader of anything. I don’t read engineering books 100 percent of the time either. At night, my way to de-stress is to read something completely different. I love cooking so I read cookbooks, and novels and history.

I just have a lot of interests; I’m not one-dimensional at all. I think it helps me because I’m really content.

What do your diverse interests bring to your research and teaching?

I am always thinking about how engineering could make things better. When I ride the bike I’m thinking, We should have a class project on measuring the effect of certain tires versus friction or, Oh, we could put our gyro on the bike or, How could we build a better power meter? I do bring that into my classes. Right now I’m teaching a design course and it’s really easy to bring things like cycling into a design course. Last year their class project was to build a pedal-powered anything. The team that built theirs made a pedal-powered composter.

I do try to bring my interests into the design process because then I’m more likely to really want to spend time with the students talking about it.

Is there a message you’d like to send to young people about engineering?
I had a preconceived notion that engineering was this one-dimensional thing. You had to be in this geeky mindset and you really don’t. I guess my advice to young people would be that engineering is really broad and diverse. There are many different paths and there are many different ways to apply engineering to the real world. Engineering impacts everyday life, and I think that people don’t think about that. A lot of young people don’t even know what engineers do, when in fact almost everything you touch has been engineered, so no matter what you’re interested in you can find some way of working on it. I found that out just by trial and error, but I think more people would go into engineering if they realized that it wasn’t just about cars, or it wasn’t just about circuit boards. There’s the whole world out there.

Relevant links:

- Turner Research Group [3]
- Of Dogs & Bike Racing [4]
- Team Chicken Ranch Blog [5]

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