CHAMPIONS OF ENGINEERING

Tunç and Lale Doluca

A winter road trip led Tunç Doluca to attend UC Santa Barbara. More than 45 years later, he and Lale continue to have a big impact through giving.

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Tunç Doluca came to the United States from Turkey in 1976 to complete his undergraduate degree at Iowa State. He then attended UC Santa Barbara, graduating with an MS in electrical engineering in 1981, and then spent nearly forty years at Silicon Valley–based chip maker Maxim Integrated, where he retired as chief executive officer in 2021. He has served on the Semiconductor Industry Association board as a director and has been on the UCSB Board of Trustees since 2017. He and his wife, Lale, have provided more than $1 million in philanthropic giving to the College of Engineering, most notably to purchase equipment for the Electrical & Computing Engineering (ECE) Department's undergraduate teaching labs, to establish the Doluca Family Endowed Chair in the ECE Department — held by **Professor Mark Rodwell** — and to bolster the campaign to refurbish and modernize the Mechanical Engineering Department's machine shop. We spoke with him in February.

Convergence: *Were there any advances you saw during your long career that, when you first encountered them, you thought,* This is big?

TD: I thought the introduction of chips that could run a computer that you could have on your desk and, eventually, on your lap, was a really big deal. I was given an IBM PC in 1983, and when I started playing with a Lotus 123 spreadsheet, I thought, *Wow, this is just amazing that I can do this on my desk and don't have to pay big bucks to log onto a mainframe to do it.* The capability of the individual suddenly expanded dramatically.

The next big thing was networking. You had all these individually used PCs with no easy connection to each other or the outside world. As a newcomer at Maxim and the youngest design engineer, I wanted to drive change, so I went to the CEO and complained about our inability to simulate our designs before they were manufactured in silicon. I said that the company had no computing infrastructure at all, so guess what he did? He put me in charge of it. That's when I learned about all of that new networking technology that made it possible to connect computers so they could talk to each other.

When I hear what people are doing now, I'm amazed. If someone had told me about some of the current technology forty years ago, I'd have said, "That's science fiction." But here we are, with things like terahertz communication. Back then, I would never have thought that was possible.

C: *You hold eleven patents. What would you tell students about how to "unlock" their own innate creativity?*

TD: After forty years, what I've found with creativity and innovation is that you can't really say, "This is how it works." It's different for every person. Some need to go sit on the mountain top and think about things. Others do it by discussing alternatives with other people, and that triggers different thoughts and different ways of looking at a problem. Each student has to find what works best for them. In my own case, I've come up with solutions in my sleep [laughs]. I've woken up in the morning and thought, *Ah, that's the way to do that.* The important thing is to force yourself to be open and to listen to what other people are trying to tell you.

C: *Can you talk about engineering creativity within the constant pressures of meeting deadlines and turning a profit at a corporation?*

TD: For years at Maxim, I heard people say that tight project schedules didn't leave them time for creativity. But what I've noticed is that the most creative people make the time. I think, further, that the best innovations at Maxim were those that came out of crisis. It's, "Oh, my god, we have to solve this to save the company," or, "We have to find a new way for something to work to generate another revenue stream." There is always pressure, and you have to realize that that's the way things are.

C: *Did your father's being an engineer affect the path you chose?*

TD: My father was very good at engineering science, and he had an amazing ability to retain information; he learned English by memorizing the dictionary! I had a model train set in middle school, and we expanded it, and that got me interested in electrical stuff. I think it was probably the early seventies when Dad said to me, "Electronics is the future, and if you're going to be an engineer, you need to get into that field." He subscribed to *Time* magazine, and he once told me that he had read about a place called Silicon Valley and then said that I was going to end up living there someday.

> *"If you had the good fortune to benefit from the university, and you learned things there that propelled you in your career, at some point, you have to ask yourself, 'How am I going to pay back those who helped me out?'"*

C: *How did you, as a young man from Turkey, find your way to attending UC Santa Barbara?*

TD: I was attending the top technical university in Turkey in the mid seventies. But things went sideways in the country, and the universities became battlegrounds. My father moved us, and my brother and I went to Iowa State. During a Christmas break, the dorms closed, so he and I and a friend got in the car and drove west. The end of the road was Santa Barbara; that's where we turned around. Imagine three guys coming from a cold, 30-below-windchill state in December and arriving in Santa Barbara. I decided then that if Santa Barbara had a university, I'd like to get my master's there. My dad told me that there was a university there, because in 1953 he had actually lived in army barracks located where the UCSB campus is now. Then I found out that they had a really good semiconductor program. My first impulse was based on the place, but when I discovered that it was also strong in my field, it was a done deal.

C: *Can you talk about the difference in the challenges faced by individual engineers working on projects versus those encountered as a CEO running a company?*

TD: Working as an engineer, things are more deterministic. If you do this, you get that. You have more control. In the engineering management role, you have outside forces and competition that are hard to predict and that you don't control. In a senior leadership position, you have to deal not only with competition, but also with trends in the industry and changing human behavior. And you have to try to figure out where the economy will go.

The unpredictability makes things exciting though. You have to accept it and know that when unforeseen events happen, you're surrounded by a team that knows how to come together to deal with it. I have encountered so many situations for which there was no playbook. In 2008, Lehman Brothers collapsed and our orders were down fifty percent; what do we do? There's no playbook for that. You kind of need to take the view that we're flying as well as we can, but we need to be able to retrench and work together to find a solution when things don't go according to plan.

C: *You and Lale have given more than $1 million to the College of Engineering. What has motivated your philanthropy?*

TD: If you had the good fortune to benefit from the university, and you learned things there that propelled you in your career, at some point, you have to ask yourself, "How am I going to pay back those who helped me out?"

When I was CEO at Maxim, I noticed that we were having a harder time recruiting engineering graduates from schools in the U.S. Interest was decreasing, especially for analog, which people saw as the old way. They were more interested in digital and in software engineering. But all of this wonderful digital technology requires analog and mixed-signal technology to make it work. For instance, radio signals don't come as ones and zeroes; they come as analog signals that have to be translated into digital and then back from digital on the other end. I thought it would be helpful to have professors who could excite students about why analog is so important. And I thought that maybe if there was more funding, like what our endowment provides for Mark Rodwell, we could support more projects and more research in the analog and mixed-signal field and, hopefully, attract more people. The perpetuity of the endowed chair attracted us, because if you put in enough funds, it keeps giving and allows the professor to advance that area.

In terms of the lab gifts we provided for the labs, I have always loved learning by doing, so labs are very important to me. We decided to support ECE undergraduate labs for that reason, and the mechanical engineering machine shop for the same reason, even though that one was a little outside my field.