New TM Professor Brings Expertise on *How Firms Adapt To Technology*

Mary Tripsas

Adapting to technology can be challenging. It requires learning and changing, and poor execution or outdated thinking can cause it to fail. **Mary Tripsas,** a newly hired professor in Technology Management, studies how organizations adapt to disruptive new technologies, with an emphasis on how the interplay of organizational capabilities, organizational identity, and managerial mental models shape strategic responses.

Prior to coming to UC Santa Barbara, Tripsas spent four years on the faculty at the University of Pennsylvania's Wharton School, thirteen at the Harvard Business School (where she had previously earned her MBA; she earned her PhD at the Massachusetts Institute of Technology), and eight at Boston College, where she served as founding director of the Edmund H. Shea Jr. Center for Entrepreneurship and led the creation of a new undergraduate concentration in entrepreneurship. Not to be overlooked: the fact that she is a lifelong musician who played oboe as part of the backup orchestra at an Indigo Girls concert in 2018.

Convergence: *What inspired your career path?*

MT: At a very young age, I became interested in technology and technical change. My father was born in Greece and didn't even have the opportunity to finish high school, but he became an electrical engineer, at first designing electromechanical telephone central-office switches based on relay logic. Telephone switching technology then moved to electronic and, eventually, digital systems, and he had to retrain himself along the way. That sparked my interest in a question that a lot of my research has been about: How do organizations deal with these major shifts in technology?

My mom was a math major at UCLA, and once we kids were in high school, she rejoined the workforce doing software development for the same company as my dad. In her case, software had changed a lot from when she finished college. Again, the issue of how you adapt to accommodate new technology was uppermost in my mind.

C: *Your first job out of college was with IBM, correct?*

MT: Yes. I worked in software development for an internal shop-floor control system at a manufacturing facility. Even though we were software engineers writing code, we could also go to the plant floor and interact with the users to better understand what they wanted. Often as a software engineer, you just write the code and don't actually get to see who's using it or what they're doing with it. That was a very interesting time for me in terms of understanding the challenges of what's easy, technically, versus what people want to use.

C: *Can you tell us about your early research while earning your PhD at MIT's Sloan School?*

MT: I was super-interested in what we now call ecosystems, or the interdependencies of different firms that come together to create new systems of products. I was especially interested in what Adobe Systems was doing. They democratized publishing by creating the first desktop publishing system that had

any commercial success. The founders, who had left Xerox PARC, did something that was incredibly innovative at the time: they enlisted other firms to develop certain pieces of their solution. As part of the system, they wanted to supply users with real typographic-level fonts. So, they licensed a bunch of fonts from a company called Mergenthaler Linotype, which, my advisor and I discovered, had been licensing fonts that had been around since the 1800s.

Learning that led me to switch gears and write my thesis about the typesetter industry, which landed me on a theme that has continued through much of my work. When you're looking at making a technical transition, developing the new technical capability can often be the least challenging part of the transition. In the typesetter industry, for example, it turned out that what protected these typesetter firms over generations of technology advances were their large font libraries, which were difficult for other firms to replicate. They provided a buffer that gave the typesetter firms time to adapt to the new technology.

Since then, my most highly cited work has involved looking at the transition of photography firms from analog photography to digital imaging. And in that transition, the same thing was true. It wasn't the technology itself that was the problem. Polaroid and Kodak have some of the most highly cited patents in digital imaging. They developed digital imaging technologies early, and they did it really well. Then why did they fail so miserably? One of the answers has to do with the mental models of the management and their inability, despite having the technical capability, to shift their thinking about what the most appropriate business models would be to commercialize that technology.

At Polaroid, for instance, management was very much stuck on this belief that the "razor blade" model (in which one of two complementary products is sold cheaply to increase sales of the other product) was the only way to make money. And so, they had digital cameras that they could have released very early in the development of the market. But management wouldn't commercialize the digital camera until it could produce an instant Polaroid print, because they thought they needed the print to be able to make money. And that certainly had been true for years for Polaroid, but with digital photography, people don't want to print; they can look at their pictures on a screen. And so, overcoming the sort of mental or cognitive biases is, in the end, I think, one of the more difficult things to accomplish.

C: *How does your research relate to your teaching?*

MT: I got my first job at Wharton, where I was asked to teach entrepreneurship. I didn't know much about it, but I had an MBA and an understanding of business, so I managed to do OK. The course evolved to focus on technology entrepreneurship, which was more related to my expertise. I started working with the folks from other parts of Penn, in particular the technology transfer office. I started having my student teams do projects in which they would evaluate the commercial potential of university technologies. And so again, this intersection of deep understanding of technology with the business side is sort of a common theme.

At the Harvard Business School, I initially taught entrepreneurship but then took over a joint course with the MIT Media Lab, where Media Lab technologists, together with Harvard MBAs, worked on projects. By the time I moved to Boston College, I had started publishing research in the area of entrepreneurship, for instance, the role of experimentation and the importance of user innovators as firm founders. I brought that research perspective and rigor to BC, where I helped to get the Entrepreneurship Center established.

C: *Have any of your students started successful companies?*

MT: When I was at Harvard, we used to quote a statistic to the effect that, while not that many students start firms directly out of the MBA program, something like half of the students do something entrepreneurial by ten years out. So I imagine — or hope — that many of my students have started firms that I don't necessarily know about. But, of students who worked on start-up projects in my classes, probably the two most successful are Rent the Runway and Birchbox. Both of those firms have female founders, which raises another important issue: women are way underrepresented in both venture capital and as start-up founders, something that I hope I can help to address as a mentor and advocate here at UCSB.

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C: *How does your past work influence your current research?*

MT: Over time, I became more interested in entrepreneurship as a research setting. I have also been looking at how developing or participating in platforms or ecosystems is challenging not only for organizations that have typically thought of themselves as technology-oriented, but also for those that have not traditionally been digital technology experts.

Right now, I'm doing some work on the use of blockchain in the food-safety supply ecosystem. If you look at the companies that have been involved in food processing historically, you have farmers, truckers, the equipment that processes the food that comes from the farm, and all the other things that go into producing food that ultimately lands on your shelf. The folks involved in that process certainly don't view themselves as experts in blockchain. And yet, it could end up affecting them in a way that makes their products no longer stand-alone. Because they're all putting information onto this blockchain, what used to be very non-technical, separate things suddenly become highly interconnected.

C: *Why did you choose to come to UCSB?*

MT: I'm excited to be at UC Santa Barbara to further my research interests and collaborate with the outstanding team of scholars dedicated to the field. I'm also looking forward to contributing to the curriculum to support students in their quest to understand technology within the context of the current business world. The Department of Technology Management is positioned well to support this mission. I'm also excited about contributing to the Technology Management doctoral program, with students focused on the management of technology, whether it's how technology affects the operations of organizations and the way that people work together in companies or how you commercialize those technologies.