Professor discusses research on challenges facing women entrepreneurs, as well as possible solutions

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Last week, the United States topped Dell's first-ever Global Entrepreneurship and Development Index, a study of the best countries for female entrepreneurship. While this is a feather in America's cap, women entrepreneurs across the nation still face many challenges.

Sometimes, issues stem from women being kept from leadership roles; other times, it's about female innovators failing to commercialize their inventions. These are some of the findings of Fiona Murray, the David Sarnoff Professor of Management of Technology at MIT and faculty director of the Martin Trust Center for MIT Entrepreneurship. MIT News recently spoke with Murray about her research and MIT's role in supporting women entrepreneurs.

Q. What has your research shown about female entrepreneurship in the United States?

A. My research has … focused on the participation of women in what we call "innovation-driven entrepreneurship": the generation and commercialization of novel innovations. Although women seem to be as productive in science—and are increasingly choosing science and engineering education (especially at a place like MIT)—my own experiences, and those of my colleagues, suggests that they are not as active in the commercialization of their research: My results show women researchers trained between 1967 and 1995 patent at only 40

percent the rate of male faculty. This difference has declined in the past decade, particularly for women whose advisors are active in patenting and commercialization.

In interviews, I found that these differences could be explained, in part, by the fact that women are less connected to industry and have narrower commercial networks. Moreover, they were more concerned about the potentially negative impact that patenting might have on education, collegiality and research quality.

I've also looked at another entrepreneurial role: sitting on scientific advisory boards. Women faculty are much less likely to be on these boards. When we look at women and men scientists with similarly high-profile scientific careers, women are not participating at the rates you would expect. My own interviews suggest that this is not because they are turning down opportunities, but because they are much less likely to be invited to join.

This is a real challenge that we have to overcome; it's as if women do not "look the part" of entrepreneurs or advisors. Women scientists and engineers comment that they ought to be more focused on "selling" their expertise and offering to be engaged in entrepreneurial activities. They see their male counterparts doing this and are learning from that.

More recently, I have focused on the troubling question of why do few women-led, innovation-driven entrepreneurial businesses get venture capital (VC) funding. Less than 5 percent of VC dollars goes to women-led companies. Part of the explanation—as documented by Ed Roberts [the David Sarnoff Professor of Management and Technology at MIT]—is that women tend to form startups alone and primarily in service businesses, which are two factors that probably mitigate VC funding.

However, these are not the only factors: In my most recent work (not yet published), we suggest that it might be a matter of investor perception and evaluation, because even when women are founding similar types of innovation-driven businesses, evaluators are less likely to show interest in their businesses. This suggests there is a lot more to be done.

Q. What is MIT doing today to help promote female entrepreneurship?

A. MIT has a number of important initiatives designed to provide the sort of systematic and disciplined approach to entrepreneurship that will allow our students to be extremely effective as they build and lead their startups. Although these activities are designed for male and female students, some of my own research shows that support from peers as well as more organized support and formal entrepreneurship activities are important for everyone, but particularly so for women.

Another critical change in recent years has been the rise in female role models around entrepreneurship at MIT. For my own part, when I took on my role as faculty director of the Trust Center, one of the key factors in my decision was to ensure that students saw women as part of our entrepreneurial activities on campus.

We have since brought in a number of very talented and successful female entrepreneurs and investors as senior lecturers, including Katie Rae, managing director of TechStars; Jean Hammond, a Boston-based angel investor and serial entrepreneur; and Elaine Chen, an entrepreneur and vice president of product development at Rethink Robotics. Other schools have entrepreneurship education, but we have paid particular attention to a "disciplined entrepreneurship" approach, and a cumulative curriculum taught jointly by experienced (female and male) practitioners and faculty.

More broadly, MIT was unique in its early attention to the role of women in science and engineering: Its 1999 Study on the Status of Women Faculty in Science at MIT (see PDF) was a benchmark in how to use hard numbers to measure and understand the differences in the ways male and female faculty were involved in the Institute. Since then, a lot has changed, and women have a number of leadership roles at MIT. Examples include former MIT president Susan Hockfield, head of the Technology Licensing Office Lita Nelson, and the vice president for research, Maria Zuber.

Q. What remains to be done to help support women entrepreneurs?

A. At MIT, the most valuable things we can do are to continue to build up our support system for women entrepreneurs at every stage of their career: for undergraduates, midcareer students, postdocs and faculty. We already have programs that are the envy of the world, but there is more to do.

For example, our Global Founders Skills Accelerator is extremely popular among student entrepreneurial teams, and gives male and female students a chance to really hone their skills and build their businesses in a safe environment with mentoring and meeting milestones. Additionally, the Beehive Cooperative is a student-run space that helps incubate businesses. The more we can expand these initiatives while paying attention to including women mentors, role models and women students, the better.

On the research side, we need to understand the dynamics that shape investor choices because, after all, without funding it's hard to build a business. With all the funding choices that are emerging—Kickstarter, angel networks and government grants, as well as VC funds—there are

lots of options. We need to understand how different decision-making processes favor or disadvantage women entrepreneurs and what we can do to change those perceptions.

It's important that women, such as Nelson and Zuber, continue to play a leading role in research and commercialization. In the same way, faculty entrepreneurs, such as Angela Belcher [the W.M. Keck Professor of Energy] and Sangheeta Bhatia [the John and Dorothy Wilson Professor of Health Sciences and Technology and Electrical Engineering and Computer Science], also help promote entrepreneurship among women.

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