'On-ramping' paves the way for women scientists, engineers to return to academia

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The path from academia to industry shouldn't be a one-way street, according to UW research that explores "on-ramping" strategies to widen the pool of women faculty in STEM. Credit: rnrmtzgr, flickr

Pursuing scientific or engineering careers in industry, government or private research after getting a Ph.D. used to be considered a one-way ticket out of academia.

But new University of Washington research finds numerous benefits—to students, researchers and academic institutions looking to diversify their faculty—in making that return trip easier.

Authors of a paper recently published in the *Journal of Technology Transfer* interviewed 10 women who successfully transitioned into university faculty or instructor positions after working as corporate scientists or industry or government researchers. Those conversations explored the challenges and rewards in making that leap, the support and tools that made it easier and how the skills women acquired in industry helped or hindered them.

All of the interviewees participated in "On-Ramps into Academia" workshops, which were held from 2009 to 2012 by UW's ADVANCE Center for Institutional Change and offered a new approach to increase women faculty in science, technology, engineering and math departments.

"We saw that there were some really good women out there who just needed some encouragement and a road map on how to translate their skills from industry into academia," said Eve Riskin, electrical engineering professor and associate dean for diversity and access at the UW College of Engineering.

"A big part of it was helping them understand that maybe what they thought was a bug was actually a feature," Riskin said.

One common strategy for increasing women faculty in STEM departments is to hire from other universities. But this approach fails to increase the number of female STEM faculty nationally.

The UW On-Ramps workshops aimed to broaden the universe of women from which universities can hire—and ultimately to change the culture

of STEM departments and make them more welcoming to underrepresented groups—by helping highly qualified women with nonacademic career trajectories navigate the transition to academic employment.

Many aspiring "on-rampers" had impressive research accomplishments, experience in rapid innovation and insider knowledge to prepare students for real-world jobs. But despite desirable skills, the pathway from industry or government back into academia or how they would fit in was far from clear.

Some had spent the bulk of their time developing products rather than publishing papers. Others who had worked in corporate settings were prevented from speaking in detail about their accomplishments because of intellectual property concerns. Many had been outnumbered by men when they were getting their doctorate degrees and questioned whether the academic culture in STEM departments had improved.

Ultimately, though, they found other dimensions of an academic career attractive enough to want to return.

"They wanted to do more than make a profit for their corporation, and they overcame their reticence with a passionate thirst for two things—having more intellectual freedom and feeling like they were doing good in the world through working with students," said lead author Coleen Carrigan, assistant professor of anthropology and science, technology and society at Cal Poly, who was previously a UW ADVANCE postdoctoral scholar.

The UW workshops offered professional development advice, in-depth discussions that included personal issues and life stories, interactions with other potential on-rampers and exploration of strategies for becoming the academics they wanted to be.

For some of the women scientists and engineers, simply finding mentors who were willing to connect them with jobs, who could assure them that having their name on patents would count in the academic evaluation process and who offered advice on resumes or salary negotiations was a key motivator.

As one of the interviewees put it:

"Having successful women ... sit you down and say 'No, no, no you have a great resume, you might want to change these couple of things but you're a really good fit and this is why' - I don't think there's a substitute for that ... It was huge. It made me feel like I can do this."

Those mentors also helped craft strategies to remedy gaps in credentials, which led some interviewees to take teaching jobs or apply for postdoctoral research positions before putting themselves on the academic job market.

Once the women landed faculty positions, they expressed high levels of confidence in their abilities, value and contributions—especially in educating the next generation of scientists and engineers. They felt insights into what knowledge and skill sets are valued in the workplace and how utilitarian innovation happens added valuable dimensions to their research and teaching.

"They haven't just been in an ivory tower," said Riskin. "If you look at the percentage of engineering students graduating with bachelor's degrees and going straight to industry jobs, it's nearly 80 percent. So they're bringing a real-world perspective that is really useful to the bulk of our students."

Many of the on-rampers also expressed high degrees of personal satisfaction in their new positions, which offered levels of autonomy and

creativity that few had experienced in their previous jobs.

"The one thing with academia is that you're your own boss," one interviewee said. "The intellectual freedom that you have in academia you have nowhere else ... You can set your own agenda."

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