



On-Ramping to Academia: Women's Experiences of Transitioning from Nonacademic to Academic Careers

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On-Ramping to Academia: A National Workshop for Women Transitioning from Nonacademic to Academic Careers

In 2008, the University of Washington's ADVANCE Center for Institutional Change received a National Science Foundation (NSF) ADVANCE Partnerships for Adaptation, Innovation, and Dissemination grant called "On-Ramps into Academia."
(<http://www.engr.washington.edu/onramp/>)

The goal of On-Ramps into Academia was to increase the pool of women faculty available to all universities by providing professional development to PhD-level women in industry or research laboratories who wished to transition into faculty positions. Unlike the more traditional strategy of institutions recruiting female faculty from other universities to increase the number of female faculty in science and engineering departments, this strategy increases the number of female faculty nationally. On-Ramps is a new approach to faculty recruitment. PhDs in science and engineering can leverage their nonacademic skills and experiences into successful careers as faculty members.

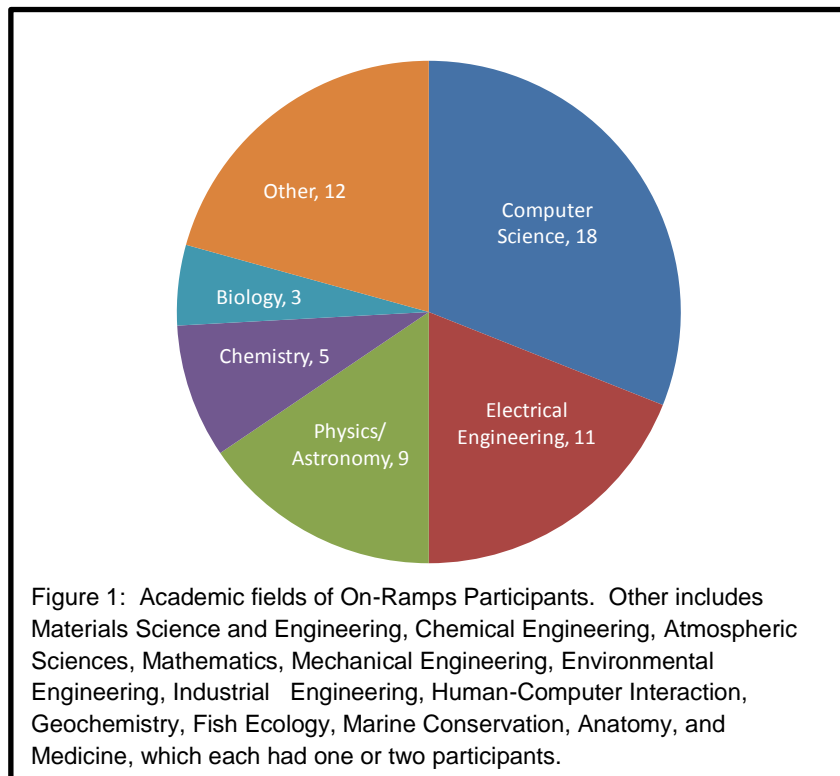
Interviews with On-Ramps into Academia workshop participants revealed three core barriers that can influence the viability of transitioning to academia, particularly for women. We also discovered that the new career also has major rewards for those who make the transition. We next describe the On-Ramps workshops and discuss the challenges and benefits of on-ramping.

Background: The On-Ramps into Academia Workshops

Women with PhDs in engineering and related science fields choose industry or government positions more often than academic positions^[3]. According to the NSF, in 2012, 23% of female PhDs in engineering and related science fields worked in business/industry; 9% were self-employed; 9% worked in non-profit organizations; and 11% worked for federal, state or local governments^[6]. Women comprise only 19% of full-time, full professors in engineering and related science fields nationwide^[7]. A common recruitment strategy for hiring female faculty in STEM is to hire women from other universities. This strategy fails to increase the number of female faculty nationally. An alternative recruitment strategy, explored in this research, is to encourage female PhDs in industry and government positions to make the transition to academia. This career path is not common in engineering, indeed we only found one paper on nonacademic-to-academic career transitions in engineering and related science fields^[9].

In 2008, the University of Washington's ADVANCE Center for Institutional Change received a National Science Foundation ADVANCE PAID grant called "On-Ramps into Academia." The goal of On-Ramps into Academia was to increase the pool of women faculty available to all universities by providing professional development to PhD-level women in industry or research laboratories who were seeking to transition into faculty careers. The recruitment of participants

was difficult and consisted of emails to listservs, individual invitations, and word-of-mouth. Most women who fit the criteria and applied were invited to the workshops. Three two-day On-Ramps into Academia workshops were held every 18 months (in 2009, 2011, and 2012). The On-Ramps program provided practical tools and support to 67 women who were interested in making the transition to academia. Women at all stages of the transition to academia were invited to attend, but were required to be a minimum of three years past their PhD and/or postdoctoral position. The workshop participants were employed in industry or government careers at the time of their application to the workshops.



Of the participants, fields with the highest representation among On-Ramps workshop participants were: Computer Science (30%), Electrical Engineering (18%), Physics and Astronomy (15%), Chemistry (8%), and Biology (5%). Each of the following fields was represented by one or two On-Ramps participants: Chemical Engineering, Materials Science and Engineering, Atmospheric Sciences, Mathematics, Mechanical Engineering, Environmental Engineering, Industrial Engineering,

Human-Computer Interaction, Geochemistry, Fish Ecology, Marine Conservation, Anatomy, and Medicine (Figure 1).

Nearly 30 speakers presented at the workshops. Speakers represented faculty from a wide range of institutions from primarily undergraduate institutions to very high research institutions^[1]. Almost all of the speakers are female faculty members who had started their careers in industry or research labs and successfully transitioned to academia. They provided encouragement and role models to the participants and demonstrated that a transition to academia was possible. Topics included translating industry skills and research to an academic setting; building a research and teaching program; discussing why working in academia is rewarding; balancing work and family in academia; and crafting a research statement, a teaching statement, and curriculum vitae (CV) for an academic audience (Table 1). Topics were suggested during research with women faculty who had begun their careers in industry or research labs. Faculty

members from UW participated in sessions to provide participants with one-on-one advice on their CVs. During the On-Ramps workshops, participants had opportunities for networking and informal discussions with peers and current faculty. Speaker presentations and workshop handouts are archived on the On-Ramps into Academia workshop website: <http://www.engr.washington.edu/onramp/>. Program staff members continue to maintain contact with workshop attendees through email and private On-Ramps established listservs. The program also shared faculty job posting announcements through an RSS feed.

On-Ramps into Academia Workshop

	Day 1	Day 2	Day 3
8:00 am - 9:00 am		Welcome breakfast	Breakfast
9:00 am - 10:30 am		Why Academe Wants You	The Interview Process
10:30 am - 10:45 am		Break	Break
10:45 am - 11:45 am		Preparing for Academia	Building Your Teaching Program
11:45 am - 1:00 pm		Lunch	Lunch
1:00 pm - 2:00 pm		Leadership in Academia	Building Your Research Program
2:00 pm - 3:00 pm		Work/Life Flexibility as Faculty	Keeping Ties with Industry
3:00 pm - 4:00 pm		travel	Discussion and Conclusion
4:00 pm - 5:30 pm		Interactive CV Workshop	
5:30 pm - 6:30 pm		Networking Reception	
6:30 pm - 8:00 pm	Mentoring Dinner		

Table 1: Sample On-Ramps into Academia Workshop Agenda.

To date, twelve women who attended an On-Ramps workshop have transitioned to faculty careers at universities all over the US. Three of these women are underrepresented minorities (URMs). Another two women are in PhD-level staff positions in academia, both of whom are URMs. At least one more woman is actively seeking an academic job as of 2015 and has had interviews. Some participants decided that academia was not for them and others have applied to academic positions and not been hired as faculty.

Interviews: Studying the Impact of the On-Ramps into Academia Workshops

To understand “on-ramping” from the perspectives of the women who had successfully transitioned to academia, we interviewed the first ten On-Ramps workshop participants to secure academic jobs. We used ethnographic methods to collect and analyze semi-structured interviews about their experiences. Interviews were audio recorded if permission was given by the participant; interviews lasted between 40 minutes and 2 hours; and they were conducted in-person, or over Skype when an in-person interview was not possible. The second author conducted all interviews over a 10-month period. The transcription process was contracted out to a third party, but the second author checked each transcription for fidelity to the audio recording

(when one was available) and made any necessary corrections, including retaining the participant's natural inflections, and correcting any word errors. All data in the transcripts were made anonymous.

We used axial coding to analyze our data^[4,2,8]. The first and second authors worked together to complete an open code process. Next, we refined these codes into categories; questioned the relevancy of variables; and identified emerging themes. We used participants' own terms in constructing codes and identifying themes. After the first and second authors' initial analysis was completed, they debriefed with the other authors who had run the workshops. The process of team memo-ing was repeated several times in the course of data analysis. The participants had an opportunity to review their transcript data that were used in the context of the paper. Member checking and peer debriefing among colleagues and participants help ensure the trustworthiness of our interpretations^[5]. From the interviews, we found that the personalized advice and practical tools the women received at On-Ramps into Academia helped them translate their skills and experiences for academic search committees. In addition, the major reward sought by these ten faculty members was the ability to leverage their nonacademic career skills to effect change in the academic context.

At the same time, our data revealed three core barriers that can influence the viability of transitioning to academia, particularly for women. These were the challenges of communicating the value of nonacademic career skills in the academic context; the financial costs of the transition; and gender discrimination.

First, we learned that the women found it difficult to communicate the value of their nonacademic career experiences in the academic context. This was more challenging for women in corporate jobs because they were less likely to have published their research. Many participants believed that the faculty career must follow a linear path from graduate school to tenure track. One participant from government research had heard from peers that she had missed her opportunity to be a professor: "And I knew it was hard, because you hear a lot of things where people say it's a one-way street. Once you go into industry you can never go back."

Second, participants were concerned about financial impacts of entering academia and indeed, several participants did accept a lower salary, sometimes significantly lower, at their faculty job. A second participant reported, "When I got the final number [pay rate] it was such a shock [...] I reduced my salary by one-third and I'm working much harder because I have to prepare all these courses that I have never taught." The first participant echoes, "So taking a step down when you start in a new field ... it's something that, it's not easy."

Third, all participants experienced gender discrimination as students in academia. This posed a barrier to their confidence regarding on-ramping back into this environment. The On-Ramps into Academia workshop not only exposed our participants to role models who had successfully made the transition to academia but also provided critical information about academia.

Participants reported that On-Ramps helped them both logistically and emotionally, thus facilitating their transition into faculty positions. A third participant said that the workshop helped her to feel confident that, despite gender discrimination, she could transition to academia on the merits of her scientific credentials: “My main take-away that I really liked was... I should feel proud to be a woman. I should not have to apologize for not being a man.”

On-Ramps into Academia workshop bridged the wide gap between participants’ initial doubts about transitioning into academia and their strong feelings of success and accomplishment in their new careers. All of our participants contemplated a career transition, but, before the On-Ramps into Academia programmatic intervention, most doubted it was possible. Once they had successfully transitioned into faculty positions, our data showed that participants expressed high levels of confidence in their abilities, value and contributions, especially in educating the next generation of scientists and engineers.

Summary: Implications of On-Ramps

The competition over excellent women faculty in science and engineering is, nationally, a zero-sum game. It is not uncommon to hear faculty say things like, “Let’s see if we can hire away Professor Jones from University X – she’s a star!” This type of attitude results in a shell game of female faculty moving from one institution to the next and does not expand the national pool of female faculty in STEM.

On-Ramps into Academia brought light to a new potential pool of faculty applicants, both female and male. Our data from our interviews suggest that “on-ramping” can create a new pool of highly qualified candidates to help diversify the faculty in science and engineering. Indeed, one participant summarized the impact of her career experiences on the classroom: “I think everything, practically, every single session I teach, that within a minute or two, I can link it to real life.” Another seconded this: “The field has moved so far in industry, that there is a huge gap now...we could complete the cycle of student learning by having people from industry seed the next generation of scientists with the skills that industry needs to move forward.” A limitation of our study is that it only focused on women. A future research project could include interviewing women and men who have successfully made the transition to academia without attending an On-Ramps workshop. Our findings have implications for alternative hiring and recruitment practices in higher education.

Acknowledgments

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