WOMEN ENGINEERING FACULTY: EXPLORING THEIR VIEWS OF SUCCESS

Stacy A. Wenzel

University of Michigan
Ann Arbor, Michigan

The purpose of this WEPAN conference session was two-fold. First, findings were shared from a study in progress of the careers of women engineering faculty. In addition, those attending the session worked in focused discussion groups and shared their own experiences as faculty members or as professionals concerned about the success of women engineering faculty. They commented on the study findings presented and on influences affecting faculty success.

Preliminary study findings: Understanding success

The study presented at this session was based on the experiences of eight women engineering faculty who shared their stories with me in a series of interviews. Through qualitative analysis of these interviews, I attempt to better understand faculty members' perceptions of their careers -- how they make meaning -- of the ordinary social interactions that shape their careers and how they understood success in that career.

The faculty interviewed were selected from the pool of tenured or tenure-track faculty teaching at U.S. public and private Research or Doctoral universities. Those interviewed were teaching in traditional engineering departments that varied in prestige and size. Two full professors, three associate professors, and three assistant professors participated. All interview participants were white and all but one educated primarily in the United States. All were married or in significant relationships during their faculty careers. Their partners/spouses were Ph.Ds in science or engineering except in one case. Five of the partners/spouses were also faculty members. Three faculty had lived apart from their partner/spouse due to difficulty finding jobs in the same location. Three had children.

For the women engineering faculty interviewed, at first glance, their views of success falls into a pattern where they noted that they defined career success as both what their institutions expected and rewarded and what they found most personally meaningful. The following quote, illustrated this pattern.

I guess there are really two answers to that question. I guess there is an intense self-satisfaction when I see a graduate student go from student to peer ... And then, -- there are another set of criteria, if you will, where somebody else is telling you what is successful. I've been promoted. I've got a paper accepted. And so. To be successful, to be completely successful, I need both. I need the exterior stamp of approval as well as the things I can just look at and say I know I did a good job.

Yet characterizing their understanding of success as a strictly dualistic dichotomy oversimplified their views. They also told of how they found great satisfaction in some of the same things that their universities valued. For example, one assistant professor explained
that she enjoyed mentoring and developing new courses. She found that her department was beginning to recognize her mentoring by counting her independent study courses when they reviewed her. She also was pleased with the changes in the competition for NSF Career awards which now required more information on teaching and development plans.

Rather than categorize their description of success into externally and internally defined, I outlined success according to key issues they discussed: the necessity of tenure, the tasks that make faculty life worthwhile, personal needs, and changes in their views of success.

**Tenure as necessary success**

Untenured and newly tenured faculty had much to say about tenure. Most of it characterized tenure as a critical goal, but not a very satisfying process. One person summarized this feeling as follows.

I think that when you are in a tenure track position, tenure is a kind of hurdle to get over. (pause) You could say getting tenure you feel successful. I'm not sure you do. I think you feel kind of wrung out. And you feel a little cynical about the whole process. Really. When you've gone through it. So although I've been successful in getting through that, I don't think it was really a fulfilling experience. Let's put it that way.

**Success that makes it worth it**

One faculty member remarked about her career, "Yeah, it wouldn't be worth it if I hated it. Right? That wouldn't be worth it all." What makes academia worth the 60 to 80 hours a week the faculty interviewed worked?

Many noted the joy of conducting creative research. They shared stories of their first research experiences as undergraduates and how they went into academe for the autonomy to do the creative work they enjoyed. A few remarked that they missed doing the research themselves now that they must instead oversee their students who actually did the research.

Faculty greatly enjoyed working with their graduate students. The satisfaction they experienced in witnessing student progress was great.

[There is an intense self-satisfaction when I see a graduate student go from student to peer over the course of [their studies]. To see them really develop. And to know that, although their success really comes about a lot from their own hard work, that there is still something I contribute too.

Undergraduate students were also important to the women interviewed, some of whom explained that teaching in graduate school convinced them to pursue a faculty career. The degree to which they valued research and teaching varied from individual to individual. One associate professor explained how she saw these different facets of her work.

I don't think that whatever I do for research can influence people's lives in that way. But I do think that something I would do in the teaching area would do that. I think in the past it has already done that. I think that in terms of impact for me, I think teaching is really the way that I can have the greatest impact. That's part of my career goals.

Like any faculty member, those I interviewed complained about the extra and little rewarded work they did on committees. Yet more often, they talked about how this extra work was worth it to them. It gave them a voice in department, university and professional policy. In addition, they gained a sense of being valued.

WOMEN IN ENGINEERING CONFERENCE: IS SYSTEMIC CHANGE HAPPENING?
1995 WEPAN National Conference
And then there's when you want to do things in the department. You'd like to set up committees to do things. And a way you can appreciate someone's opinion and their work is by getting them involved in some of those decisions. Which is more administration, but it's still an appreciation of 'I think you're good in this area.' 'We value your opinion.' 'We think think you'd like to be in on this.' 'I'd like you to be in on this on the ground-level.'

Each woman interviewed had served a special role in working to serve other women in engineering at their university. Some were called to serve in inappropriate ways, for example, when male peers assumed that recruiting women graduate students was something they could ignore and hand over instead to the only woman faculty member in the department. The women in this study often spoke of the importance they placed in their special role working with and for other women. For one new faculty member this role was a critical part of why she entered academia.

And part of the reason that I decided to go into academia was that, um, I've always, at least since graduate school, I've been very active in trying to get women into engineering. And I felt by taking a job like this even just passively by doing my job I'd be promoting women in engineering, by teaching my students at the undergraduate level. I felt the need to do that. There weren't enough women in engineering, especially at the faculty level, and there was a certain amount of pressure—not pressure but self-imposed responsibility...

The personal side of success

Each of the faculty interviewed discussed how she was impacted by her personal and family situation. Even with the rewards and joys in her work, there was a need for finding a way to spend time on hobbies, with a spouse/partner, with children.

I think if your family life and personal relationships go down the tubes then all the professional accolades, I should think, are just dust in the mouth or something like that. So I think being a whole person is very important.

Dealing with the long hours required in their work and then still finding time for the personal side of life made a few women talk in terms of "survival."

I think I am at a time in my life where the goal is to get through the day. (laughs) I have two children under four. ... I am just at a point now that let's just sustain things. ... just getting through the day.

The dynamics of success

Learning from women at different stages of their careers made it clear that how they view success changes throughout the career and differs from person to person. For the newest faculty member, she had not seen her goals change, but talked instead of how she was learning and continually clarifying what she needed to do to be successful. A number of faculty described how their goals had changed and how they saw them as sequences or phases. Sometimes these changes occurred not so much by choice, but as one person put it: the "way that I did things in my life was the only way I could have done things." One professor described how she conceptualized her goals of success as mountains. After she climbed over one, she would find another one waiting on the other side. A couple faculty were at very critical stages of their careers, right before or after tenure, when they felt compelled to decide if they could continue to sacrifice their personal life in order to work at the place and the pace they were. Finally, one person in the study insisted that her view of success had not changed nor did she see it changing in the future. Instead, she wanted to talk about how her university needed to change to accommodate her work.
Selected views from the WEPAN focus groups

Twenty-four attendees at this session participated in the focused discussion groups following the study presentation. The groups talked for about one hour, reacting to the study findings and discussing their own views of what influences were critical to the success of women engineering faculty. Each of the focus groups of twelve individuals included 4 or 5 engineering faculty members. The groups also included several coordinators of women in engineering programs and administrators in engineering programs as well as other interested WEPAN attendees.

Personal significance of this issue

As they introduced themselves in the focus groups, participants noted a number of reasons why understanding the careers of women engineering faculty was significant to them. The nine faculty members offered a number of thoughts showing that they were working with administration to develop policy supporting women faculty and they were mentoring other women faculty and graduate students. One faculty member explained that she was working with Ph.D. students who are telling her that "no way would I put myself through" the challenges that come with an academic position. She explained, "I'm hoping to get some insights to where I can point these women to learn that, hey, this is a good thing to do."

Program coordinators of women in engineering groups noted that they interacted with faculty and were concerned with how to assist them and not overburden them. A number of people at the session who interesting in talking about the career development of women engineering faculty, some because of parallel issues they saw in government or industry. A couple group participants were involved with recruiting women science and engineering Ph.D.s and wanted to share what they knew and learn more about the interests of these women. Two were conducting general research on women in engineering. One was in the process of deciding if she should pursue an academic career in engineering.

Influences on faculty success: Interaction, rules, family

Dealing with the isolation of being a woman in an engineering department was a major theme of discussion that lead to a consideration of supportive relationships like mentoring and more broad networks of other colleagues. Many participants extolled the importance of electronic mail as a way to stay in contact with supportive men and women at other institutions. "That's one of the real powers of e-mail. It only takes 3 minutes to get the message that gives me the power to work for another 3 hours." Others explained how important it was for them to meet informally with other women in their institution over lunches. One participant described how women needed "interpersonal interaction that involves mentoring"

"Women need that interpersonal interaction that involves mentoring. Just seeing another woman doing what you're doing. ... so you simply don't feel that you are all alone. ... And I don't know why it helps, but I know that it does. It's that critical mass. [At a luncheon of women I attended, I benefitted from seeing] all these women with analytical minds kind of functioning in a way I was very familiar with. ... And I brought that back to my own job. I hadn't really experienced that before. There is a strength to just being with other women, like minded women, and helping your own identity and then going back to your job more confident of who you are and what you are trying to do. So in a way it's true that the challenges are similar (for both men and women) but if you are isolated it is going to be harder to meet those challenges."

Women mentors and colleagues served to alleviate a feeling of loneliness, shared their understanding of the informal rules within an institution, and helped faculty survice crisis points in one's career. Yet both discussion groups expressed that some women faculty have succeeded without mentors and that the role of mentoring women was not the sole responsibility of women faculty. Male faculty must mentor women also for a number of reasons. First, women
mentors are not available for all new women professionals. Second, not all women are good mentors to all other women. Third, faculty need different types of mentors and men in one's research field may be more important mentors to help with certain things than can a woman in another field. Finally, expecting all women faculty to mentor all other women puts a heavy burden on women's own chances for success because most reward systems do not recognize mentoring work as valuable compared to research. A number of members of the discussion groups commented on the tenure evaluation process and how it discouraged assistant professors from serving as mentors until after they received tenure.

The reward system or "the rules" were important to understand. However, knowing how one's institution officially defined their expectations of faculty was only part of being able to successfully negotiate a faculty career. For example, one person explained that at her institution faculty were expected to publish at a rate that ignored that they stopped the tenure clock, despite "what it says on paper." Though the "lip service" stressed the value of teaching, the reward structure was not changed so much as "another hurdle" was added. "They don't change the hurdles. And they don't lower them." In addition, truly understanding the rules included recognizing that some rules may differ for women as compared to men. For example, when new faculty negotiate for their start-up packages, "men negotiate and [the faculty] say 'gee he is assertive and he knows what to ask for.'" When a woman who is negotiating knows what to ask for, "that b word is flying everywhere. 'Can you imagine she's asking for that!'"

Once women faculty knew the rules, it could be a matter of deciding to play by them or to break them with the understanding of the consequences. One person thanked a woman professor who chose a long term strategy and played by the rules. She explained that breaking them "might have prevented you from getting where you are, where you have enough power now to try and change the system. So I think there is some strategy and judgement that goes into deciding which rules to break." Another person explained her personal view that "it's important to know what the rules are and be ready to break them rather than break yourself."

Know what you want to do. If you're good there is always someplace that you will succeed at what you want to do. And I think all this sacrificing what you do because that's what the dean says. You don't know that next year that dean might move and the rules might change. And you just changed who you were because, I'm sure, he said.

The consequences for women within a given reward system took on an additional dimension because of their small numbers. One senior faculty member noted that "I felt a lot of pressure on me, because if I screw up the people coming up behind me [would be impacted]. ... [The male professors of my age didn't have to worry about [these sort of things].]" Another explained the difference is not that there are not men who [chose to break the rules]. Men can come and go. . . On the personal level, we may miss them, but when you look at the count, nobody notices that that man came and left. There are a lot of women and minorities and they're the only ones [in their department or school]. They are the model then of everything. For them to decide that motherhood is the thing then [some will say] 'that's how all women must think.' . . . At my institution if they decided that and didn't really play the game, they wouldn't get tenure. . . . If she doesn't get [tenure], there is a big focus on it. It gets looked at when there are that few women.

How women faculty dealt with the challenges of having a working spouse and family responsibilities was also a major topic of discussion. This was seen as a perplexing societal issue, important beyond academe. Yet, participants noted that academe faced a particular struggle in facilitating the success of women with families, because the tenure process coincided

WOMEN IN ENGINEERING CONFERENCE: IS SYSTEMIC CHANGE HAPPENING?
1995 WEPAN National Conference
with prime childbearing years. As one person said, "they don't give you that space to say when I'm 40 I really want to devote myself to my career for the next 25 years," but until then I want to spend some time raising my children. She noted that you "have to go for it right away." Another explained that tenure made academe unique compared to other institutions, because

The thing about tenure that many people don't quite recognize is it's not that maybe I'll get it at after six or seven, but maybe I won't. It's 'I have to get it on that time table no matter what your family situation is.' So you almost have to fit on their schedule to get it. So it's almost a do or die thing.

**Conclusion: Moving from research to change strategies**

The intention of the study presented and the focus group discussions is to gain insight as to how education institutions can change in ways that facilitate the success of women engineering faculty. Focus group discussants addressed this challenge directly. As they critiqued the study presented at the start of the session a number of group participants asked whether the views of women engineering faculty differed from those of men engineering faculty, women in other institutions, or faculty in general. They also debated gender differences in regard to faculty members' interest in childcare and teaching.

This debate related to how a number of participants discussed their role as a change agent within the engineering education environment. One worked with senior men engineering faculty and told them frankly that she saw engineering as a very hostile place for women. She was at stage in her career where she felt secure enough to make these statements because as she said, "what can they do to me." She found their reactions interesting. One dean replied, "Engineering is very hostile for everybody. And engineering education is a very hostile environment."

So that opened up the discussion for men to talk about their frustrations which it turns out are the same frustrations that women have. The system is bad. ... we just have to say, the system is not good. And we just have to fix it. But women are going to bring this [discussion] into the academic environment. And it's almost as though we legitimize this complaint that men have had for decades and they were just afraid to say anything.

Participants also asked whether it was realistic for institutions to change the criteria they rewarded as success. For example, while some institutions talked about changing or eliminating tenure, one participant explained that her institution was

not going to be the institution that can lead the world in changing [tenure]. We can maybe be part of the team. We feel like we would not be able to attract the top ranking people if we did not have tenure. ... even if [these top ranking people] don't like tenure.

Others agreed that change would be difficult, because untenured faculty must keep themselves marketable to many universities. Even if their own program had a unique way recognizing talents other than research productivity, they would have to continue a strong research program for marketability. One participant voiced a more optimistic view for institutional change.

I think once some of these institutions start to change it is going to be a whole lot easier for others to start to change. But someone has to take the risk and be the first institution.