

THE ROLE OF FACULTY IN WOMEN'S ENGINEERING PROGRAMS

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There's an old play making the rounds of college campuses. It is called "THE WEB". Many of you have seen this play, acted as stars in the theaters of the classrooms, labs, and greens of your institutions. In lots of cases it is a one woman show; and at best, when there is more than one of us in the starring role, the roles are identical. The stars are the women faculty and a precious few male faculty in engineering. Directed and produced by the predominantly male engineering faculty, this play is long running. The audience is a kaleidoscope of students, colleagues and community leaders.

"THE WEB" is a slice-of-life story of the typical female engineering faculty member. On this day, like any other day, the faculty member is caught in the web of "must-dos", "will-dos" and "want-to-dos". To survive in the academic arena, she like any faculty member must be an excellent teacher. For her audience, the students, are often less forgiving of her faux-pas than of those of their male professors. He can have a bad day or just get confused while working out a derivation in class; she just doesn't know the material. Similarly, this same audience will accept the standards set by male professors; he can demand high performance from students whereas she will be touted as "picky" and "unreasonable". But to survive, the woman faculty member must be a super teacher because conventional wisdom dictates that "good" teaching evaluations will not carry promotion, re-appointment and tenure decisions while "bad" ones can be used effectively to end an academic career. Since the star of the show wants to survive, she chases "good" evaluations without sacrificing her intellectual integrity or compromising her standards of excellence. Good teaching is a "must-do".

When the star of the show is not in the classroom, she is probably putting the finishing touches on yet another proposal or rewriting that last paper submitted to a refereed journal or guiding graduate students, etc., generally, contributing to the

"wealth" of the institution. This conduction of exemplary research is another must-do for survival in academe. Again, conventional wisdom dictates that while the lip service is well and widely articulated regarding the importance of teaching, it is the research program - the amount of dollars and the numbers of graduate students and publications - that carry most promotion, re-appointment and tenure decisions. Outstanding research is another "must-do".

The star is also expected to develop professionally, e.g., attend conferences, sit on committees, create new courses and labs, organize meetings to name a few of these activities. All contribute to the value of the female faculty member to the institution. Service is yet another "must-do". Teaching, research and service, the three "must-dos" - how they are evaluated by bodies of non-peers, are critical to the determination of her fate. Not acknowledged is that the star of this show, THE WEB, must do all of these things in a less than supportive environment. Often, there is no mentor for her, little "inside" information from colleagues, lagging inclusive team spirit. What's more, she is still expected to excel in these areas in spite of smaller start-up packages, lower salaries and fewer supported graduate students.

Add to these demands, the "will-dos" and the "want-to-dos" that make the star of this show who she is. Because of the scarcity of female engineering faculty, the star will also represent not only her engineering discipline but also female students and females in general on numerous other committees on campus. This is really a part of the "service" facet but the part which receives little if no critical acclaim. For instance, anytime there's a position open for a woman on campus, be it in the Physical Plant, the Finance Office, the Placement Office or a faculty position, the star of "THE WEB" will be "invited" to represent all women at the institution. What a responsibility! Additionally, she is continually called upon throughout her day to engage in the three R's-recruiting, retaining and reaffirming any woman student, undergraduate or graduate, formal advisee or not. It is generally accepted by her colleagues that she can and will handle any "woman" problem. And because the star of this show is conscientious and empathetic and knowing that most of the time there is no one else like her - female - that is, the star spends a lot of time on "will-dos".

But this star is also a human being. She, like anyone, has lots of "want-to-dos" in her life. She wants the security and love of a family and friends outside of work; she wants recognition and appreciation for her diverse achievements - her many roles; she wants to continually develop as an interesting individual through hobbies, social, civic and cultural activities. Where is the time for the "want-to-dos"? Somehow she squeezes some of these in, just to keep her balance, to maintain her identity; more often than not, the "want-to-dos" are sacrificed to the tyranny of the urgent professionally.

At the end of the day, she packs up her briefcase with mostly unfinished "must-dos" and heads home only to work a couple of hours more. Late at night, the star of

the show reflects on her day, her career progress, her accomplishments, her rewards. Two things jump out - two lies that her mom told her and possibly many moms tell their children: "Life is fair" and "You get what you earn." The star of THE WEB knows that it isn't fair to have so many demands on her time, so little acknowledgment of the many roles she plays across the campus and the community, so little reward, so few accolades for her efforts. Mom was wrong when these sayings are applied to engineering academe. The star of the WEB really plays many roles - educator and researcher, mentor, spokesperson, advocate, ordinary woman - all wrapped in one big role - that of surviving and contributing. It's not fair and the star is getting little applause.

As she drifts off into the Land of Nod, the star of THE WEB realizes that she is an incomparable quick change artist, deftly switching from the technical to the personal in an instant. She sets priorities for the next day knowing that she will have to ad-lib lines and improvise since the writers and the audience are fickle. She plans to work with the script-writers on revisions to make the technically educated character more humane, more real; she will try to include more "want-to-dos" in tomorrow. She will meet continuously with the Props Department to replace sporadic and unreliable props with sturdy ones. She will ask Casting to give the supporting actors more depth and sensitivity. And she will point out to the Producers that the easiest way to "sell the show" will be to change the ending to one that will be more encouraging to other women thinking about joining the production company. People everywhere like happy endings.

For now the star of this show is trapped in the web. But every time she presents a good paper, she raises someone's sensitivity to the technical competency of women. Every time she gives a stimulating lecture, she plants the seeds in some narrow minds that women engineering faculty are competent. Every time, she sits on a committee or speaks to a community group, she teaches the audience by example. Every time she interrupts her day to talk to a student, she chips away at the common images of the engineer as a male nerd, insensitive to the world around him.

Just before closing her eyes for the last time on that day, she re-acknowledges the wisdom of Malcolm X:

"Educate a man...educate an individual.

Educate a woman...education a nation."

More generally, one might modify this statement to:

"Educate a teacher...educate an individual.

Educate an educator...educate a nation."

For these women, and the committed male colleagues are educators, delighting in the sharing of expertise and experiences with any bright, inquisitive person, regardless of gender. And as such, the spheres of influence of these educators have immeasurably vast diameters.

Although this play, THE WEB, specifically refers to a woman faculty member, any faculty member, male or female, dedicated to increasing the participation of women in engineering also stars in the play. Each is faced with the realization that such efforts are undervalued and mostly unrewarded. Yet each performance erodes barriers to access and to participation, tears down stereotypes, and either plants the seeds of ambition in open young minds or fertilizes the growth of dreams of careers in engineering.

The price of starring in the play is however, that of time - too little for so many demands. What happens is that the committed faculty member must make time for participation in women's programs. The question then is really not what role can be played but rather is the following:

How can the depth of participation of faculty - the stars - be enhanced to maximize effectiveness - i.e., audience, in our case, student response?

Two responses are 1) to band together with other committed professionals and 2) to use other resources at hand. Examples of these techniques for enhanced participation are the Women's Engineering Board (WEB) of the SUCCEED coalition and the Women in Mechanical Engineering group in the George W. Woodruff School of Mechanical Engineering at Georgia Tech.

The Women's Engineering Board of the SUCCEED Coalition is an organization of roughly sixty tenure-track women faculty at the eight SUCCEED institutions. Most are young; most are untenured. All are pushed for time. All are committed to increasing the participation of women in the engineering profession. By joining forces across state lines and school boundaries, we are practicing the seemingly vanishing art of "holding hands".

Through our WEB, we have successful programs and participation in such with each other. We are building a viable and visible support network for each other, for other young faculty and for our students. We are exchanging strengths in our sensitivity raising efforts, forming alliances to increase the amount and diversity of exposure of women in engineering, and planning broader dissemination of the interests and accomplishments of the WEB members. Most importantly, we are, together, pushing for the adjustment of the reward system in academe to allow **just** recognition of the value of real service efforts to the overall missions of our respective institutions. We feel that once institutional legitimacy is given to such efforts as participating in women's programs and other outreach efforts, more faculty

will be likely to make time for such activities. Women's engineering program administrators can join hands with us in these efforts.

On an institutional scale, the George W. Woodruff School of Mechanical Engineering formed the Women in Mechanical Engineering group in the fall of this academic year. The School Director, Ward Winer, expressed a sincere interest in making women students feel more welcome. Considering the number of upper division and graduate female students in the Woodruff School, the three women faculty members shuddered at being role models and mentors for roughly three-hundred women students. Again, the case of too many demands, too little time.

Being the problem solvers we were taught to be, on examining the resources available, the three of us realized a "hidden given" in the problem. That given was the presence of 23 women staff in the school, at our disposal so to speak. Although not possessing technical or engineering degrees for the most part, each of these staff women is a dedicated professional, many having spent their careers in the school, in the business of education. Each is a multi-talented, sincerely interested in the students and critically tuned in to the inner workings of the school and of the institute.

We remembered that in a supportive environment for women students are many components, the technical component being only one component. The other components - companionship, personalization, interest in the well being of the student - are possessed by the staff as well as the faculty. For us, the most important ingredient for making ME "user friendly" for women is that sense of being a part of a family - of belonging - of not being alone unless by choice. With 26 women involved rather than just three faculty women, the student/faculty-staff ratio became reasonable. And dividing the work associated with planning the activities did not require an inordinate time commitment from any one woman.

The Women in ME has been a successful endeavor. It was surprising that in spite of almost torrential rains on the days of our first two activities - a reception at which we played games aimed at getting to know each other and a luncheon with a speaker on gender issues - the turnout was amazing. Both were packed. We followed up during spring quarter with a breakfast with the first woman to give the Woodruff Distinguished Lecture, Dr. Sheila Widnall from MIT. In between, we sent messages to students wishing them success on mid-terms and finals, reminding them that we women are here for them; we also distributed a booklet with brief information - name, location in the school, phone number, hobbies, etc., to each of the women students. And for next year, we are planning a tiered mentoring program for women students. With twenty-six of us and our School Director behind us, we can handle this.

After each event, my e-mail was jammed with excited messages from students. Most importantly, students, staff and faculty alike left each event with an enhanced sense of contributing to the educational efforts of our school. This is a win-win situation for all of us, another example of enhancing the participation in women's engineering programs. Involve interested and talented non-engineers around the campus.

In short, the answers to the question of enhancing the participation of faculty in women's' engineering programs are to hold hands with us and to invite other multi-talented people to join our circle of support of such programs. Remember anyone involved in such programs is educating the "nation" at her or his institution. The challenges for the faculty are to make the time and to enlist the support of other giving professionals, within the individual institution and within the world of engineering education. The challenges to the program administrators are to join us in adjusting the reward system and to fully use all of the "givens" around you. Together we can be much more effective in our efforts.