

DILEMMAS IN THE MENTORING OF FACULTY WOMEN IN ENGINEERING:

“The heroic journey” versus “The caring community”

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INTRODUCTION

Our primary concern in this presentation is with strategies for improving the presence, retention and advancement of women faculty in engineering. We explicitly focus on mentoring as a key element in such strategies. Progress on the broader agenda, of which mentoring is one important aspect, is important for several reasons. First, it will likely lead to greater equity in the academic workplace – thus it is a matter of basic fairness. Second, it should lead to improved interest and retention for women students in engineering – thus creating a more diverse and egalitarian community in institutions of higher education and in the engineering workplace more generally. Third, it is likely to lead to greater achievements for all members of the engineering community – thus improving the quality and climate of our profession.

WOMEN IN SME: THE PROBLEMS

The dominance of men and the “male culture” in science, mathematics and engineering (SME) is not an invention of the academic community. It reflects and is supported by societal-wide sexism and gender privilege that is mirrored in medicine and business. Inadequate mentoring and patterns of overt and subtle discrimination in the academy build off the early and continuing differential socialization and education experiences of men and women. One result of this socialization and education is the disproportionate absence of women in engineering professions. For example, 17% of engineering students and 3% of engineering faculty are women [1]. Of the engineering faculty nationwide 7% of Assistant Professors are women, 3% of Associate Professors are women and only 1% of Full Professors are women [2].

How do we account for these patterns? Although there are important differences across racial and class groupings, young men and young women generally are socialized differently in their families and in early schooling experiences. Young women typically place a greater priority on interpersonal satisfaction and integration than do men, potentially resulting in different career (and life) priorities [3]. Moreover, as they seek and achieve senior and leadership status, women more often prioritize concerns for group affiliation over individual achievement and prefer to create less hierarchical leadership patterns – when their institutions can accommodate such innovative designs [4].

With particular regard to the sciences and engineering, women are often less confident in and alienated by the culture of these fields, which emphasize individual competition and few opportunities for cooperative and interactive learning [5, 6]. Women who despite these pressures do successfully pursue careers in science and engineering often report men seeing their interest as “unnatural” or unfeminine, casting them as ugly, sexually

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deviant or “too busy to be attractive” [6]. When these perceptions and related behaviors are acted out in the classroom, hallways and laboratories, and tolerated – or not challenged and confronted – they are reinforced in the lives of both men and women. Since these discriminatory patterns continue in the lives of women faculty, women must enter and find their way in a “chilly climate” [7], one that has been and often still is a privileged male preserve. Many women also report male advisors counseling them out of science and engineering curricula, receiving less pay for similar work and achievements than their male counterparts, lesser access to senior ranks and administrative roles and honors, stereotypic assumptions about female uniformity across race and class differences, and exclusion from informal social networks.

MENTORING AS A SOLUTION

We hold no illusion that these issues of gender privilege and discrimination will be eliminated simply by improved mentoring of women faculty in science and engineering. But improved mentoring of women students and faculty can have significant impact on their careers and lives, and on the academic climate and structure generally. Mentoring is fundamentally a developmental relationship in which an experienced person provides both technical and psychosocial support to a less experienced person. One of the earliest discussions of mentoring is found in Greek mythology, wherein Athena, the Goddess of wisdom and the civilized life, protects and guides Odysseus on his journeys and prompts him to find the courage to act in the face of many dangers. She also appears in the form of a man – Mentor – to guide his son Telemachus, and to urge him to search for news of his father.

Traditional mentoring models

Mentoring has multiple aspects and functions, and has variously been described as fulfilling either or both the technical and psychosocial needs of the less experienced person. Examples of the technical knowledge-based or career development issues include how to solve a particular technical problem, continue intellectual growth, approach a new class, develop a curriculum or syllabus, prepare a research proposal, balance work overloads, present oneself at the first faculty meeting, present an appeal to a department chair or dean, ask for a leave or assignment change, etc. Mentors and protégés also may address psychosocial issues such as how to deal with difficult peer relationships or personality conflicts, respond to sexism and discrimination, establish a sense of competence, cope with disappointment, find courage, grow as a person, etc. The traditional conception of mentoring poses accomplishing such objectives within a two-person, mentor-protégé relationship [8].

“Male” mentoring styles – “the heroic journey”

In the context of the male-dominated academy, especially in the sciences and engineering, the mentoring of both male and female young faculty generally has proceeded on the basis of a male cultural style. Two major components typify this approach to mentoring: (1) the priority of instrumental and technical conversation, relationships, and guidance over psychosocial issues; and (2) the commitment to “the heroic journey.” Research with young men and women in science and engineering suggests that men have “a predominantly instrumental approach to education...contrasted with an affective orientation among many young women ([6], p. 464)”. Thus the male mentoring model emphasizing technical and instrumental issues is well suited to the preponderance of young men in these fields; at the same time, it does not fit well with the ways in which young women were socialized.

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Seymour (1995) further describes the male socialization metaphor underpinning most mentoring relationships as focusing on challenging the protégé, posing tasks in order to increase the young person's tolerance to stress (and potentially to weed out those who cannot rise to the challenge), and stressing independence. Broome [9, 10] applies the works of Robert Bly and Joseph Campbell in discussing "the heroic engineer" and "the heroic mentorship." The hero's journey, in this interpretation, requires separation from dependency – including abandonment by former helpers, sole engagement in perilous adventure, and triumphant return. As Broome indicates, on this journey "the helper abandons the hero, leaving him or her eventually to slay the dragon ([9], p. 415)." The denial of nurturing in the midst of stressful situations is presumed to lead to healthy independence and stems from traditional "tests of manhood" present in military and sport arenas. It also often leads to the highly competitive situation that Baum ([1], p. 20) has called "the boot camp environment where one's success comes only at the failure of others." Obviously, this style does not fit the socialization and styles of most women and their orientations to integration rather than separation, interdependence rather than dependence or independence, and collaborative rather than competitive task engagement. Perhaps not as obviously, it also does fit well for many men.

Cross-gender (and cross-race) mentoring

That the dominant mentoring style in science and engineering is based on a male cultural model is not the only impediment to successful mentoring of women faculty. It is also true that in these male-dominated fields there are few senior female faculty to act as mentors and models. Indeed, young people generally prefer to work with mentors and role models who are like themselves (probably because they perceive that these models will have experienced difficulties and challenges similar to their own, [11]), and this is especially difficult for women in science and engineering fields. As Wankat & Oreovicz note, "Since people prefer mentors of the same gender, women are at a disadvantage in engineering. Women faculty get less faculty support than men but need more ([12], p. 338)."

Furthermore, those senior women who are present often are treated by their male peers as junior colleagues. A recent University of Michigan guide for graduate students notes, "faculty of color, female faculty, and [Lesbian, Gay, Bisexual and Transgender] faculty are aware that some graduate students do not select them as mentors because of their marginalized positions in the academy. Graduate students perceive that these faculty wield less power and influence inside and outside their department...and are therefore seen as being less effective on providing the types of instrumental assistance graduate students need ([13], p. 39)."

Thus, cross-gender mentoring is the rule, and this reality sets the stage for relationships in which gender and status interact to produce all the confusions and dysfunctions often present in cross-gender relationships in a gender-privileged society. Moreover, to the extent that senior male faculty consciously or unconsciously adopt aspects of the "heroic male journey" as their mentoring model they will ill-serve young female faculty who may be more comfortable responding to praise than to challenge, who perform better when supported rather than tested, who seek peer collaboration rather than competition, and who may wish to construct their careers (and lives) around different priorities.

THE NEED FOR ALTERNATIVES: MENTORING WOMEN FACULTY IN SME

We have argued that women faculty in SME who seek mentoring relationships face a number of special challenges and obstacles. Some of these obstacles are generated by men and women's prior socialization, expectations and styles. Some are generated by

peer gender dynamics and by the dynamics of inter-status mentoring across gender lines. And some are generated and reinforced by the culture, work expectations and reward systems of the male-dominated academy (time constraints, lack of rewards, low institutional priority). Successful mentoring of women faculty must recognize the different cultural styles of men and women, the diverse needs and styles of women from different cultural and class backgrounds, the needs of women (and many men) for supportive and nurturing relationships in the midst of a highly stressful and competitive profession, and the socially constructed and institutionally supported dynamics of gender privilege that affect cross-gender relationships. While attention has begun to be paid to the special interpersonal sensitivities and tactics that might be especially important in mentoring women graduate students and faculty, our particular concern is with alternative models of the mentoring relationship itself, especially ones that focus on organizational redesign.

Model 1: Multiple mentoring

The multiple mentoring model encourages a pro-active protégé role in developing a diverse set of helpers. Ragins & Cotton make a strong case against reliance on the single mentor model, arguing that "It is important for organizations to avoid sending the implicit message that once a protégé has an assigned (formal) mentor, this mentor is sufficient and that they should not attempt to gain an informal mentor ([14], p. 546)." Tierney & Bensimon also note that "The notion of a single experienced faculty member being willing and able to play the all-inclusive role of mentor to a protégé is wishful thinking...a variety of individuals help to meet a new faculty member's diverse needs ([15], p. 52)." Both the diversity of young faculty members and their diverse needs, and the performance pressures and interest level of older faculty, mitigate against this "lone helper" model. Humphreys [16] discusses the possibilities of "distributed mentorship", which includes as mentors both senior and junior colleagues, people inside as well as outside the academy, and electronic media as well as personal connections. Similarly, in a series of pamphlets recently created by the University of Michigan, mentors are advised "to help students cultivate multiple mentoring relationships inside and outside the university ([17] p. 6)." And in a parallel pamphlet prepared for potential protégés, students are advised to build "a mentoring team", and are reminded that "by having a team of mentors, you will not be harmed in any way if you work with someone who truly has limited access to the powerful networks of your discipline ([13], p. 39)."

Some of these ideas have been tested by Packard [11], who has devised an intervention program aimed at helping protégés assemble a diverse set of mentors into a "composite mentor." Suggesting that young scholars consider the attractive traits of different role models in their environment, she argues that the composite mentor is especially promising for women in SME: because they "struggle with the lack of mentor images in the field... It would help women make use of the available images in their environment ([11], p. 5)," including men and people from different backgrounds.

Model 2: Collective mentoring and creation of "the caring community"

The collective mentoring model suggests that mentoring is not simply an individual or one-on-one activity, nor one solicited and designed solely by the protégé. Instead, an entire department or organization must take responsibility for the effective mentoring and performance of young faculty. Senior colleagues and the department itself, rather than the protégé, must take the initiative in sending the message that the progress of young faculty is a priority concern, must ensure the creation of mentor relationships that work, and must create a departmental climate that overcomes some of the obstacles to not only effective mentoring of faculty women, but obstacles to their effective performance, retention and advance as well. Tierney & Bensimon [15] point out that collective mentoring is a formal

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and collective organizational task, part of the organization's responsibility to orient and socialize its new members. As such, "Mentoring need not take place only in a senior faculty member's office or an orientation session at the beginning of the school year. The mail room, the faculty lounge, and any number of other institutional locations have potential for socializing individuals to the culture of the department and organization (p. 56)." Ginorio [5] argues that women and people of color, especially, need to find a meaningful community in science and engineering, one that "would not include those that reflect outdated ideas of what a successful culture of science is: competitive, all engrossing, demanding to the exclusion of any other interest, and open only to the handful of individuals who can pass all the tests of misunderstood manhood that are demanded today (p. 32)." Transformation that creates more egalitarian and caring communities will benefit men as well as women.

Institutional transformation as the underlying task

The effort to more effectively mentor faculty women in the sciences and engineering will require change not only in how we think about mentoring, but also in how we think about broader faculty and institutional roles and structures. Senior, mostly male, faculty may well need special training in implementing more effective mentoring of women faculty and cross-gender mentoring relationships ([15, 18]; see also [13, 17]). Such training programs have already been developed in industrial and corporate settings. In order for the potential benefits of mentorship to be realized, the organization's reward system, culture, norms and definitions of tasks and functions must value and encourage relationship building activities as central to organizational goals and objectives. Morgan argues further that "Transforming our institutions to better serve the needs of women must include serious new kinds of hiring and retention programs, financial incentives for change, and circulating data on successful programs ([18], p. 109)." Above all, it must include guaranteeing the presence of (and male respect for) senior and powerful women, women who can effectively mentor younger women in their fields. Indeed, the entire discussion of mentoring young women faculty simultaneously stems from this lack and seeks to redress it. Any of these efforts will require a "planned, deliberate change in the ethos of the academy ([19], p. 127)," as well as in its internal structures and relations with external constituencies.

CONCLUSIONS

Given the multiple tasks junior faculty must learn to perform (teaching, conducting research, publishing, navigating a new institution, planning a career, becoming a whole person) multiple and collective mentorships will be more successful systems for nurturing young colleagues. These collective activities require departmental and institutional commitment, access to other women faculty and especially to senior women faculty, instrumental task support, nurturing interpersonal relationships, and a "warmer departmental climate" for women. Mentoring of women faculty must also acknowledge and respond to the special ways in which women try to negotiate previously male preserves, maintain their unique personal and cultural identities, and balance career and family expectations and relationships. Above all, mentoring must be seen as more than an individual activity and other than a heroic challenge or test. Successful mentoring of women faculty rests on, and can help create, a more caring community in which women (and men) have more equal access to the full variety of departmental resources, including those relevant to their psychosocial as well as technical, personal and career, growth and success. The goal is not to accelerate the assimilation process, but to conduct organizational socialization activities that provide support, create mutual learning relations, make the most positive value of gender (and racial) diversity, and engage

people with new skills, styles and values in the effort to improve the organizational environment by creating a more caring and productive community – for themselves and others.

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