

AC 2009-2069: PERSPECTIVES ON "CAREER AND FAMILY" ALTERNATIVES FOR FEMALE ENGINEERING FACULTY

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Perspectives on "Career and Family" Alternatives for Female Engineering Faculty

Abstract

It is well established that female faculty represent a small percentage of the total faculty in engineering departments. It is also well known that engineering programs need to find solutions to increase their number of female faculty. Academic careers are demanding, specially, in the earlier years when a lot is expected of young tenure-track faculty. For those female faculty members who also would like to start a family, the demand of a full-time academic career forces them to choose between devoting time to family or pursuing professional goals. Often, the question becomes, start a family or get tenured? Male faculty, on the other hand, are less likely to face this dilemma. Moreover, most administrators are male who do not fully understand the need to accommodate female faculty. A young bright female faculty whom we hired for our new civil engineering program was facing this dilemma: family or career? The choice for our program was then to lose a highly talented educator or find an arrangement whereby she could start her family and contribute to the success of the program at the same time. In this paper, we discuss the arrangement that was made approximately four years ago. Our young female faculty, who has started a family with two children and a third on the way, is now teaching and conducting research half-time and performing admirably. Two years ago, she won "the excellence in teaching award" in our college of nearly 140 faculty, and last year she was awarded tenure and promotion to Associate Professor. In this paper, we offer perspectives by the former department chair (male) and the faculty member. We present our perspectives on the benefits, challenges, and the limitations of the arrangement and suggest ways to improve similar future arrangements.

Introduction

In recent years, much has been reported about many issues facing female faculty, particularly in engineering - issues such as fewer number of tenure and promotions, fewer leadership positions, and lower salaries when compared to men. In a male dominated field such as engineering, we have come to accept these outcomes. Title IX of the Education Amendments of 1972¹, "*No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance,*" had a significant impact on high school and collegiate athletics. Title IX did a lot in changing the male dominated culture of athletics in institutions of higher education and afforded women the same rights as men to participate and compete in sports. Although Title IX did a lot of good for women athletics, it makes no specific reference to athletics. The act covers all educational activities. Imagine enforcing Title IX in the way it was originally intended and its impact on bringing equality in science and engineering education and changing the hiring and retention practices in a male dominated field such as engineering in the same way it did in athletics.

According to the American Association of University Professors², most Ph.D. candidates receive their degrees in their early 30s. Considering the fact that the tenure process usually takes 6 to 7 years, it is then self-evident that for most female faculty the tenure period overlaps with their

child-bearing years. Academic careers are demanding, specially, during the tenure period when a lot is expected of young tenure-track faculty. For those female faculty members who also would like to start families, the demands of a full-time academic career force them to choose between devoting time to family or pursuing professional goals. Often, the question becomes, start a family or get tenured?

“Women who have children soon after receiving their PhDs are much less likely to achieve tenure than men who have children at the same point in their careers.” Joan C. Williams (2004) *Hitting the Maternal Wall*^{3,4}.

“The success of faculty members in balancing their academic careers with family is a matter of more than individual happiness: it is also a matter of addressing structural inequities and attracting the most qualified candidates to the academic profession.” John W. Curtis (2004) *Balancing work and family for the faculty: Why it is important?*⁵

While the numbers of women with doctoral degrees are increasing, these numbers are not reflected by the numbers of female faculty being hired, tenured, or promoted. Considering that nearly 37% of the doctoral degrees in science and engineering are awarded to women, it should then be alarming to discover that women make up only 9% of full professors in Science, Technology, Engineering, and Mathematics (STEM) fields². Of course, it is only in recent years that this issue has drawn some attention. The NSF’s Advance Program was created out of concern for this same exact issue. Because of the Advance Program, large universities such as Iowa State University⁶, Rice University, University of Washington, University of Michigan, University of Wisconsin, and Virginia Tech are developing or have already developed policies and programs to support, recruit, and retain female faculty with family interests. They provide tool kits⁷ for creating family friendly departments and encourage the department chairs to take advantage of these resources when scheduling workload and evaluating female faculty performance. However, there are no similar resources available to small departments and universities.

Typical family-friendly policies available to faculty at universities such as Iowa State University, Virginia Tech and the University of Washington, largely due to the efforts of their NSF-funded Advance Programs, include: one-year extension of the probationary period, temporary reduction to part-time appointments up to a maximum length (consecutive or non-consecutive) of two years, two additional weeks of paid family leave, and one semester of modified duties at full pay to create a more flexible schedule. Many of these policies have been in place for several years, however, Bird and Debinski⁸ reported that faculty members have, in general, been slow to use these policies. Quinn et al.⁹ found that utilization of family-friendly policies by faculty often required negotiation between the chair and faculty member on issues regarding eligibility to use policies, how to implement the policies at the department level, expectations in terms of service, teaching and research for part-time appointments, and how they will be evaluated during the tenure process.

The young female faculty whom was hired for our new civil engineering in 2003 faced this dilemma of feeling like she had to choose between family or career. As an alternative to leaving her academic career, she utilized parental leave of absences and negotiated a long-term (but not

permanent) part-time arrangement. She is the first tenure-track faculty member in our college of nearly 140 faculty to request such accommodations. The university has policies for requesting parental leave of absences, but does not have any policies in place for temporary part-time appointments. In this paper, we will discuss some of the challenges faced by our small department and university in implementing similar family-friendly policies as those found at larger research universities. We will provide perspectives from the former department chair and the faculty member on the benefits and limitations of the arrangement and suggest ways to improve similar future arrangements.

Department Chair’s Perspective

In this section we discuss the department chair’s perspective. We discuss the challenges a department chair in a small program faces, when he wants to bring about change in the university and department culture dominated by male. Minnesota State University, like most institutions, struggles to attract and retain female faculty in engineering. However, unlike large universities, for a small university such as Minnesota State, which does not have the Advance Program or well defined policies, the role of the department chair is very crucial in creating a family-friendly environment. A female faculty whom we hired a few years ago was facing this dilemma: family or career? The choice for our program was then to lose a highly talented educator and a researcher or make an arrangement so that she could start her family and contribute to the success of the department at the same time. Our young female faculty, who has started a family with two children and a third on the way, is now teaching and conducting research half-time and performing admirably. Minnesota State University (MSU) is a public university, home to nearly 14,000 students and offers 160 undergraduate and 82 graduate programs of study through six colleges. The University has a total of 480 tenure track/tenured faculty 42% of which are female. The College of Science, Engineering, and Technology has a total of 116 faculty, with 20 of them being female (17%). The Department of Mechanical and Civil Engineering offers a B.S. in Mechanical Engineering, B.S. in Civil Engineering, and M.S. in Engineering. The department has an enrollment of over 320 students with 10 full-time and 1 part-time faculty, two (1 full-time and 1 part-time) of which are female. The breakdown of all faculty for the College of Science, Engineering, and Technology as well as other colleges (Allied Health and Nursing, Arts and Humanities, Business, Education, Graduate Studies, Social and Behavioral Sciences) at MSU is shown in Tables 1 and 2.

Table 1. Numbers of Faculty in the College of Science, Engineering and Technology: Spring 2009

	Fixed Term	Non-Tenure Track	Tenure Track/Tenured	Grand Total
Female	11	1	20	32
Full-time	10	1	19	30
Part-time	1		1	2
Male	13		96	109
Full-time	12		96	108
Part-time	1			1
Grand Total	24	1	116	141

Table 2. Numbers of Faculty for All Other Colleges at Minnesota State University:
Spring 2009

	Fixed Term	Non-Tenure Track	Tenure Track/Tenured	Grand Total
Female	39	5	180	224
Full-time	28	3	178	209
Part-time	11	2	2	15
Male	18	1	184	203
Full-time	18	1	183	202
Part-time			1	1
Grand Total	57	6	364	427

As shown in Tables 1 and 2, the number of female faculty in science, engineering, and technology are well below the university level. Consequently, the role of the department chair in creating a family-friendly environment is significant. Some of the challenges the chair faces in accommodating a faculty member's request for either full-time or part-time family related leave include: (1) limited resources in a predominately teaching school – it is very difficult to convince the higher administration to approve part-time tenure track appointments. With the exception of maternity leave, small universities such as MSU do not have policies that allow female faculty to take family related leaves as needed; (2) part-time appointment – even if the department chair could convince the higher administration to grant the female faculty a part-time appointment, who is going to teach her other classes or carry out her other duties such as advising? The small programs usually have one person with a specific expertise, and for this reason alone it is very difficult to absorb the loss and meet the accreditation requirements; (3) adjunct faculty pool – for a university such as Minnesota State which is located in a small town, the qualified adjunct pool is small. Moreover, adjunct faculty do not necessarily provide the attention that students need in fundamental classes.

Despite these challenges, here are some of the things that a department chair can do:

- Raise the administration's awareness about family issues that female faculty face. Mason and Goulden¹⁰ reported that despite our modernized families, women continue to serve as primary caregivers and their careers are consequently more negatively impacted by starting a family or caring for aging parents than are those of men. In many schools including ours, not only are the higher administrators male, but they also have non-technical backgrounds and as the result they do not fully understand the demand of engineering academic careers on female faculty. Therefore, it is very important to have a continuing dialogue about family-work issues with the administration.
- Get faculty organizations involved. If you have a faculty organization, union, or a faculty senate, then they should be involved in the dialogue with administration and be a strong advocate for a family-friendly environment.

- Communicate frequently with the faculty member to better understand her needs. This point cannot be emphasized enough. If you don't know what her needs are, then you cannot help her. Visit her office frequently.
- Develop procedures that would allow for flexibility in course scheduling to accommodate the faculty's family responsibilities. Consult the faculty to develop her class schedules so that she could better meet her family obligations. Do not assign classes to the part-time female faculty where high level of student-faculty interaction is required.
- Develop procedures that would allow flexibility in assigning service oriented duties that could be carried out at home. For example, it may not be necessary for her to attend all department meetings. Service duties which require extra office hours such as academic student advising could be replaced with other service opportunities that are more flexible.
- Encourage scholarly and research work that can be carried out remotely, and then allow the faculty member the flexibility to perform this part of her work at home. Telecommuting is common in the corporate world. However, at smaller universities it is typically not as well accepted. There are expectations from other faculty and students to be on-campus during the workday. Department chairs play an important role in encouraging telecommuting and managing the expectations of colleagues and students.
- Develop communication protocols and policies that would allow the faculty the option of adjusting the tenure timeline. If she needs to devote more time to her family and when the family affairs impact the faculty's productivity, the university needs to have policies in place to extend the tenure-track period or pause the tenure clock per faculty's request.
- Change the department culture. The most difficult task that a department chair faces is changing the department culture. By culture, we mean the male faculty's views and attitudes towards a family-friendly environment. It is also important to get male faculty involved in developing and promoting new policies and guidelines that are beneficial to female faculty. These policies should also be made equally available to male faculty in dual career households with young children.

Faculty's Perspective

In this section, we present the faculty's perspective. The second author was granted a part-time appointment in 2005 and has requested to maintain this arrangement until her children are school age, which is longer than the typically two year maximum period allowed by the family-friendly policies at large universities noted in the Introduction. She has two children ages 3 and 4 and has taken a one-semester leave absence following the birth of each. She is currently pregnant with her third child and has requested a one-year leave of absence for the 2009-10 academic year. Two years ago, she won "the excellence in teaching award" in the College of Science, Engineering and Technology, and last year she was awarded tenure and promotion to Associate Professor.

Benefits – According to the second author, the part-time appointment has allowed her the privilege of being able to spend more time home with her children while still having opportunities to remain professionally active in science and engineering. The balance provided by the part-time arrangement allows her to focus on the needs of her children while still being able to educate new civil engineers and contribute to the body of knowledge in hydrology through her research.

She stresses the importance of having some advocates in the department that are supportive of her needs. In a small department, it is important that the majority of the faculty are agreeable to the situation. The advocates play a critical role in convincing other colleagues and administrators of the need to make the necessary accommodations.

“I have several strong advocates in the department. I don’t think the part-time arrangement would have been approved in the first place nor would it still be working now if I did not have these advocates. My department chair was very supportive of my request to higher levels of administration.”

Challenges – Managing students, colleagues, and family expectations is a constant challenge. Every semester, despite good teaching evaluations, the second author gets complaints from her students that she is not available enough to answer questions outside of class. The students complain about it amongst themselves and also provide this comment as written feedback on course evaluations. Despite her efforts to maintain consistent office hours on days she is on campus and respond to e-mail questions in a timely manner when she is off campus including the evenings and the weekends, there are always a few students that are not happy with the arrangement. In her opinion, this would not be an issue at larger universities where most faculty are only available during office hours. Somehow, the students in our small program have come to expect the faculty to be available all day, five days a week (and evenings and weekends for email questions). She has accepted that the students will be frustrated with her on this issue. However, she is concerned that the college dean and her colleagues may view it as a deficiency on her part for not keeping the students happy.

With only being on campus 2 – 3 days per week, her schedule is filled with class time, meetings and office hours leaving little time for class preparations, grading and research while on campus. As a consequence, it is necessary to regularly work on evenings and weekends to manage her 0.5 FTE workload. At a teaching-focused university where full-time workloads are 12 credits per semester, it is critical to have academic release time in order to maintain a research program. Because the teaching load is already reduced for part-time faculty, it is very difficult to get academic release time approved to work on research. In addition, several university programs to apply for university-funded academic release and summer research grants are only available to full-time faculty. She has been discouraged by the lack of progress on research since going part-time. However, she strongly feels that the benefit of being able to spend more time with her children that comes with the flexibility of a part-time arrangement is worth having to deal with these challenges. Quinn et al.⁹ found a similar response when interviewing several faculty in part-time arrangements at the University of Washington. In particular, they found that the challenge of slowed progress resonated with part-time faculty and that it was difficult for faculty at less than 75% time to make progress on research. However, the part-time faculty interviewed still believed that the benefits outweighed the challenges that they faced.

The second author has also sensed frustration from some of her colleagues because she has not been assigned student advisees. Due to the already busy schedule on her office days, it would be difficult for her to take even a half-share of advisees each year. Quinn et al.⁹ reported a similar finding that service expectations are vaguely defined in part-time arrangements. This can create

discontentment amongst colleagues. Typically, workload credit is not assigned to service work so it is unclear on how to reduce service expectations proportionately to the reduction in FTE. It is important for part-time faculty to find service opportunities that can fit into their part-time schedule and where they can provide added value for the department and/or university. For example, the second author has agreed to serve as the faculty advisor for the Society of Women Engineers (SWE). This is an area where she is passionate about mentoring students, where there is a need for a female engineering faculty to serve and where a majority of the service work can be done through email and outside the normal workday (e.g., section meetings are typically held in the evening). The disadvantage of it is that since this is college-level service work (across all engineering and engineering technology departments), it makes it more difficult for some of her colleagues within her department to value the time and commitment required.

Another challenge that the second author faces is the constant awareness that her colleagues are being required to take on her part-time reduction in teaching workload. For several of them, this extra work is being placed on them as an overload or making it difficult for them to utilize research release time. This challenge is more significant in small departments and universities. Ideally, the salary recaptured by the college for her part-time FTE would be used to hire adjunct faculty or another part-time faculty to cover her reduced teaching load. However, this has not been the case. The cost savings from her part-time FTE have not been made available to the department. The model for part-time faculty proposed by Drago and Williams¹¹ strongly recommends that the cost savings from a part-time faculty member's salary be used to hire a replacement and discourages the use of existing departmental colleagues to cover the teaching load. We have observed that when this recommendation is violated, it is fuel for discontentment amongst colleagues and the part-time faculty is blamed for their frustration.

Recommendations – Graders are the easiest way to free up faculty time and shift workload. Graders are a cost effective way where administration can free up time for both full-time and part-time faculty to contribute in other areas. In geographical locations where it is difficult to find adjunct faculty to cover the reduced teaching load of a part-time faculty, graders and teaching assistants can provide an inexpensive way to reduce overload on colleagues and also free up the part-time faculty for research or service activities.

Administration at the department and college level play a critical role in managing expectations and attitudes. The difference between tolerance versus advocacy in an administrator's perspective on a faculty's part-time arrangement is not only noticeable by the faculty member but also key to their job satisfaction. Also, it is important to have a unified front regarding decisions that are made to accommodate a part-time faculty. This need is magnified in small departments and universities where part-time arrangements tend to be negotiated on an ad-hoc basis. Consistent support amongst different levels of administration will foster a better understanding and contentment amongst colleagues and students and help to manage everyone's expectations of the part-time faculty. Quinn et al.⁹ recommended having zero tolerance for unacceptable behavior from tenured full-time faculty toward part-time faculty. When there is disagreement between the college dean and department chair on aspects of the teaching or service workload or research expectations, it opens the door for full-time faculty to also offer their complaints about the situation. On several occasions, the second author has experienced having full-time tenured faculty come directly to her in frustration with their complaints about

her workload. Some of these incidents were regarding a workload issue where there was disagreement between the department chair and the college dean.

The university needs to do more to provide daycare options for part-time faculty. The university daycare will not accept children on a part-time basis. Even if a part-time faculty is willing to pay the full-time cost for only part-time use, it is still extremely difficult to get in. They have a long waiting list. The second author and her husband have been able to make things work with shifting their schedules and relying on relatives and babysitters to cover days they both have to work. They have been on the waiting list for the university daycare for two years. On two occasions a spot has opened for one of their children but not for both of them, so they have to turn it down and remain on the waiting list until two spots open in the right age groups at the same time. The odds of this working have been a source of frustration. Although there are other daycares in town, the university daycare is the only one that would provide the convenience of a location that is on campus which allows the faculty member to maximize the use of the daycare hours for working rather than commuting. Bird and Debinski⁸ found that faculty at Iowa State University faced similar challenges of limited enrollment and high costs for on-campus childcare. The AdvanceVT program¹² at Virginia Tech also reported that new faculty wanted the university to give more attention to issues of childcare for faculty.

The university, college, and department need to place a high priority on recruitment and availability of qualified adjuncts or additional faculty. In a small program, this is critical to the success of part-time arrangements. As noted earlier, it is also important that the department receives the cost savings from the other half of a part-time faculty's salary for covering the workload, either as funds to cover the cost of adjuncts and overloads or preferably through an additional part-time faculty line. As discussed by Bird and Debinski⁸, this is especially important when a pre-tenure faculty member decides to take a family leave of absence. The concern of how colleagues will evaluate them in subsequent tenure and promotion decisions is magnified when one's colleagues are assigned extra workload to accommodate the leave. Although the second author successfully received tenure and promotion to Associate Professor in 2008, she is concerned about how her continued part-time leave will affect her future application for full Professor.

Concluding Remarks

Academic careers are demanding, specially, in the earlier years when a lot is expected of young female tenure-track faculty. As mentioned previously, most Ph.D. candidates receive their degrees in their early 30s, and considering the fact that the tenure process usually takes 6 to 7 years, it is then clear that for most female faculty the tenure period overlaps with their child bearing years. For those female faculty who would like to start a family, often, the question becomes, start a family or get tenured?

As family-friendly policies continue to be developed and implemented at universities across the nation, it is important to be aware of both the benefits and limitations in faculty utilizing such policies. Several studies have discussed these issues from the perspective of large, research universities. This paper uses a case study to examine the challenges faced by a small department and university in trying to accommodate similar family-friendly policies. Recommendations

from the perspectives of both the department chair and the faculty were similar. The importance of the role of the department chair and higher levels of administration in advocating family-friendly policies and managing expectations of colleagues and students was emphasized.

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