

*Engendering the University through Policy and Practice: Barriers to Promotion to Full Professor for Women in the Science, Engineering, and Math Disciplines*¹

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In research and policy addressing gender inequalities among university faculty, most attention has thus far been paid to the tenure process – to the task of getting women from the assistant professor ranks to the associate professor ranks. There is little question that programs like the National Science Foundation’s ADVANCE initiatives (in the United States) and more general affirmative action policies have had some beneficial effects. Women in all academic disciplines are now more likely to achieve tenure than ever before.

Less attention has been paid to the transition between associate and full professor, however. Promotion to full professor signifies, at least in the U.S., full standing in the academic community, and it is from the ranks of full professors that administrators are drawn. Unlike the promotion to associate professor, which is a mandatory process – six years or out – the promotion to full professor is a voluntary one. No faculty member is required to seek promotion to full professor. Though it is now becoming more common

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for faculty to be promoted to full within six years of achieving tenure, some still retire at the rank of associate professor.

Some data will help to shed light on this problem. These are data on the top fifty programs in a number of disciplines for the percentage of women faculty at each level in the United States:

Discipline	% Women Ph.D.'s	% Women Assistant Profs.	% Women Associate Profs.	% Women Full Profs.	Gap between % Ph.D.'s and % Assistant Professors	Gap between % Ph.D.'s and % Full Professors
Mechanical Engineering	10.4	15.7	8.9	3.2	-5.3	7.2
Electrical Engineering	11.5	10.9	9.8	3.8	0.6	7.7
Physics	13.3	11.2	9.4	5.2	2.1	8.1
Astronomy	20.6	20.2	15.7	9.8	0.4	10.8
Computer Science	20.5	10.8	14.4	8.3	9.7	12.2
Civil Engineering	18.7	22.3	11.5	3.5	-3.6	15.2
Chemical Engineering	22.3	21.4	19.2	4.4	0.9	17.9
Economics	29.3	19	16.3	7.2	10.3	22.1
Math	27.2	19.6	13.2	4.6	7.6	22.6
Political Science	36.6	36.5	28.6	13.9	0.1	22.7
Chemistry	31.3	21.5	20.5	7.6	9.8	23.7
Biological Sciences	44.7	30.4	24.7	14.7	14.3	30.0
Sociology	58.9	52.3	42.7	24.3	6.6	34.6
Psychology	66.1	45.4	40.1	26.7	20.7	39.4

Source: Nelson (2005).

This table captures the increasing barriers at each level of the academic ladder. The final two columns demonstrate that, relative to the percentage of women Ph.D.s, for every discipline listed women are more underrepresented at the level of full professor than at the level of associate professor. For example, in economics, there is a gap of 10 percentage points between the proportion of women who receive PhDs and the proportion of women faculty at the associate professor level. The gap is more than double that size (22 percentage points) at the full professor level. There are some striking pieces of data in the table – for two fields in engineering, mechanical and civil, women are actually overrepresented as assistant professors relative to their proportion as PhD's; yet they remain underrepresented as full professors. The three fields with the largest gaps at the full professor level are in the table are Biology, Psychology and Sociology. These latter two fields now have a majority of women PhDs; Biology is quickly approaching parity. It is notable that all of these are fields that one thinks of as being welcoming to women, or at least more welcoming than the physical sciences and engineering.

Why should women find the promotion to full more difficult? Some argue that this is merely a pipeline issue – as more women enter the pipeline and achieve tenure, more will ultimately progress to full. But there are reasons to be less than sanguine about this. We know from studies of the pipeline (for a review, see Committee on Maximizing the Potential of Women in Academic Science and Engineering, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. 2006) that women are simply more likely to leak out at every stage than men. But there is also reason to expect – given what we know of gendered organizations – that structure, in the

form of policy and practice, and interactions and networks within departments themselves – matters.

The key to understanding the difference may lie in several factors. The first is organizational demography. In most universities promotion committees are made up of faculty already at a particular rank. Functionally speaking, the promotion committees assessing candidates for full professor differ from those assessing candidates for associate professor. There are simply more women in the latter case – promotion committees for candidates for full are smaller and far more likely to be dominated by white men. These men are also likely to be older and to have had wives who were responsible for the family. Though I do not test this hypothesis in this project, my strong suspicion is that this matters quite a lot. Demographically speaking, a boy's club is certainly operating at this level.

The second factor may lie in policy and practice in terms of the actual documents themselves. It has been a matter of some debate in the literature on gendered organizations whether bureaucracy, per se, reproduces gendered inequalities or represents a masculinizing force in organizations. Certainly this was an early assumption – embodied, for example, in Kathy Ferguson's 1984 book, *The Feminist Case Against Bureaucracy*. In my own 2000 article in *Gender & Society* (Britton 2000) I take on this claim, arguing that in fact the balance of the literature indicates that more bureaucracy is better than less. This has been shown in a number of contexts and in a very large body of literature – Reskin and McBrier (2000) show this in banking, for example, Cook and

Waters (1998) have demonstrated this in a study of engineering and law. Cecilia Ridgeway (2009) has recently argued against a blanket assessment of more bureaucracy as better than less for women, and this is an issue to which I return in my conclusion.

Regardless, there is little question that while the standards for promotion to assistant professor are often quite vague, the standards for promotion to full professor are usually non-existent. The documents themselves may play a crucial role in blocking women's advancement to the highest levels of the academic hierarchy.

Of course the documents themselves are not so important as the documents in use. Particularly at the full professor level, informal expectations play a considerable role in creating the motivation for seeking promotion by individual faculty, as well as the standards for evaluation of candidates. Additionally, factors that have been shown to affect promotion – like collaboration, and networks, and division of faculty time, and work/family balance issues, may have a disproportionate negative impact on women (for a review, see: Committee on Maximizing the Potential of Women in Academic Science and Engineering, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. 2006: *Beyond Bias and Barriers*). The project on which I report here is centrally focused on understanding these last two sets of factors in creating barriers to promotion to full professor for faculty in the science, math and engineering disciplines.

Methodology

The research in this paper has been funded by the National Science Foundation and will ultimately involve interviews with 80 science, engineering, and math faculty at seven U.S. universities [ADVANCE Partnerships for Adaptation, Implementation, and Dissemination (PAID) Award: PROMOTE - Improving the promotion to full processes at western public universities," Principal investigators Kimberly A. Sullivan, Ann Austin, Beth A. Montelone, Dana Britton, Tracy M. Sterling. NSF Award #: HRD-0820273]. The sampling frame has been constructed to capture the factors affecting the progress of science, engineering, and math (SEM) faculty who found this transition easy and those who found it more difficult:

	A	B
	Associate	Full
1	In rank for 3 to 6 years post tenure	Promoted within 6 years or fewer
2	In rank for 7+ years post tenure	Promoted after 7 years or more

N = 10 men and 10 women SEM faculty per cell, total = 80

I have conducted the first few interviews in this project and I will present some very preliminary data here. As part of this project, I have also collected and analyzed tenure documents from SEM departments in one institution. I have a dozen documents at this point and I will discuss some of the results of the analysis of these data here as well. Analysis of both kinds of texts has been conducted using standard qualitative techniques, reading the transcripts and documents and coding for emergent themes.

Tenure Documents – Gendering In Policy

First I turn to the documents central to this project, those governing tenure and promotion. One of the most common themes in the documents is a pattern of omission and obfuscation. Either there are no statements at all about what is required to achieve promotion, and sometimes tenure, or there are statements that have been made deliberately unclear. This is one of the clearest examples (I have blinded the names of the departments):

For promotion to full professor:

Distinguished reputation in [discipline], such that he or she would be invited to join our faculty at the rank of Full Professor (Department A).

The more usual pattern is one of making requirements deliberately unclear:

No exact quotas or guidelines can exist and a combination of objective and subjective elements will enter into a final decision in the evaluation process. Decisions on acceptable performance levels must contain the individual judgments of the faculty and the administrators involved in the decision (Department B).

The upshot is that while there must be a consensus, no objective factors can be specified. They are entirely based on “judgments” and unspecified (and partly subjective)

“elements.” The implications for individual faculty are clear – they have little guidance in what it takes to be promoted and little recourse if they are denied.

The second theme is that where requirements do appear in the documents they are purposely vague, particularly when it comes to specifying the policies governing promotion to full professor. To the extent that there is any clarity in the documents at all, it appears that level of achieving tenure. Some documents (a few) quantify this, and there is no question that they spend far more time on what is required to achieve tenure than what is required to achieve promotion to full professor. Conversely the documents spend very little time explaining what the expectations are for full professors:

Promotion to Professor is based on attainment of sustained excellence in the assigned responsibilities of the faculty member and recognition of excellence by all appropriate constituencies (Department C).

Here there is no discussion at all in the document about standards, just about consensus. Still other documents reflect this lack of clarity as well.

Expectations for promotion from associate professor to professor are considerably higher [than those for tenure], including leadership in scholarly research and/or instructional activities, and strong professional recognition at the national and international levels (Department D).

Appointment as Professor is based on the candidate's national and/or international recognition for a distinguished career . . . Such criteria must be fulfilled to high orders of expectations (Department E).

Here one can see the very common emphasis on “national and international reputation” as a criteria for promotion to full professor. No document specifies what this is very clearly, and, as my interviews with faculty reveal, it is very much a criterion established in use rather than in policy.

Interview Data – Faculty Experiences

The documents themselves only tell part of the story, however. The more important questions, those about the documents in use, and about informal practices and norms, can be answered only by looking at the experiences of faculty themselves. There is where the interview part of the project comes in. I have only begun these interviews. I will focus here on the experiences of two women in the sciences, both full professors at an institution other than my own, both promoted within the usual six year time span. Both are in science disciplines related to biology. Both are married to men, and both are mothers. One, whom I will call Susan, has a four year old daughter, born when the year she became a full professor. The other, whom I call Maggie, has a fourteen year old daughter, born when she was an assistant professor.

Both women were in favor of processes creating more transparency in the documents, and both had been tenured and promoted at a time in which documents were either

extremely vague or non-existent. In fact in one woman's case the department head simply reviewed materials and decided who would be promoted. There was no faculty participation at all. So even given the vagueness in the documents, these women saw them as an improvement. Hence the documents themselves, as written, were not a primary topic of interest in these interviews.

As I asked both to think about the low numbers of women in their fields, both were very clear that this was a pipeline issue, one simply of getting enough women over time into their fields. For example, Susan explicitly rejects explanations of discrimination:

Once the women get into the system, in tenure track positions, I'm not inclined to argue in [my field] that they're stalled so much by professional limitations, by department limitations. *Meaning?* Meaning they're just not one of the guys, so they're not going to be promoted, or. It's come a long way. I wonder if it's to some degree a time thing. Like we just have to now get people in the assistant professor positions, which we're doing, and then get them through the ranks. Which is going to take decades (Susan, full professor).

Maggie's take on this was similar:

So if you have 50/50 male and female grad students, you certainly don't have that mix in terms of faculty. Well, I think what has happened, when I was in graduate school there weren't many women in [my field]. So I think the population is slowly increasing. *So what's your sense of why, when you look at the proportion of women as PhD's, and as*

assistant professors....? The numbers are increasing. So you think it's a pipeline issue?

Right, it's in the pipeline. (Maggie, full professor).

Perhaps not surprisingly, these women shared the commonly held view that time would solve the problems facing women in their disciplines. As I demonstrate below, however, upon reflection their life circumstances complicated this view considerably.

Even given the vagueness in their own documents, the women shared the usual sense of a full professor as someone with a national and international reputation:

So what does it take to be promoted to full? Sustained productivity, but there's another dimension to it. And actually, this came from the department head who hired me. He said something that stuck with me: he said that being tenured is an indication that the faculty believe that you have promise, being promoted to Full professor is an indication that you have achieved that promise. And so, what is promise? I think it's a national and international reputation. (Susan, full professor)

Like many things in social science, the questions with which I went ultimately were not central for these women. They saw the documents themselves as improved, but not crucial. And they held to the notion of full professor as a recognition of success in a national and international sense.

As the interviews progressed, I asked them to think themselves about their own careers and their successes in achieving full professor. It was at this point that the issue of

work/family balance became absolutely central. Some context is necessary, perhaps, for you to understand their responses. At this university literally the only policy available to women (or men) is a stop the tenure clock policy. Faculty may take an extra year to achieve tenure, and this extension is more or less automatic. The policy is not widely used, and has been available only in the past ten years or so. There is no mandated maternity or parental leave, and no formal policy that allows women to modify their instructional duties for child or dependent care. Administrators and the others involved with the ADVANCE program on this campus are working on the latter now, but the overall situation in terms of policy is extremely bleak. Many US universities are better than this one, but none have really reached the level of many European governments and universities.

The two women I interviewed were differently situated in terms of their access to resources to help them balance work and family. One, Maggie, had a spouse with a PhD in another discipline who was never offered a full time teaching position by the university. He is employed only half time in a staff position. The stop the tenure clock policy was not available to her when her child was born (this happened when she was an assistant professor), and she was on her own in terms of negotiating day care. These things had clearly taken a toll on her, though she had been “objectively” successful in achieving the rank of full professor. She describes her situation in this way:

When I came here I was the second female faculty member ever in the department. Second in that group, and the first to ever have a child while a faculty member. And that was interesting. *How did that work for you?* Let’s just say that I am a strong promoter of

maternity leave policies for female faculty. *Because you didn't have access to anything, right? Did they even modify duties for you?* No. Nothing. I went right through. I worked until the day or two before she was born. Because being a new faculty member here, I had only been here two years when she was born and I had tried to save as much vacation as I could to be able to have time, and I took four weeks of vacation after she was born. And then she went into child care. That was hard. (Maggie, full professor)

This is a woman who has in fact been active in the ADVANCE program, and a strong supporter of work/family balance policies. This has not been a focus of ADVANCE at this particular institution, however, where the emphasis has been much more on straightforward career building activities.

Susan – who arrived on campus only three years later than Maggie - has in fact benefitted from three separate, and in some ways serendipitously acquired, institutional resources. She was able to negotiate a spousal hire when she came to campus (there is no policy, and no money, for such things at this institution), she found one of the 19 total slots for a child in her age group in university subsidized daycare, and she also received an ADVANCE grant that allowed someone to teach her labs during the first year her child was born (though this is not why she submitted the grant). She sees all of these things as crucial to her career:

Well, I think it is harder for women when you factor in the family stuff. That's real. From a person who's lived it. Like how do you maintain your research productivity, keep your graduate students on task and all of that when you're dealing with, you know, a one

month old? [Laughs]. That's really hard. For female faculty who choose to do the family thing, I don't think, without those instances [of institutional resources], my career would have stumbled. And I can definitely see that when there's children stuff happening at the assistant professor level, or when you're associate and there's that focus for a while, it really slows progress on the research for sure (Susan, full professor).

In fact if this woman had not gotten access to these resources, she is clear that she would have had to work half time, and her research would have been stalled. Taken together, the experiences of these two women offer very different stories. Both have "made it" in the sense of becoming full professors. But Maggie has clearly done this very much on her own. Susan has had access, limited and serendipitous though it is, to university policies that have allowed her to negotiate the system by making fewer compromises. One woman is an example of what happens when no policies are available, the other of how even patchwork and informal policies can matter in fostering success.

Both of these women, however, see their future progress – into administration, for example - as being blocked by what they frame as their "choice" to put a priority on family. For the first woman, the situation appears particularly bleak:

Quite frankly, I've seen opportunities for getting more administrative skills, and I have just let them go by the wayside, and that was my choice because of my daughter. I was on two boards of directors for [professional organizations], I was on the committee for the National Academy. So, I mean I was doing a lot of good things. And then I had a daughter who said, "Mom, you're gone all the time. Can you stay home more?" And I

said “OK, I’ll stay home more” (crying, now pushing back from desk). *Well where do you see yourself, then, ten years down the road, as she’s grown?* Probably picking some of that up again as I can. And I, you know, I really enjoyed doing that stuff (eyes are teary all through this). But, there’s times I think administration would be good, but then from a personal side, when I look at the hours involved, evenings and weekends, Monica comes first. So, maybe once she’s out of college. But then again, OK it’s like you put more on this track, and you voluntarily took yourself out of it. Are you ever going to get the opportunity to go back? (Maggie, full professor)

It is interesting, but not surprising, that this woman, as the others I have interviewed, see this very much as a personal choice, something she “voluntarily” did, even though she does have a sense that men do not have to make the same choices.

This sense of blocked forward progress returns to the question from which I began. Even in terms of the fuzzy standard they impose – that of a national or international reputation, the stories of these women reveal the barriers to promotion for many women faculty fairly clearly.

I’d love to [go to more meetings and conferences.] I’d love to. But until Monica’s out of high school, I can’t. There’s one that I was going to go to last April, and in another one last year in Tennessee. Canceled, I couldn’t go. You know, I couldn’t do the research you’re doing. Because of the travel. I’ve just been declining things left and right (Maggie, full professor).

To the extent that building a reputation remains the key component of a promotion to the full professor level, women will face barriers that have to do with their efforts to prioritize work and family – and the lack of policies that support these efforts. And even beyond this level, the women I have interviewed see administration as a goal far away on the horizon, if it is possible at all. This suggests that even if women break through to the level of full professor further glass ceilings remain.

Conclusion – Preliminary Findings and Implications

My analysis of tenure and promotion documents suggests that the criteria for promotion to full professor remain quite vague and are focused largely on the dimension of “national and international” reputation. To the extent that these criteria are unclear, and to the extent that women face barriers imposed by their disproportionate responsibilities for balancing work and family, it will be more difficult for women to achieve this level, and beyond that, to be represented in great numbers in the administrative ranks.

Would more transparency in the documents be beneficial? It is difficult to say. The women I’ve interviewed so far (and even more so in cases I do not present here) do see greater transparency and rationality in the process as an important goal, one that would allow them to measure themselves against standards that are clear and consistent. Transparency could help militate against interpretations of standards like “national and international reputation” in ways that benefit men, based on their abilities to travel and engage in a variety of service activities. Of course for the women I interviewed, tenure

and promotion policies are the least of their problems. While they have been successful, the fact that the university sees family as a private matter means that women who receive any assistance at all, like Maggie, see themselves as lucky rather than as entitled.

What are the implications of this analysis for a theory of gendered organizations? From a theoretical standpoint, I began from a question raised by Acker's (1990) work on gendered organizations – the question of how policies and practices in organizations work to disadvantage women, and whether transparency of policies helps to mitigate this effect. In simple terms, I posed the question of whether more bureaucracy is better than less. In a recent paper, Cecilia Ridgeway (2009) argues that the answer to this question depends on the context. To the extent that what she calls a “gender frame” is particularly salient in an organizational context, transparent and bureaucratic policies will help to lessen its effects. She writes:

The gender framing perspective suggests that whether formal personnel procedures do more good than bad depends not only on the extent to which bias is built into the procedures but also on how powerfully disadvantaging the gender frame would be for women if actors were not constrained by formal procedures. Thus, there is no simple answer to the “are formal rules best” question. But a consideration of the joint effects of the gender frame and the organizational frame allows us to specify how the answer to this question varies systematically with the nature of the context (2009:153).

My argument in this paper is that in a context in which women faculty are powerfully constrained by what they see as their “choices” to put work and family first, and in which

the university organizational context does nothing to support combining work and family, a gender frame in which women are mothers and wives first and faculty second is likely to be particularly salient. Given this, a lack of clear and transparent policies around promotion – policies that literally quantify requirements in ways that allow women, and their male colleagues, to measure themselves clearly, women are likely to suffer and be less able to access the upper ranks in the academy.

But if we take Ridgeway seriously, I think what we also might postulate is that policies that make a gender frame less salient – e.g., by allowing women (and men) to balance work and family - might make transparency in standards less important. Some studies are in fact showing that women can thrive in flexible organizational structures in fields that are less highly gender typed – as the relatively recent work on women’s success in biotech firms by Whittington and Smith-Doerr (2008) and others has shown.

So while these data are preliminary, I think this study holds some promise for helping us to understand the barriers women face in accessing the upper ranks in the academy. As I have written recently (Britton and Logan 2008), almost two decades on from Acker’s original formulation (1990), research has established the utility of a perspective that sees organizational structures as gendered. What remains is the task of understanding how context makes gender more and less salient, and ultimately, fostering the goal of creating less oppressively gendered organizations.

References:

- Acker, J. (1990): Hierarchies, jobs, bodies: A theory of gendered organizations. In: *Gender & Society* 4. 1990. 139-158
- Britton, D. M./Logan, L. S. (2008): Gendered organizations: Progress and prospects. In: *Sociological Compass* 2(1). 2008. 107-121
- Britton, D. M. (2000): The epistemology of the gendered organization. In: *Gender & Society* 14(3). 2000. 418-435
- Committee on Maximizing the Potential of Women in Academic Science and Engineering, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. (2006): *Beyond bias and barriers: Fulfilling the potential of women in academic science and engineering*. Washington, DC: National Academies Press
- Cook, C./Waters, M. (1998): The impact of organizational form on gendered labor markets in engineering and law. In: *The Sociological Review* 46(2). 1998. 314-339
- Ferguson, K. E. (1984): *The feminist case against bureaucracy*. Philadelphia: Temple University Press
- Nelson, D. J. (2005): *A national analysis of diversity in science and engineering faculties at research universities*. Norman, OK. Retrieved from: <http://chem.ou.edu/~djn/diversity/briefings/Diversity%20Report%20Final.pdf> on December, 2008
- Reskin, B./Branch, D./McBrier (2000): Why not ascription? Organizations' employment of male and female managers. In: *American Sociological Review* 65. 2000. 210-233
- Ridgeway, C. L.(2009): Framed before we know it: How gender shapes social relations. In: *Gender & Society* 23. 2009. 145-160
- Whittington, K. B./Smith-Doerr, L. (2008): Women inventors in context: Disparities in patenting across academia and industry. In: *Gender & Society* 22. 2008. 194-218