This paper traces the workplace practices within which mid-career women faculty in science, technology, engineering, and mathematics (STEM) carry out their careers. Findings from this case study of 25 faculty at one research university revealed three institutional processes that constrained their careers: (a) access to and integration into career networks; (b) distribution of labor in the department and institution; and (c) promotion and leadership. Using Acker’s (1990, 2012) theory of gendered organizations and subtexts I uncovered systemic inequities that could compromise professional advancement for mid-career women faculty in STEM. Implications for these findings; Acker’s theory; and recommendations for policy, practice, and future research are included.

Keywords: gendered organizations, mid-career faculty, women in STEM, promotion and leadership

The underrepresentation of women in both tenured and administrative academic positions at colleges and universities persists despite the social and economic advances women have made in academe over the last 20 years (Bain & Cummings, 2000; Conley, 2005; Hargens & Long, 2001; Pullmann, 2007; Valian, 1998; West & Curtis, 2006). For example, in 2011, 41% of all tenured faculty and 24.5% of positional academic leaders were women (Lennon, 2012; Snyder & Dillow, 2016).
Such underrepresentation is most evident in the Science, Technology, Engineering, and Mathematics (STEM) disciplines (Carr, 2013; Stage & Hubbard, 2008), where women comprise 25.7% of all tenured faculty in STEM at 4-year colleges and universities (National Science Foundation, 2014).

One way to better understand the underrepresentation of women in leadership positions (Bain & Cummings, 2000; Conley, 2005; Hargens & Long, 2002; Pullmann, 2007; Valian, 1998; West & Curtis, 2006) is to focus on the experiences of mid-career women faculty, who are most immediately poised to assume leadership roles in academe. The limited extant literature reports that women in mid-career are less satisfied than men, feel more gender inequity than at the beginning of their careers, feel heavy work/family conflicts, and take longer to achieve promotion to the rank of professor (Gardner & Blackstone, 2013; Modern Languages Association of America (MLA), 2009; National Research Council (NRC), 2009; Selingo, 2008). These factors, coupled with Acker’s (1990) contention that the university is gendered (i.e., masculine (Britton, 2000)), complicate women’s ascension into leadership roles.

Guided by Acker’s (1990; 2012) conceptualization of gendered organizations, the purpose of this case study was to trace the workplace practices of 25 mid-career women faculty in STEM fields at one research university (Land Grant University (LGU)) to understand how they carried out their careers. Specifically, I sought to answer the following research question: How is the organizational culture gendered and how does it influence the career decisions of mid-career women faculty in STEM at one research university?

To begin, I review the literature about mid-career faculty in general, and women mid-career faculty in particular. Next, I explore the literature about decisions to pursue academic leadership by faculty, especially those in STEM. I then turn to Acker’s (1990; 2012) discussion about gendered substructures as a way to consider why inequities continue in academe. After describing the design of my study, I present the findings and discuss them in light of the related literature and Acker’s concept of gendered substructures. I conclude by considering the implications of this study for future research and practice.

**Background**

A Chronicle of Higher Education survey of over 5,800 faculty members at 89 colleges found that faculty in the middle of their careers report the lowest levels of satisfaction on career development, perceptions of fairness on the job, and overall job satisfaction (Selingo, 2008;
Mid-career can be particularly fraught with anxiety about what is next because career ladders in academe are relatively flat, unless faculty move into administrative and leadership roles. Post-tenure faculty also receive less support from the institution (e.g., mentoring, targeted internal grants) and are expected to engage in more institutional service than during the pre-tenure years (Baldwin & Chang, 2006; Baldwin, DeZure, Shaw, & Moretto, 2008). In addition, Huston, Norman, and Ambrose (2007) found that significant numbers of mid-career faculty were disengaged from their departments and institutions, although they were highly productive. These findings demonstrated what Golembiewski (1978) called a faculty “mid-life” crisis in the mid-career years.

The experiences of mid-career women faculty raised particular concerns. In addition to experiencing the mid-life crisis, women in mid-career were less satisfied than men, felt more gender inequity than at the beginning of their careers (Gardner & Blackstone, 2013; Geisler, Kaminski, & Berkley, 2007); felt heavy work/family conflicts (MLA, 2009; NRC, 2009); and took longer than men to achieve promotion to the rank of professor (Gardner & Blackstone, 2013; Geisler et al., 2007; MLA, 2009; NRC, 2009).

Further, when considering the experiences of mid-career women in STEM specifically, they took 3 years longer than men to be promoted to full professor (NRC, 2009). This statistically significant difference begs the question of why might this be the case? Scholars pointed to a number of factors including how faculty allocate time to specific tasks (Misra, Lundquist, Holmes, & Agiomavritis, 2011; Terosky, O’Meara, & Campbell, 2014); a lack of clarity in promotion policies (Fox & Colatrella, 2006; Terosky et al., 2014); little access to networks (Fox & Colatrella, 2006; Terosky et al., 2014); and limited agency in the promotion process (Fox & Colatrella, 2006; Misra et al., 2011; Terosky et al., 2014). These myriad explanations all point to schemas and structures that can either advantage or disadvantage a faculty member’s career trajectory (Valian, 1998).

For example, Misra et al. (2011) found that men and women reported dedicating a similar amount of time to their jobs. However, women spent more time teaching, mentoring, and participating in service to the university than their men colleagues. While on the surface this appeared to be an individual choice, women felt more pressure to engage in other activities than their men colleagues. Thus, women were pulled away from work (i.e., research) that would advance their careers and pushed to other tasks that have been described as women’s work or “institutional housekeeping” (Bird, Litt, & Wang, 2004; Terosky et al., 2014).
Further, Fox and Colatrella (2006) found that criteria to advance to full professor were ambiguous and unevenly applied. In these ways, promotion can be a moving target for both men and women. However, faculty reported that gender was a factor in promotion decisions; to be successful, it was important to have supportive formal and informal networks, including those with “the old boys’ club.” Having these networks often proved difficult for women (Fox & Colatrella, 2006; Terosky et al., 2014). Much like with tenure decisions, women also identified pregnancy as a signal to colleagues that they did not take their careers seriously. To contradict such assumptions, women felt they must do more work than men to be similarly evaluated, and ultimately promoted (Fox & Colatrella, 2006). Thus, it is not surprising that these circumstances would lead to women feeling reticent about pursuing promotion to full professor.

In addition to concerns about promotion to full professor, women faculty in mid-career also pointed to barriers that limit their involvement in formal leadership positions. For example, leadership can be seen as a man’s space, where women do not belong (Roos & Gatta, 2009). And, for women who have gained entrée into this masculine space, they often experience subtle and overt discrimination and negative stereotypes (Bagilhole & Goode, 2001; Kolodny, 1998; Roos & Gatta, 2009). Even in less formal leadership processes, decision-making excluded women. Like with women preparing for promotion to full, the “old boys’ club” was a network to which women did not have access, and subsequently, were less aware of opportunities to advance their careers, including the pursuit of leadership roles (Roos & Gatta, 2009). Yet, the importance of participating in leadership opportunities cannot be discounted. As Frank and Coterella (2006) found in their study, some measure of leadership, even if it was demonstrated through research responsibilities, was necessary for promotion to full professor.

In sum, the aforementioned literature provides a context in which mid-career women faculty in STEM experience their work lives. It pointed to the structural/numerical inequities of mid-career women in STEM and of women in academic leadership positions, as well as some insight into the climate that may perpetuate these inequities. Next, I introduce the conceptual framework that coupled with the extant literature, guided this study.

Conceptual Framework

Acker (1990) identified five ways in which organizations are gendered. Building upon this work, Acker (2012) pointed to the gendered
substructure to explain why gender inequities persist in organizations. It is within this substructure that assumptions about men and women are reproduced, and inequities maintained. The gendered substructure is influenced by three factors: (a) the organizational culture (e.g., socially constructed values, symbols, behaviors); (b) interactions among those within the organization; and (c) gendered schemas about what it means to be a woman or man at work in the organization. For Acker (2012), the gendered substructure is comprised of three interlocking elements: gendered subtext, gendered organizational logic, and the ideal worker. I describe these elements below.

**Gendered Subtext**

Typically, the dominant texts in organizations appear to be gender neutral (Bendl, 2008). However, underlying these texts are subtexts that are gendered. Thus, by deconstructing the dominant narratives, subtle (and sometimes not-so-subtle) discourses can be uncovered that reinforce the primacy of masculinity and men (Bendl, 2008). The subtext is just part of the overall substructure, and can be embedded in practices and policies (Acker, 2012). For example, jobs have particular responsibilities. If a worker performs responsibilities that are described in another worker’s job, that worker will only be evaluated based upon the performance expectations of the original job description. Thus, if there is occupational gender segregation (e.g., women are secretaries and men are managers), and women secretaries assume some managerial tasks, women will never be rewarded for that work because it is outside the scope of their role. The subtext then makes it difficult, if not impossible, to move from a secretarial into a managerial role (Acker, 1989, 1990, 2012).

**Gendered Organizational Logic**

“Organizational logic is an element in the gendered subtext . . . I see this idea as referring to common understandings about how organizations are put together, the constituent parts, how the whole thing works” (Acker, 2012, p. 217). More concretely, work rules, policies, and practices, whether formal or informal, constitute the logic of an organization (Britton, 1997). For example, there is an organizational logic about what it means to do the work of a faculty member in a college or university. Specifically, faculty teach, research, and engage in service (Tierney & Bensimon, 1996). However, organizational logic, particularly at research universities, presumes that research, and certain kinds of research (e.g., objective and therefore, masculine), are more highly valued (Schiebinger, 2014). Teaching and service, which are considered
more feminine, are nearly inconsequential in terms of promotion and recognition from colleagues (Bird et al., 2004). Further, practices, such as intolerance of colleagues who have a temporary decline in scholarly productivity due to parenting expectations, establish another gendered organizational logic (Schiebinger, 1987).

These logics also play out for leaders. For instance, academic leaders have experienced rising managerialism, which is understood as fundamental to administrative work. Yet, it is another organizational logic that is masculine and seeks to limit the advancement of women (Alemán, 2014; Metcalfe & Slaughter, 2008). Collectively, these aforementioned gendered messages constitute part of the organizational logic (Acker, 1989, 1990, 2012). And the notion of the ideal worker, or in the case of this study, the ideal scientist, is also part of the organizational logic.

**Ideal Worker**

In her book, *Unbending Gender*, Joan Williams (2000) uses the concept *ideal worker* to describe how norms at work are established through social constructions of what it means to be a good worker. As she documents, the ideal worker in professional settings, such as academia, presumes a particular kind of worker that follows men’s life patterns. In particular, Williams focuses on a part of the professional career trajectory where the ideal workers are those who function unencumbered by family responsibilities or caretaking. Given the powerful gender norms in work/family arrangements, women still assume most of the primary responsibility for home and childcare (Drago, 2007; Sallee, 2012; Sayer, Bianchi, & Robinson, 2004). This means that men’s life patterns (e.g., no time off for childbirth and little time off for childcare) are a better fit than women’s for the arc of academic careers—that is, they are better oriented toward meeting the ideal worker expectation for uninterrupted productivity and greatest achievement during the key child rearing and bearing years. What Williams exposed are the institutional practices, expectations, and culture that define workplace excellence, and most importantly, how these are socially constructed along gendered life cycles.

Multiple studies show women are disadvantaged by the norm of the ideal worker in professional settings, and not just by the gendered life cycle. Indeed, the concept has proved so useful that it now applies to a range of norms and practices around which the ideal worker is constructed. For example, the MLA (2009) reported women at the post-tenure level in academe are slower to achieve promotion to professor, regardless of whether they have children. The report documented some labor women perform at the university (e.g., grading, in-class
instruction, spending time with students) actually slows down their time to promotion. This is because at the post-tenure level the ideal worker norm implies a trajectory that is bountiful in resources, time to engage in research, and collaborations and unencumbered by departmental labor. In this way, the ideal worker has institutional support that bolsters and facilitates success. Thus, institutional support is gendered; in fact, as Acker (1990; 2012) argued, the institution itself (or its substructure) is gendered. Further, gendered practices and processes that reinforce the ideal worker serve to maintain gender inequality in the organization (Acker, 1990; 2012; Benschop & Doorewaard, 2012).

**Methods**

To answer my research question, I conducted a critical embedded case study. Because Acker’s (1990; 2012) framework informed the design and analysis, a critical case design is warranted (Yin, 2014). In other words, Acker’s framework provided a clear set of conditions (i.e., gendered subtext, gendered organizational logic, ideal worker) that are necessary to determine whether it is a reasonable explanation for the circumstances of the case (Yin, 2014). In the presentation of the findings, I pay attention to the experiences of the 25 mid-career women STEM faculty who participated in this investigation. These experiences are embedded in the larger unit of analysis or case, i.e., the research university where these women work.

**Data Collection**

The Office of Institutional Research at LGU served as a vital partner throughout the grant that funded the current study. It provided names and contact information of all STEM faculty. From that list, I invited all women at the associate and full professor ranks in STEM fields to participate. This group ($N = 40$) represented all three colleges with STEM departments at the university. This included the colleges of engineering, arts and sciences, and agriculture and natural resources. Within those colleges, 12 departments were represented (this included all departments that had a woman in the associate or full professor rank in STEM) and 25 women agreed to complete a short demographic form and participate in a semi-structured interview that lasted approximately an hour.

Thirteen of the 25 women were associate professors, the remaining 12 were full professors. At the associate rank, all but one participant was White/non-Hispanic. The faculty member who did not identify as White, identified as Asian. Among the full professors, those not
identifying as White included three Asian and one Hispanic woman (see Table 1 for additional demographic characteristics of the participants).

Although the interviews were semi-structured, each interview addressed the following broad areas: factors that contributed to their success as faculty, factors that have hindered or impeded faculty success, and resources necessary for faculty achievement. At the request of a participant, one interview was not digitally recorded; however, all remaining interviews were recorded and transcribed verbatim. For the interview that was not recorded, I took extensive handwritten notes during the interview and immediately after the interview, which I later transcribed electronically.

**Data Analysis and Trustworthiness**

To strengthen the dependability of the findings, I invited two peer coders to assist me in the analysis. The peer coders participated in the analysis process only; they were not involved in any other aspect of the study. Together, we analyzed the data, using techniques from both case study research (Yin, 2014) and from grounded theory (Strauss & Corbin, 1990). As Yin noted, the explanation-building process for explanatory cases studies has not been well-described operationally. As such, I borrowed from other designs (i.e., grounded theory) to assist in articulating the analysis processes.

Specifically, they peer coders and I read each transcript line-by-line and inductively and theoretically identified patterns in the data. The literature, and especially Acker’s (1990, 2012) framework, informed the theoretical coding process. After this initial (or open) coding, we met to discuss these patterns and to begin to identify categories (Strauss & Corbin, 1990). We found significant similarities in pattern identification, although there were semantic differences that we reconciled during this meeting. We each returned to the data guided by the categories, using a constant comparative approach to identify themes (Strauss & Corbin,
We met again after this analysis to refine our ideas based upon the themes, which informed my decision about the best to present the case (Yin, 2014).

To enhance the trustworthiness of the findings, I used researcher triangulation. As I alluded to above, each coder looked for convergence and divergence among the codes and we reached consensus as to the findings. In addition, I incorporated thick, rich description (Lincoln & Guba, 1985) in presenting the data to increase the potential of transferability of the findings to other settings. Finally, I conducted an inquiry audit by presenting the methods and findings to several groups of critical friends (e.g., the university’s advisory committee for the ADVANCE grant and the steering board) for their feedback.

Positionality

As with all research, positionalities influenced the entire research process (Alcoff, 1988). Specifically, I am a faculty member in higher education at LGU and am a White, woman-identified feminist. At the time of data collection, I was untenured. I also was a Co-Principal Investigator (Co-PI) on the ADVANCE grant that funded this project.

While my positionality was the most salient because I was involved in every aspect of the research, the positionalities of the peer coders were also relevant. By acknowledging these positionalities, we were more reflexive and able to bracket our assumptions to possibly mitigate some bias in the data analysis process. The other two coders were also woman-identified White feminists. One of the peer coders was a mid-career, tenured faculty member and department chair in women’s studies at LGU. She was also PI on the ADVANCE grant. The other coder was a grant writer and a trained sociologist, who had no other affiliation with the grant project. Thus collectively, we all held various statuses as insiders and outsiders relative to the participants in the study.

Limitations

There were several limitations in this study. First, I did not address issues of intersectionality; for the purpose of the grant and this study, the focus was only on one process, and in this case, gender. In addition, I was limited in my capacity to discuss other identities due to the homogeneity of the sample in terms of race and class. Second, interviews served as the primary data source. Yin (2014) recognized that case studies often rely on one source of data; however, he recommended multiple data sources (e.g., observations, documents) to enhance the rigor of the case. Third, I collected the data from only one research university. As a result, readers may find transferability limited as a result, particularly if
their institutional context does not have a heavy emphasis on grant production and research activity. Fourth, neither the peer coders nor I was from a STEM discipline. Although this may mitigate some bias, it also limits the firsthand understanding of certain scientific terms within the data and faculty work within STEM disciplines more broadly. Fifth, and perhaps most important, the faculty I interviewed were those currently working at the institution; thus, this study cannot shed light on the gendered experiences of faculty who have left the university.

Context for the Case

LGU is a comprehensive research university, with 19 colleges and schools. It is a land grant university and the flagship campus of a university system. The university is a member of the Association of American Universities, and according to the Carnegie Classification of Institutions, its research activity is very high. Campus enrollment is nearly 35,000, of which approximately 22% are graduate and professional students. At the time of the study, LGU had 1,900 full-time ranked faculty, with slightly more than 1,200 on the tenure track, of whom 875 held a tenured appointment. Among those who were tenure stream faculty, about 370 were women (approximately 60% of those held tenure). Two hundred sixty-four identified as non-White. There were 355 faculty on the tenure track in the STEM departments at LGU, 62 of whom are women.

Findings

Findings show that institutional practices that either facilitated or limited opportunities shaped participants’ academic careers. Participants (identified by pseudonym) described many more barriers than supports along their career trajectory. The three themes that emerged reflect the most salient practices that shaped the academic pathways of the participants: networks, departmental division of labor, and promotion and leadership experiences.

Networks

Science is fundamentally a social enterprise (Fox, 2008). The myth of the revered, lone scientist, going it alone, is undercut by the reality of science as a networked, collaborative exchange. Indeed, collaboration is necessary not only for scientific discovery, but also for the careers of scientists doing the research. Work networks in professional settings are the bases for these collaborations (Fox, 2008). In addition, network
relationships circulate informal resources—such as information about research and funding opportunities, or inside information about departmental matters, collegiality, and support. Because resources circulate in networks, they create intangible products like greater academic insight and creativity that result from the synergy among individuals. For some participants, collaborations have either maintained or even “saved” their careers. But for most of the others, collaboration was elusive, leaving them more likely to be the lone scientists struggling for connections, recognition, and integration into the research enterprise.

Allison pointed to a pivotal moment when a senior colleague stepped in to make a difference. She struggled for years without an adequate professional network. Her narrative shows how important it was to establish this research collaboration.

I struggled for the first 3 years because I did not have facilities or resources to do the kind of research that I had done for my dissertation. I was floundering. It was not until after I started working with [a senior professor] that I was able to kind of pull things together. So, yes, he was probably the single biggest help. (associate professor)

Unlike Allison, many participants reported they had few or no networks within the institution. As a result, these women maintained networks fostered in graduate school or developed other networks outside the university. These faculty felt mentoring and collegiality were absent, and reported feeling isolated in their work and perceived that their work was not valued or rewarded by other colleagues or the institution.

Janet said she had to be innovative to create professional ties at the university because she was excluded from those within her department. In this case, rather than focusing on research collaborations, she spoke of the importance of internal networks to help her navigate the university.

When I started, I was the only woman in the department. . . . The guys just usually don’t tell you things for whatever reason. They may tell each other things. They did not pass a whole lot on to me, but I had some colleagues in other departments, which sort of helped me out. (full professor)

Women also reported they had to consciously cultivate these networks—or continue their reliance on individuals (husbands, staff members, past advisors, and friends) who could provide few professional resources at the university. Kelley described how she depended upon others outside the department and used networks that predated her arrival at the university.
On campus, I kind of went and thought that when I came here I was looking for a mentor . . . some mentoring. I talked to some people and I approached them and I don’t know how much that really worked out. Frankly, most of my mentoring came from somebody I was dating at the time who had that experience with tenure and most of my other mentoring comes from off campus because I still talk to my major professor and some other mentors I had at my graduate institution and they are very involved when I have questions. I do have a mentor now here who came from [where I did my doctoral work] and I first started working in his lab when I came to grad school. (associate professor)

As suggested by Allison’s earlier quote, she clearly understood the value of establishing networks. As a result, she asked for a mentor when she arrived. However, her opportunity to establish this sort of network was quickly derailed.

We did not have any formal mentoring in place when I was hired. . . . I remember asking our then chair at the time should we have one and why don’t we have one. His view was that these formal mentoring programs at the departmental level end up promoting cliques and so he did not want to establish one because he thought that would promote cliques and create factions in the department. (associate professor)

Likewise, Sharon expressed a desire for a mentor and collaborator. She explained how she has coped with the lack of networks for her in her department, particularly after the loss of a peer colleague.

There have been times when I really wanted a senior colleague in my area, and now that I have lost the expertise of my former collaborator, there is no one on campus I can turn to for that. And I mean he was the only one on campus who worked in that area. I now have an off-campus collaborator, but it is not the same as having somebody here I can ask simple questions to. (associate professor)

Ultimately, the lack of networks often left women adrift and disconnected, and they understood that it negatively influenced their careers. However, it is important to reinforce that the participants in this study were all tenured, and some promoted to full professor. One also served as the sole woman department chair in the university’s STEM disciplines.

**Division of Labor**

One of the most valuable resources faculty members bring to bear on their academic career is their own time, and thus the manner in which
time is demanded and distributed in academe warrants its own discussion. In this paper, the allocation of time among the various activities of department life, which I call division of labor, emerged as a salient factor along the career trajectory. Faculty are responsible for work in three key domains, teaching, research, and institutional service (Tierney & Bensimon, 1996).

However, the three components of the academic division of labor are differentially valued in the promotion and tenure process. As a result, how faculty allocate their time in these areas is important. As described by every participant in this study, research is the core mission and most highly valued, followed by teaching, and then service. Thus, it is not surprising that all participants were actively engaged in research and grant writing and saw that as their priority.

Yet, they perceived inequity in the way departmental labor was constructed worked against them, taking time away from their research. Thus, many workload assignments were barriers along their career paths. For example, Susan described a clear gendered division of labor in her department. Despite efforts to seek more equitable treatment related to her teaching assignment, her chair refused.

I was being asked to teach my fifth new course and I was hired with another faculty member at the time who was male and he had taught [only] two new courses. So I made up a matrix of all the junior faculty and I actually had the highest number of new courses along with another male colleague in a different division. I first approached my chair about this and was told that was just part of being a junior faculty, that you teach new courses all the time. (associate professor)

Susan continued to reflect on this experience, noting that her chair set the tone early in the department. While she is teaching fewer new courses as an associate professor, it has left an indelible message that early career women are responsible for the majority of teaching in the department.

Molly also discussed her teaching responsibilities and the synergy that should occur between teaching and research. She made the point that it is not only the number of courses that matter, but also the content of those courses. Further, teaching can facilitate interactions with students who can be instrumental in the lab. However, if course assignments do not facilitate this synergy, it can come at a cost to research. She described the long process she faced when trying to address concerns about her work responsibilities.
I am in the process of slowly getting my teaching changed so that I don’t teach things that I think are a complete waste of time. That will probably be harder for me because it will force me to do different things. I really am deeply frustrated with some of the stuff I have been assigned to teach. I did some of it to be a good sport and help out but it has now gotten a little past that point. It really feels to me like I have to teach something intellectually worthwhile at the undergraduate level or I am not going to get any students and I am not going to be happy with myself. (associate professor)

Molly, like many other participants, described how she has tried to be a good colleague and team player, traits that should serve her well in developing networks. However, she realized by doing so, it has come at a professional cost. Not only did it have consequences for her research, but she remained isolated within her department.

Similar to Susan, Natalie reflected back on early departmental workload issues. She explained how inequity in workloads due to gender had far-reaching effects throughout her career. She described how her service responsibilities compromised her teaching, and more significantly, her lab set-up.

That was part of the reason my first year was so difficult. The other part of the reason was that I was on two search committees, because I was the only one who could put diversity on the committees. One search got 150 applicants and the other got 80 and I was the only one on both committees. That was my first year when I was trying to get my courses up and going, and the department expectation is that you get your lab up and going and I was on two search committees and I was struggling in the classroom. (full professor)

Natalie continued, explaining one of the consequences of small numbers of women in her department. In fact, the implications of the lack of a critical mass of women in STEM disciplines led many participants to lament being tapped to provide representation on large numbers of committees, which escalated since receiving tenure. Natalie shared,

That one is a huge frustration, absolutely a huge frustration because I am a female and because I am in STEM, which means that the dean and the department and the professional community, in order to specify that they are diverse, then I am on every committee known to humankind. And my male colleagues, because there are so many of them, they are on this committee or that committee. I don’t know. I don’t see a way out of that box. (full professor)

Like Natalie, many other participants talked about feeling “stuck” regarding service. They understood and valued committees that
intentionally sought out a variety of perspectives, including those from women. Yet, this ultimately meant that within STEM, the same individuals were asked to contribute, as there were only 40 women in STEM at the ranks of associate or full professor at LGU. One way to address the small number of women is to ensure that women are retained and promoted. The next theme speaks to the climate for promotion and leadership for these women faculty.

**Promotion and Leadership Experiences**

I asked all the participants to reflect upon the promotion and tenure processes. All participants were quick to explain that grant money and publications were the necessary factors to advance, first from assistant to associate and then from associate to full professor. For example, Sharon said, “I have seen a number of my colleagues be promoted to full professor but I don’t know if there is a specific time period that is done in or if there is a specific number of grant dollars. It seems to me that it is a combination of the two.”

Further, when reflecting on the promotion and tenure processes, several women reported facing significant challenges in their tenure experiences. In some cases, the negative experiences occurred at the department level, for others it was at the college and/or university levels. Scholarly records were called into question, despite a strong sense that men colleagues with similar records (in publication numbers and grant dollars) were not. Regarding her difficult tenure experience, Susan shared how it compared to that of a man in her department who received tenure the year before her.

I have a stronger record than the man who went up the year before who had a unanimous vote. We both had [NSF Career Awards]; we both had one other prestigious external grant; we both had the same number of papers. I had graduated students and he had not. I had outstanding teaching evaluations. (associate professor)

When asked whether she thought her gender played a role in her difficulty, she said, “Absolutely. There was no question that the things that went on in this department were because I was an outspoken woman and a chemist.”

Ellen, a full professor, reported on the tenure case of a colleague, where her politics appeared to result in a negative tenure decision. “I have a colleague that plastered Geraldine Ferraro posters all over her office and got a negative vote on her tenure in her department because she was such an antagonist. So I think you know that has been a very
deliberate decision [by me] to foster an atmosphere of collegiality.” While the woman described here was not a participant in this study, her experience influenced how Ellen behaved so that she would avoid being seen as “a flaming feminist.”

Women called the process scarring, which lowered morale and sent a message that their colleagues did not value them. Women at the associate ranks who had negative tenure experiences also talked about how it had made them hesitant to submit materials to be considered for full professor, despite maintaining an active research program. Returning to Susan’s experience, I asked her about her plans for promotion to full professor. She shared her trepidation, saying, “But you know, deciding to go up . . . And you essentially . . . You relive it all [the tenure process]. It’s horrible. I mean, it is like returning to the scene of an accident.”

In addition to the anxiety the promotion process can bring, women described the process of going up for full professor as nebulous and unclear. There were no definitive guidelines or policies that described what was necessary for promotion. In addition, unlike the tenure process, there was not a specific timeline. Only in a few cases did women report a colleague or chair encouraged them to submit materials for promotion. However, women did notice that men colleagues were singled out by others to submit their materials for promotion. This, again, reinforced the importance of having a network of colleagues in the university, who few actually had.

Pathways to leadership were also marked with ambiguity. However, unlike promotion to full professor, fewer women actually aspired to formal leadership positions in the university. While Cathy was already in a leadership role as a department chair, even she did not express overwhelming interest in pursuing other academic leadership roles. She stated,

I have had people come asking and you know I can’t . . . there has been some interest, but I have not thought that leadership was particularly attractive . . . because you have to leave your own field, pretty much, your interest instead of being [her academic discipline] becomes the state of education and that has never been anything I was interested in . . . But the opportunities kind of get dangled and I must say that I have started to think about it, but it is nothing I would have sought out or aspired to. (full professor)

Ruta, who leads a center at LGU, also expressed that other universities have asked her to consider administrative positions. Describing why she thinks she is sought out for such jobs, she noted,
You know there are not many successful women right, so they want to steal me. Everywhere I go to give a talk, that’s a problem. They say, “can you come over here?” And some of the positions are non-academic and it’s not for me because I’ve been fighting for years and it builds insecurity in you . . . All these people telling me “you’re no good,” or “you are not this,” or “you are not that,” it builds insecurity in you. I have a very supportive husband and that’s why I’m surviving. I don’t know, and I love my research, I mean I’m director of the center and that’s enough for me. (full professor)

Like Ruta and Cathy, nearly all faculty expressed the primacy of their research. They believed that leadership positions would pull them away from the research they loved. As a result, the vast majority of participants dismissed the possibility of pursuing leadership positions in the future. For the few who did want to become an academic administrator, they did not feel much support within the university to pursue these goals. Rather, they felt it was necessary to move to another institution to find these opportunities.

Further, participants were hard pressed to identify any experiences at LGU that helped them develop leadership skills. When they did talk about leadership roles, they were primarily within their professional societies, further enhancing their national and international reputations as scholars first. Thus, they quickly equated leadership within the university to a formal role, failing to recognize the vast backgrounds most had through leading research teams. Mary was of the rare exceptions, who pointed to a variety of experiences through her research and through other activities where she acquired significant leadership expertise. She stated,

I am leading a $6.5 million project and I am the program director for a $12 million dollar project. So I learned how to be a good organizer and how to motivate people and how to work well on a project. I can do that. I can do that in science and I can do it [elsewhere]. I am also on an executive board member on a non-profit, so I can work together with other people and make that happen. So I think I can do that [be a leader] on some other level. (full professor)

Although many of the women participating in this study had leadership skills, whether they were willing to recognize them or not, leadership was largely perceived as someone else’s role. As women, they were often tapped to consider leadership positions at other universities; yet, their dedication to their scholarship made most of them reluctant to pursue formal leadership roles. It is worth noting, however, that being
identified as a potential leader can make a difference, as Cathy indicated above, she is now more willing to consider future leadership roles.

The women faculty in this study reported a climate for promotion and leadership that was often conceived as chilly and unwelcoming. None of the women at the associate level have found themselves “stuck” at that rank—they simply have not been in rank long enough. However, the potential for this phenomenon may be great without any intervention. Further, few women were interested in leadership roles, and for those who were, they believed they must leave LGU. Given this theme, coupled with the previous two, it is not surprising that women continue to be underrepresented in STEM, and especially in leadership roles. In the next section, I consider the findings through the lens of a gendered organization, which may help explain why these patterns may persist at LGU.

Discussion

The institutional practices that limit access to networks; assign inequitable workloads; and create ambiguity, and in some cases hostility, around promotion and leadership disadvantaged the women in this study. Even if these women are promoted to a full professorship or pursue leadership opportunities, they have experienced obstacles along the way that they had to either work around or slowed them down. Thus, the career paths, or trajectories, of those who participated in this study were neither smooth nor linear because the institutional practices (i.e., the networks, division of labor, and promotion and leadership processes) often led to bumps along the way. Ultimately, the institutional practices experienced by participants in this study come together to reflect an organization that is gendered (Acker, 1990, 2012), which has implications for how these women experienced their careers thus far and how they see them going forward. To reinforce this argument, I next discuss the findings in light of the three interlocking elements that comprise a gendered organization: gendered subtext, gendered organizational logic, and the ideal worker (Acker, 2012).

Gendered Subtext

On the surface, the notion of science as a collaborative enterprise (Fox, 2008) appears gender neutral. However, as the findings show, women’s access to collaborators and other networks was challenging. Thus, for mid-career women at LGU, it was much more difficult to engage in scientific collaboration due to the subtext offered by their men colleagues that they were not welcome in their networks. Additionally,
in the few circumstances when women did identify collaborators and mentors at the university, they were men who served as gatekeepers of inside knowledge necessary to better navigate the gendered organization.

Like in previous research, women in this study consistently reported few networks within the institution and less daily interaction with colleagues about their work (Gibson, 2006), which in turn limited their access and opportunity to new initiatives and rewards (Roos & Gatta, 2009). Women often went outside this gendered organization to seek mentorship and collaboration (Terosky et al., 2014); however, these external networks could not provide the informal institutional knowledge that directly influenced their careers at LGU. In some cases, women asked senior colleagues about mentoring and were dismissed or discouraged. One woman was told that mentoring promoted cliques, failing to acknowledge that the “old boys’ club” is a clique that thrives in the gendered organization. Thus, these mid-career scientists felt disengaged and isolated, much like those in Huston et al.’s (2007) study.

Another example of a gendered subtext at work was the promotion process. Although the process is intended to be gender neutral, the work that is valued is research and funding, which implicitly privileged men. Women spoke about hidden and inequitable workloads (typically assigned by men department chairs) related to teaching new courses and to overwhelming service obligations—none of which in practice would advance them toward promotion. Participants described increased service obligations due in part to their identity as women, but also because they were tenured (Baldwin & Chang, 2006; Baldwin et al., 2008; Terosky et al., 2014). Further, women were marginalized actors who were expected to participate in certain dimensions of organizational life—in the classroom and on committees. Even when they were engaged in research that was comparable, and in some cases stronger, than men in their departments, their work was not rewarded. Thus, promotion became a gendered process that favored men; men were not perceived to be pulled away from research (i.e., the primary criteria for promotion) for other activities in the same ways that women in this study were.

Further reinforcing the gendered subtext of promotion and of leadership, women discussed the ambiguity of the promotion process; such ambiguity may slow women down (Fox & Colatrella, 2006; Gardner & Blackstone, 2013), also slowing their capacity to serve in leadership positions (Roos & Gatta, 2009). Participants witnessed men colleagues encouraged to submit their materials for promotion to full professor and approached to serve in leadership roles; this was rarely the case for
women in this study. The subtext here is that being a full professor and being in a position to assume formal leadership advantaged men; when women assumed these roles, they were exceptions. Thus, within these gendered subtexts, masculinity was privileged. Next, I discuss how organizational logic was also gendered, and advantaged men.

**Gendered Organizational Logic**

In addition to the gendered subtext regarding collaboration and promotion, findings pointed to a gendered subtext and related organizational logic regarding how labor was distributed within departments. While the women faculty and their men colleagues had the same responsibilities (largely 40% research, 40% teaching, 20% service), the hidden workloads, such as more new courses to prepare and increased service obligations, reflected inequitable assignments. Thus, the gendered organizational logic dictated how time was allocated, which may explain Misra et al.’s (2011) finding that women and men allocated their time differently. The logic also disadvantaged many of the participants in this organization.

Specifically, being placed on committees in order to ensure representation disadvantaged women (Baez, 2000; Fields, 1996; Glazer-Raymo, 1999; Hernández & Morales, 1999; Moody, 2004; Tierney & Bensimon, 1996), taking time away from other activities like research. Further, as previously mentioned, allocating time in this manner ran the risk of being penalized within the promotion process, which rewards research above all (Tierney & Bensimon, 1996). These assignments also reinforced assumptions and stereotypes about what constitutes women’s work or institutional housekeeping (Bird et al., 2004), despite participants’ stated primacy of and passion for research. Further, when women challenged these gendered assignments, chairs often dismissed them, thus maintaining gendered divisions of labor.

The notion of leadership also constituted a gendered organizational logic. Leadership was narrowly defined; when asked about interest in leadership, participants quickly assumed this meant administration. How was this gendered? First, those who were in these formal leadership or administrative roles were predominantly men. Thus, the organizational logic is designed so that women are not represented, and may not think they belong (Roos & Gatta, 2009). Second, because participants equated leadership with administration, most leadership opportunities they had did not fit within this particular logic. For example, nearly all the women (a few were in fields like mathematics and statistics that are not lab-based) ran successful research groups, mentoring students and technicians to assume similar leadership roles in the future.
Yet, only in a couple of instances did these women translate those research experiences into being engaged in leadership. Third, this organizational logic was tightly coupled with what it means to be a faculty member—teaching, research, and service; leadership is outside of what it means to be a professor. As such, it is not surprising that women were reluctant to aspire to positions of formal leadership; they were scientists first and foremost. Moreover, to operate closer to the ideal worker norm, which I discuss further below, opting out of leadership was truly the best option for women in this gendered organization, as engaging in leadership was yet another push away from their research.

**Ideal Worker**

The ideal, or normative, worker model is critical to support the argument that the organization under investigation is gendered. There are a number of examples from the findings that suggest the participants strove to achieve this norm. For example, despite a number of women who reported having children at home (see Table 1) and responding to interview questions focused on work and family, the roles and responsibilities related to parenting were not salient in these findings. In fact, throughout the entire set of transcripts, they were mentioned only on occasion—and when they were, participants often spoke of having partners who were able to stay at home with them, consistent with the ideal worker (Williams, 2000). Moreover, this omission is itself telling and in line with the ideal worker norm; by not acknowledging children, the participants positioned themselves to be viewed as ideal workers who were unfettered from parenting responsibilities.

While participants may have tried to perform as ideal workers, actually being ideal workers was impossible. The obstacles identified throughout the findings of this study reinforced this. For example, if participants were ideal workers, collaborators and mentors would seek them out and be plentiful; divisions of labor would facilitate research productivity, because responsibilities that pull them away from their science (e.g., teaching and service) would be assigned to others; promotion processes and leadership roles would be accessible and clear; and women would be well-represented in STEM, in mid-career, and in leadership.

In addition, as Acker (1990) argued, skilled work is most often considered men’s work, leaving unskilled work as women’s responsibility. Thus, this norm assumes the masculine work model is ideal and the feminine model is flawed, or even aberrant. In a research-intensive academic setting, the ideal worker focuses on publishing research and on securing external funding to continue a research agenda. Research
is undoubtedly skilled work, and the work for which future faculty are trained in graduate school and as postdoctoral fellows (Austin, 2002; Austin & McDaniels, 2006). However, other aspects of faculty life (e.g., service, teaching, leadership) receive little, if any, attention during graduate school or in postdoctoral fellowships (Austin, 2002; Drago & Williams, 2000; Golde & Dore, 2004; Nyquist et al., 1999), which implies these roles are unskilled, or even intuitive. Thus, due to the gendered subtexts and organizational logic experienced by women in this study, the ideal skilled worker is difficult, if not impossible, to achieve.

**Recommendations and Implications for Theory and Research**

The lived experiences of mid-career women faculty were crucial in this analysis. Their academic homes in STEM disciplines provided unique contexts, given the significant underrepresentation of mid-career women faculty and leaders (Stage & Hubbard, 2008). All of these women have found some measure of success, which has been recognized in a number of ways, least of which was earning tenure and promotion. In fact, to a great extent, participants operated effectively within the confines of gendered subtexts, organizational logic, and ideal worker expectations. Following the “rules” of the gendered organization has contributed to where they are in their careers. Largely, participants were well-trained to focus on individual success or “leaning in” (Sandberg, 2013)—after all, even if faculty work collaboratively (Fox, 2008), only the individual is promoted or asked to lead. However, their road to success was not without challenges that are also consistent with being a part of a gendered organization (Acker, 1990, 2012).

Ultimately, being the ideal scientist and the ideal woman within the organization was fraught with contradictions; at times, they pushed back against the gendered organization and also fed into it. For example, participants were successful scientists focused on a research career; yet, they also strived to be good team players by agreeing to prepare new courses or teach curricula not aligned with their expertise. By doing so, they operated in a “culture of nice” that is expected of women. In addition, participants hid their roles as caregivers outside of the university, and at the same time, were pushed to, and did, work as caregivers within the academy through teaching and mentoring students and university service, despite having other interests and preferences.

Contradictions, such as those described above, raise legitimate concerns about career advancement. How should women work toward promotion or leadership opportunities when messages are mixed? In other words, findings from this study indicate that to get ahead as academics,
women must “act like men” and be the ideal worker; however, women must also “act like women” and follow the gendered subtexts and organizational logic. Failure to meet all these expectations may lead to significant career consequences, such as isolation, discrimination, and marginalization.

Despite the value of Acker’s (1990, 2012) theory to dissect organizations and identify whether they are gendered, Acker’s theory falls short in a number of ways. By noting some of Acker’s (1990, 2012) theoretical shortcomings that emerged over the course of this study, my hope is to highlight opportunities to build on Acker’s theory so that it can become an increasingly more valuable heuristic for scholars, policy makers, and organizational change agents.

First, the theory does not wrestle with the contradictions that women in this study faced. For example, while I argue that the women in this study work within a gendered organization that has consequences for their academic lives as women, the theory does not clearly speak to the tensions between the lived experiences of being the ideal worker (e.g., independent scholar without any family obligations to which to attend) and simultaneously meeting the demands of the gendered subtexts and organizational logic.

Second, Acker (1990, 2012) offers very little guidance about how to transform organizations, making it difficult to identify concrete recommendations for change (Lester, Sallee, & Hart, 2013). However, I have included specific recommendations based upon this study’s findings in an attempt to address this theoretical limitation.

Third, Acker’s (1990, 2012) theory equates gendered with masculine (Britton, 2000). Thus, referring to organizations as gendered suggests that women are somehow gender-less. Thus, instead of gendered organizations, it is more accurate to identify them as masculine organizations—and is its corollary a feminine organization? This is to say that if we dismantle the masculine organization, would the resulting feminine organization be any less problematic? In both cases, binaries are reinforced, allowing no room for other constructions of gender. Ideally, rebuilding organizations that were masculine (or feminine) would lead to an organization that recognizes and rewards and does not marginalize and discriminate against any gendered positionality (or any other identities). Yet, this, too, creates challenges: how do we create new and inclusive expectations for organizations that are nested in a larger organizational context of socially constructed gender norms? Here again, Acker’s theory gives us little direction to an expansive question and an opportunity to push her theory in future research.
In addition to a call for research to advance Acker’s (1990, 2012) theory, this study compels research in other areas. For example, gendered organizations also have implications for men and gender non-conforming faculty and their career trajectories and leadership aspirations. Their experiences are beyond the scope of this study, but future research should focus both on the experiences of men and gender non-conforming faculty in STEM at mid-career. Gendered analyses should expand to include faculty in other fields and disciplines as well. All institutional actors shape the institution, and thus, institutional practices and processes. As such, research must consider the actions and experiences of administrators, students, staff, and external constituents in order to get a fuller picture of gendered subtexts, organizational logic, and ideal worker norms to provide more expansive recommendations and strategies to interrupt the reproduction of the gendered organization.

Recommendations for Practice and Policy

As with much of the extant literature, my findings uncovered the constraints these women faced throughout their work lives in academe (Fox & Colatrella, 2006; Misra et al., 2011; Terosky et al., 2014). However, by employing Acker’s (1990, 2012) framework, I exposed how these seemingly disparate constraints worked together to create a system that is explicitly masculine and reproduces inequities. Further, because the collective constraints revealed a gendered organization, change efforts must be directed at the macro, or institutional, level. This does not mean that activities like mentoring programs or professional development sessions are without merit, but implementing piecemeal programs will have little overall influence on interrupting the myriad inequities identified in this study.

Moreover, because of the theoretical framework employed, I am not focusing on change efforts intended to “fix” the women so that they can be successful in the gendered organization, which is often the outcome of many well-intended professional development opportunities for women in STEM. In fact, focusing change efforts on enhancing individual agency, or “leaning in” (Sandberg, 2013), is expected in and reinforces the gendered organization, rather than seeks to dismantle it. This is akin to “pulling herself up by her bootstraps,” which assumes she has boots to wear in the first place.

Certainly individuals can disrupt gendered norms, and if many individuals work in isolation, but with similar goals, it might lead to broader-based change. But this is not sufficient. Largely, focusing on individual agency is the very model we have been employing to seek
equality and the changes have been incremental at best. Instead, by also marking organizational inequality, as Acker’s (1990, 2012) framework allowed me to do, I suggest opportunities for collective agency toward re-gendering organizations to value all genders.

In light of the findings from this research and the theoretical framework, I list several recommendations below that, if implemented widely, may foster organizational transformation.

- Well-designed comprehensive programs that can be institutionalized, such as those that are funded by Institutional Transformation grants from NSF ADVANCE can be crucial in re-gendering efforts (see http://www.portal.advance.vt.edu/ for detailed examples of initiatives that can be adapted to other organizations).
- We must interrupt exclusionary practices and provide legitimate mentoring and collaborative opportunities for faculty at all ranks. These programs cannot be one-time opportunities, rather they must be woven into the organizational fabric, so that all faculty have access to formal and informal organizational networks and support.
- Chairs and faculty colleagues must distribute workloads evenly, paying attention to the cost of hidden workloads and whether the few women within the faculty are being exploited. Requiring teaching and service audits annually to monitor and adjust workloads can go far in ensuring more equitable workloads across all faculty.
- Throughout the university, the process to become a full professor must be explicit within promotion policies and administrators and senior colleagues should encourage all faculty to work toward that goal, removing or compensating for bumps that may push someone off course.
- When a faculty member has a career break related to caregiving, promotion policies should very clearly state that breaks at any point during faculty careers should not disadvantage them.
- Policies should be implemented that require modified work assignments for one term when a faculty member returns from a caregiving break. This time can be instrumental in restarting research programs without teaching and service demands.
- We must broaden the definition of leadership, and recognize and reward the leadership skills and roles faculty already have. To assist, institutions can provide resources and professional development for chairs, deans, and others to help them identify and nominate a broader array of potential leaders.
- It is necessary to be transparent about how integral leadership is to faculty work, and to nominate women for formal leadership roles.
• Take the lead from some of the League of European Research Universities to develop and implement gender equality policies that demand equal treatment for all genders that are distinct from existing Affirmative Action, Equal Opportunity, and Title IX policies (Maes, Gvozdanovic, Buitendijk, Hallberg, & Mantilleri, 2012).

None of these recommendations are quick fixes and may not be transferrable to every organization. In addition, re-gendering an organization will take time and concerted effort by all faculty and administrators. It will also take leadership. However, failing to begin and sustain re-gendering efforts will only work to maintain the status quo and keep women on the margins.

Conclusion

Gendered organizations reproduce the primacy of men through practices, processes, and policies (Acker, 2012; Benschop & Dooerwaard, 2012). This makes it very difficult to address the inequities, bumps along the career path, and disadvantages identified by the mid-career women scientists in this study. It also suggests that the number of women interested in and holding leadership positions will remain lackluster. To interrupt these processes, we must work together to collectively re-gender organizations through research, theory-building, practice, and policy. Without collective action, it is impossible to dismantle the gendered subtexts and organizational logic within our departments, disciplines, colleges, and universities. However, by doing so, the potential is there to redefine the ideal worker as one who can be any gender.

Notes

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1 I relied on several data sources for faculty statistics. There was no available source that included all these data for purposes of comparison and no data were available regarding numbers of women in positional leadership positions in STEM.

2 A mid-career faculty member is someone who has been tenured, but has not yet started to prepare for retirement (Baldwin & Chang, 2006; Baldwin et al., 2008).

3 Because this study is focused on the department and institutional levels, I am looking at institutional service, rather than service to the profession.
References


