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"I am Not a Feminist, but. . .": Hegemony of a Meritocratic Ideology and the Limits of Critique Among Women in Engineering

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Abstract

Engineering is often described as an enduring bastion of masculine culture where women experience marginality. Using diaries from undergraduate engineering students at four universities, the authors explore women's interpretations of their status within the profession. The authors' findings show that women recognize their marginality, providing clear and strong criticisms of their experiences. But these criticisms remain isolated and muted; they coalesce neither into broader organizational or institutional criticisms of engineering, nor into calls for change. Instead, their criticisms are interpreted through two values central to engineering culture: meritocracy and individualism. Despite their direct experiences with sexism, respondents typically embrace these values as ideological justifications of the existing distributions of status and reward in engineering and come to view

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engineering's nonmeritocratic system as meritocratic. The unquestioned presumption of meritocracy and the invisibility of its muting effects on critiques resembles not hegemonic masculinity—for these women proudly celebrate their femininity—but a hegemony of meritocratic ideology. The authors conclude that engineering education successfully turns potential critics into agents of cultural reproduction. This article contributes to ongoing debates concerning diversity in STEM professions by showing how professional culture can contribute to more general patterns of token behavior—thus identifying mechanisms of cultural reproduction that thwart institutional change.

> I do belong here [in engineering]. I will graduate as a woman engineer and when I go out into the world I will kick ass . . . But the difference between women and men in engineering is that while men are all for themselves, we women know that what we do today directly impacts the women engineers of tomorrow, and so I'm not just one woman—I am all women (diary entry from Taylor, a student in this study).[1]

A growing body of research has shown that young women, including those entering male-dominated professions such as engineering, often avoid, if not reject, a feminist critique of policies designed to mitigate the historical legacies of sexism (and racism; Leaper & Arias, 2011; Zucker, 2004; Zucker & Bay-Cheng, 2010). As the opening quote suggests, and our reading of this student's diaries reveals, this engineering student is not going to be stymied by her experiences of gender stereotyping or marginality; moreover, she is committed to finding a place for herself, and women more generally, in engineering. But, lest we be mistaken about her perspective, Taylor writes at another point, "I wouldn't say that I am close at all to being a feminist. . ." What does she, and her peers who articulate similar positions, mean by this?

Drawing on diaries from undergraduate women in engineering programs at four engineering schools, we explore women's interpretations of feminism and their status within the profession. Most notably, we find limited variation in their accounts and interpretations

of engineering, and thus little of the standpoint perspective Haraway and others suggest might emerge from marginalization (Haraway, 1988; Harding, 1986; Keller, 1982; Traweek, 1988). While providing clear and strong criticisms of their experiences, they rarely recognize structural inequities, or translate these matters and their own marginality, either individually or collectively, into a commentary on the engineering profession itself. To most of these women, feminism is a voice of complaint, asking for special treatment through affirmative action; they also reject it because it suggests that their talent and experience do not meet standards of objective merit and individual achievement.

Our prior research found that engineering education successfully reproduces the profession's working culture through processes of socialization that mimic and anticipate the gender bias of the workplace. From rituals of initiation through anticipatory socialization at internships and summer jobs, neophytes are socialized into a culture that encourages men to integrate theory and practice by solving practical technological challenges while, at the same time, often relegating women to peripheral, nontechnical, social roles and undermining women's confidence that engineering is a meaningful career path (Seron et al., 2016). A culture of engineering education that valorizes technical prowess while denigrating social skills has significant consequences for sex segregation in the workplace. Cech's (2013) research reveals that women are significantly more likely to be employed in engineering subfields that more explicitly integrate social skills and earn significantly less than their male counterparts who tend to be concentrated in more technical subfields. (For a broader discussion of occupational sex segregation, see Reskin & Roos, 1990 and Stainback & Tomaskovic-Devey, 2012.)

Women engineering students recognize and acknowledge their marginalization. Consistent with the theory of tokens (Kanter, 1977), these marginal members respond to their status by adopting the norms and expectations of the majority group, thus reducing their visibility by contributing to the profession's self-perpetuation. In this article, we show how professional culture contributes to what has heretofore been explained as individual adaptation to organizational dynamics. To elaborate further the role of culture in professional socialization and gender reproduction, this article looks at how the rituals, tropes, and symbols of engineering education successfully reproduce the core values of American engineering: meritocracy and individualism. By adopting the core professional values of engineering, women themselves, perhaps unwittingly, uphold structures and cultural practices

that ultimately undermine goals they purport to share: an equal opportunity to pursue a meaningful career in this historically male-dominated field. Instead of an institutional or a potentially feminist critique of the engineering profession's organization and practices, these young women interpret their experiences through the cultural lenses, value preferences, and epistemologies that are historically hegemonic within the profession. Recent work has underscored the persistent role of belief in "universalistic (or meritocratic) criteria" among "high status," science-based occupations (Xie, Fang, & Shauman, 2015, p. 333); we demonstrate, in addition, the equally powerful imprint of individualism, gender essentialism, and belief in one's own exceptionalism. In other words, even when women identify discriminatory practices and their own outsider status, professional socialization processes blunt the cutting edge of this critique—and undermine the potential for critique to be the basis of significant institutional change in engineering.

Socialization into the ideologies of meritocracy and individualism, coupled with a valorization of "technical" prowess at the expense of "socially focused" work processes, depoliticizes the gendered structure of the profession (Cech, 2013, 2014). Engineering education fosters an ideal of "depoliticization" among students—the notion that engineering is an objective and pure space that not only can but should be separated from messy "political" or "cultural" concerns like diversity and inclusion (Cech, 2013, 2014; Cech & Sherick, 2015). Students learn that raising concerns about marginalization—of themselves or others—is tangential or even distracting to what counts as the "real" practical and objective work of engineering (Cech, 2014).

Although regularly chastised for its failure to meet both professional and national science, technology, engineering, and mathematics (STEM) goals for trained engineers (Augustine et al., 2010; Olson, 2013), the profession actually appears successful in achieving a cultural goal, actively turning potential critics into the agents of professional reproduction. While current figures report 14.8% of working engineers to be women (National Center for Science and Engineering Statistics, 2015), many would-be engineers decide to leave the profession: Attrition rates can be as high as 50% depending on the stage of educational preparation and postgraduate career (Fouad & Singh, 2011; Fouad, Singh, Cappaert, Chang, & Wan, 2016). This article helps explain why the proportion of women engineers remains so consistently low. Without a legitimate space for reflexive critique of the ways in which its epistemologies bleed into social and political interpretations, diversification alone is unlikely to promote cultural change. The women who do enter

engineering are unlikely to be active agents of change promoting greater gender integration.

We contribute to the literature on women's marginal status within engineering by documenting how a professional culture supports tokenism, showing students' interpretations of their experiences and their embrace of the profession's ideologies of meritocracy and individualism. Whether women decide to stay the course or depart, they learn _and_ articulate engineering culture's characteristic values, in the process muting opportunities to voice potentially transformative critiques, take collective action, or prompt structural change. The unquestioned presumption of meritocracy and the invisibility of its muting effects on critiques resembles not hegemonic masculinity—for these women proudly celebrate their femininity—but hegemony of the meritocratic ideology.

In the next section, we situate the processes of professional education and socialization in engineering by conceptualizing what it means to be an engineer and the ways in which critical commentary of _any_ kind places one in a marginalized position in the profession. We follow this background with a discussion of our data and methods, suggesting the unique benefits of diary data for this type of inquiry: actor's interpretations of their experiences in situ. In section "Discovering and Responding to Marginality," we present our findings. We offer an understanding of the cultural mechanisms that impede development of an institutional analysis by marginalized women engineers while silencing calls for structural transformation. In the discussion, we summarize our key findings and in the conclusion, explore some implications of these findings for the study of the professions more generally.

Becoming a Marginalized Engineer

In the vast majority of engineering programs in the United States, women are a numerical minority of the student body; women's minority status is accentuated over the course of their education, as women are disproportionately more likely than men to leave engineering for other majors (National Center for Science and Engineering Statistics, 2015).[2] Women's marginal presence in engineering is, moreover, not a new phenomenon; patterns of admission and attrition have been relatively stagnant since the mid-1990s with women representing about 19% of engineering undergraduates (National Center for Science and Engineering Statistics, 2015). Further, as other traditionally male-dominated professions such as law and medicine began to enjoy

gender parity, the engineering profession has expended significant energy to catch up by developing programs to encourage women to enter and stay the course in STEM disciplines, including engineering (The National Academy of Science, 2010). Today, women's minority status, and the programs designed to address gender imbalance in the profession, are part and parcel of engineering education in the United States.

The persistence of women's minority status in engineering education has cultural consequences. In her groundbreaking study of women's entry into the corporate world, Kanter (1977) argued that the minority status of women rendered them tokens who, by their very presence, received more attention than they necessarily desired, often adopted organizationally conservative behaviors even if their presence exposed the culture of the dominant group by creating a "contrast" effect, and experienced assimilation into the group in gender stereotypical ways (see also Faulkner, 2009). What is perhaps relatively distinct about engineering is the *longevity* of the numerical token status of women not only over time, but at various stages of an engineering pipeline and across the course of an engineering career (Cech & Blair-Loy, 2010; National Center for Science and Engineering Statistics, 2015; Xie & Shauman, 2003). Today, the longevity of tokenism is a distinguishing characteristic of engineering culture at both school and work.[3] For example, findings from women's experience in engineering worksites suggests that they often experience a paradox of "(in)visibility:" Their status as women is highly visible whereas their status as engineers is often invisible and contested (Faulkner, 2009). Building on our earlier work which reveals the ways in which engineering education mimics and anticipates the values of the workplace (Seron et al., 2016), it may very well be the case that the experience of "(in)visibility" and the competing challenges it poses for women may also begin with professional socialization. While professional socialization is a period of "doing" and "trying on" particular roles, identities, and cultural meanings with relatively lower costs for switching career tracks or experimenting with different types of courses and knowledge when compared with the workforce (Dryburgh, 1999; Ibarra, 1999; Schleef, 2006), engineering programs tend to follow a relatively lockstep set of required courses and related requirements compared with most undergraduate majors (Seron & Silbey, 2009).

Thus, the tacit and foundational value orientations that are conveyed to students in engineering education may further exacerbate women's token status. Prior research has shown that engineering education teaches students to "differentiate between people-focused/technology-focused"

styles and to place greater value on "objectivity" over "emotional con-
nectiveness," and what engineers refer to as "hard" rather than "soft
technologies" (Cech, 2014; Faulkner, 2009; Hacker, 1981). In addition,
engineering's denigration of the "social" as subjective also embodies a
particularly robust commitment to meritocracy that justifies the distri-
bution of status and reward as just desert for individual effort and
accomplishment (Castilla & Benard, 2010; Riesman, 1967). This anchor-
ing point of engineering's folk wisdom claims that individuals who work
hard and have the appropriate skills in math and science will be recog-
nized and well-positioned to enter the engineering academy and, build-
ing on a foundation of technical knowledge, skill sets, and habits of
mind will subsequently experience success in the profession (Claris &
Riley, 2012; Freidson, 1986; Jorgenson, 2002). Meritocracies generally
are assumed to operate objectively and without bias toward or against
any person or group (e.g., women, racial/ethnic minorities, or lesbian,
gay and bisexual individuals), and thus are culturally and politically
neutral (Castilla & Ranganathan, 2018). This is a space that claims to
be free of politics, where knowledge and problem-solving conform with
the objectivity and value-neutrality attaching to scientific positivism in
general and engineering in particular (Cech & Waidzunas, 2011;
Faulkner, 2000). Those who fail to "make it," underscoring the imprint
of American individualism as well as meritocracy, have only themselves
to blame because of a lack of ability, effort, dedication, or fit (Riesman,
1967; Sharone, 2013). To raise concerns about inclusion or marginal-
ization is not only out of step with the presumed political neutrality of
engineering, but may be interpreted by some as threatening the object-
ivity of engineering itself as well as a meritocratic foundation for tap-
ping those with the potential to become engineers.

In its commitment to empirical science, technical thinking, merit, and
individualism, engineering culture allocates what it sees as political
issues, such as gender equality, to the realm of the social and subjective,
therefore, off-limits. Thus, the depoliticized culture of engineering also
constitutes a degendered space where issues that may be of social con-
cern to women in science are also devalued and marginalized (Cech &
Waidzunas, 2011). Whether women interpret negative experiences
through a political or an apolitical lens depends on the extent to
which they themselves embrace the cultural values of the dominant
group (McCall, 1992).

Women, then, confront a set of paradoxical pulls: They are exposed
to the same professional socialization processes as men, which encour-
age them to adopt or reinforce allegiance to taken-for-granted

assumptions of engineering culture (Cech, 2015), including scientific method and problem-solving through technical solutions within supposedly apolitical, neutral settings that valorize individualism, meritocracy, and essentialism. And yet, women also face marginalization, tokenism, and (in)visibility within that same culture (Seron et al., 2016). How do these contrary forces play out in women's accounts of their engineering education? Specifically, we ask, do women articulate critical perspectives of the profession that emerge from their token/(in)visible or marginalized status in engineering? Do they challenge current conditions? Or, do the very processes of professional socialization push them to de-emphasize their token/(in)visible status on a path to finding consistency with the culture of their future profession and their emerging professional identity?

Method and Data

Research Sites

Two dimensions of our sites of inquiry are theoretically important: the institutions' approaches to engineering education and their commitment to gender parity. This study was conducted at four sites: Massachusetts Institute of Technology (MIT), the Franklin L. Olin College of Engineering, Smith College, and the University of Massachusetts, Amherst (UMass). In engineering education research, one pedagogical debate revolves around the sequencing of "learning" and "doing" engineering, succinctly articulated in MIT's emblematic motto: *mens et manus*, mind and hands (MIT, n.d.). Pedagogical models focus on the sequence of training minds and hands. Engineering education at MIT and UMass begins with the premise that one must learn (science) before one can do (engineering), "learn *then* do." Smith and Olin, by contrast, begin with the premise that it is best to "do *and* learn" at the same time, often through early exposure to design projects organized as team assignments.[4] Some have argued that a more holistic and contextually engaged approach to engineering at an early rather than secondary or tertiary stage will encourage women in engineering to stay the course (Nagy, Garrett, Trautwein, Cortina, & Eccles, 2008).

Although both MIT and UMass have long-standing efforts in place to encourage women to complete engineering degree programs, Smith and Olin enjoy a distinct advantage in this regard. Smith, a women-only, elite, liberal arts college, introduced the Picker Engineering Program in 2000 as the first, and only, engineering program in the

United States where the student body is exclusively women. Smith College has also long been a site of feminist scholarship; of the various sites for this study, Smith engineering students live in an academic environment where exposure to feminist critique is well represented within their required liberal arts education.[5] Olin College of Engineering admitted its first class in 2002 with a strong commitment to gender balance among its student body (41% women) and faculty (35% women). On pedagogical and contextual grounds, women are likely to enjoy a friendlier environment to pursue engineering and to question its underlying assumptions at Olin and Smith compared with MIT (39% women among engineering undergraduates in the class of 2007, 46% women among undergraduates in the class of 2007 overall) and UMass (13% women among engineering undergraduates in the class of 2007, 50% women among undergraduates in the class of 2007 overall). Across the four sites, moreover, engineering students complete a robust range of liberal arts courses in the humanities and social sciences; all engineering students, then, are exposed to the kinds of courses that characterize a liberal arts education. While ours is not a representative sample of all women engineering students enrolled at U.S. institutions, the combination of sites we examine does reflect the spectrum of engineering education currently offered in the United States.

Data Collection Through Diaries

We tracked a cohort at each school from their first-year orientation through the end of their fourth year, when most students graduated. Rather than asking for retrospective descriptions of their experiences upon graduation, we asked a subset of students to record their experiences in their own words through twice monthly diary entries. With these innovative data, we consider the developmental process of becoming an engineer in situ, that is, as ongoing experiences (Seron et al., 2016). In three instances over the 4 years (3 out of 96 submissions), we did ask diarists to comment on specific topics. In all other times, we were as nondirective as possible. In the findings reported here, we include responses among the general diary entries from one prompt in 2005, where we asked diarists to comment on Lawrence Summers' address to the National Bureau of Economic Research (NBER) discussing women in STEM fields (for a further discussion see pp. 15 to 19, infra.).

We composed the sample of diary writers by inviting a stratified random sample of engineering students at each school, which over-sampled women and racial/ethnic minorities, from an existing survey

Table 1. Demographics for Diarists.

School	Total	Female	Male	URM
Smith College	12	12	0	6
Olin College	9	5	4	2
MIT	8	4	4	4
UMass	12	7	5	5

MIT = Massachusetts Institute of Technology; UMass = University of Massachusetts, Amherst; URM = Underrepresented Minorities.

population of over 700 students (Cech, Rubineau, Silbey, & Seron, 2011). Over their 4 years of college, 41 students (13 men, 28 women) wrote to us at least twice a month (in total more than 3,000 entries); 100 additional students were interviewed twice (38 men, 62 women). In this article, we draw from the diaries of women, where 12 were from Smith, 5 were from Olin, 4 were from MIT, and 7 were from the UMass. We offered students $100 per month for diary writing over the 4 years. In this article, we focus on women's diaries. Table 1 provides the demographic breakdown of diarists.

We note two caveats. First, these data were collected between 2003 and 2007. While the overall picture of women's marginal representation in engineering has not changed in the intervening years, and those women who persist into the labor market are significantly more likely to find positions in the "softer," less remunerative subfields of the profession (Cech, 2013), it may be the case that women's interpretation of their socialization has changed. Second, those women who do persist into the labor market and continue to experience marginalization may develop a more structural, feminist interpretation of their experiences—a research question that is ripe for future study.

Data Analysis and Intercoder Reliability

All diary entries were coded using *Atlas.ti*. After the first semester of diary submissions, the researchers independently read each diary entry and inductively developed codes to capture the range of topics discussed by students. Our analysis of the textual data was developed from general understanding of the literatures on engineering, higher education, professional socialization, and gender, with an openness to the need to reformulate questions and developed additional categories as new themes emerged from the student diaries. In analyzing over 3,000

diary entries, we took steps to insure intercoder reliability where, on average, we achieved 75% to 80% agreement (Seron et al., 2016).

Discovering and Responding to Marginality

Prior to their matriculation to college programs in engineering, these young women demonstrated exemplary talent in math and science; they often described how their parents expended significant energy, time, and commitment in the "concerted cultivation" of their talents, selecting summer science camps for girls, encouraging them to take college-level science courses in the summer, or helping them find internships in an engineering or scientific field (Seron, 2016; also see Lareau, 2011). These young women, then, begin college with a set of experiences that complement American values of meritocracy and individualism: They worked hard, and they were recognized and rewarded. As they took advanced courses in math and science in high school, many of these young women also report that they were one of very few, or the only "girl" in their class: They begin college with the recognition that they and other women are in the minority. Others discovered this status when confronted with the composition of their introductory engineering classes. Classroom work, team projects, and internships generate sufficient uncertainty about the mission of engineering and the ability of women to pursue meaningful careers in engineering, that many question whether to continue in the profession. As they reflect on their marginal status, and encounters that they find disagreeable, they often preface their criticisms with "I am not a feminist, but . . ." They tend to distance themselves from what they understand to be feminists' commitment to preferential treatment for women.

Engineering education not only includes immersion in physics, mathematics, and materials but also requires students to put aside popularly circulating or "lay" mythologies about the world in which engineers will work and make a living: Through classes, work with peers, internships, and jobs, the novice comes to identify with the profession's claims about itself, particularly its commitment to objective, technical, scientifically derived problem solving as engineering's central contribution to society (Ibarra, 1997). As we demonstrate later, the critiques expressed by the majority of these young women do not, however, lead them to question the profession's central narrative about itself and its commitment to scientific and engineering objectivity coupled with its devaluation of "socially focused" activities. Rather, the critiques of their marginal status are couched in the dominant ideologies of the *apolitical* space of the profession.[6]

First, we show how students experience themselves as marginalized; we then provide evidence that students explain their dissatisfaction as personal or individual failures born of an inability to meet the high technical standards of the profession, while explaining women who succeed in engineering as exceptional. Although women may decide to leave engineering because of these experiences, few of our respondents are able to explain this mismatch between the aspirations with which they began their education and their experiences. Those who leave the profession seem to reject it fully, while those who stay explain their experiences as necessary hardships that are just part of becoming an excellent engineer.

Rejecting Feminism

Whether at Smith, Olin, MIT, or UMass, these women are well aware of their minority status in engineering. At UMass, Kendra needed only to walk into a first-semester class to realize that she is part of a very small proportion of the engineering student body. She writes, "So, the engineering groups. We're in a class of about 45 people (only 5 girls)." Echoing other diarists, Chloe writes, "Looking around a room and seeing 5–10 females for about 150–200 males is strange." But, her peers at Smith are equally aware of their minority status within this discipline; Cecilia writes:

> The response from most people, when I say that I'm an intended engineering major is one of respect and a bit of awe. People tend to believe that engineering is hard work and I'm not sure if I receive more fascination from people because I'm a woman going into engineering and it might be seen as more natural for a man to enter the field. I don't really think this is the case, as I've had feminist women congratulate me on going into engineering.

In this entry, Cecilia appears to distinguish herself from "feminist women" and foreshadows a robust perspective among these engineers in the making: They do not see themselves as feminists. To place this finding in its broader context, we asked students to rate how strongly they agreed with this statement in a survey conducted during their second year of study: "I consider myself a feminist." Our findings show that women in engineering are significantly *less* likely to report that they consider themselves to be a feminist compared with their female counterparts in all other majors. Interestingly, there is no

significant difference among women in engineering majors across our sites; while we expected that women at Olin and Smith, in particular, might be more likely to identify as feminists than their counterparts at MIT and UMass, the results do not bear this out here or in other findings from this larger project.

What do they mean when they say, ''I'm not a feminist?'' Most associate feminism with a demand for preferential treatment or a policy of affirmative action—a policy that they believe undermines a commitment to merit and individual achievement. Whether they place themselves on the liberal or conservative end of the political continuum, or express little interest in politics (a theme that is typical of both men and women in engineering), most of them agree that they are opposed to a policy that, in their view, is unfair. For example, Megan, a White student at MIT notes that she is wholly opposed to the nominations of Roberts and Alito to the Supreme Court because of their very conservative views of the law. Yet, she writes that nominating a woman to replace Sandra Day O'Connor for the sake of nominating a woman ''sparks a 'reverse discrimination' debate'' and goes on to comment:

> A little more [gender] balance in the Supreme Court would be nice, but at the same time, I want the best people to be there. I mean I really hope that I haven't gotten where I am . . . because of my gender. I'd like to think that I earned it.

Ashley, an African American student, shares the view of her peers as she reflects on a class discussion about affirmative action:

> The professor outlined the reasons that affirmative action policies were first developed, and the arguments for and against their continuing use. Being a minority and a woman, I have given a lot of thought to what I think of affirmative action, and why I think that it is out of date, and shouldn't be used anymore, and I was pleasantly surprised to find every single one of my main points to be ones that the professor brought up in the lecture. It didn't necessarily validate my beliefs, but it is nice to know that other people who've given a lot of thought to the matter have come up with some of the same flaws that I had.

Speculating, Ashley's sentiments resonate with a post-Civil Rights, post-racialized, colorblind worldview (Bonilla-Silva & Forman, 2000).

A reading of these diaries demonstrates that these young women who are admitted to these highly selective programs view themselves as

having played by the rules of meritocracy—and, having done very well. Preferential policies, such as affirmative action, pose a fundamental challenge to their belief systems about what they have achieved as individuals through their own hard work. Laced through this discussion, then, is evidence of their acceptance of fundamental premises of engineering (and American) values of individualism and meritocracy—and, hence their distaste for preferential treatment or an affinity with what they take to be a feminist political posture. In place of a feminist perspective, they develop accounts of their experiences that acknowledge their marginality while simultaneously embracing the conventional narratives of engineering (Rhoton, 2011).

Gender Essentialism, Exceptionalism, and Meritocracy

Women engineering students' experiences, questions, and critiques of the profession are couched in a broader set of values characterized by gender essentialism, exceptionalism, and meritocracy. For the most part, these women believe in a biological or essentialist difference between men and women on engineering-related tasks. They explain their own abilities in math and science as exceptional compared with their female peers (also see Seron et al., 2016). They hold to the view that success is up to the individual and her willingness to persist in the face of whatever challenges come along. Many of the women question whether they have sufficient confidence to make it in engineering, but even this questioning is expressed in essentialist terms and solutions that leaves their faith in meritocracy in tact.

We examine diarists' reactions to three signals of their token status: (a) popular beliefs about men's and women's "natural" talents and family responsibilities in response to Lawrence Summers' 2005 speech at the NBER, (b) evidence of inequality in the workplace experienced during their internships, and (c) their own feelings of inadequacy. We see that women respond to these signs of their marginality not by critiquing engineering culture, but by making sense of these signals of marginality through ideologies of essentialism, exceptionalism, and meritocracy. Emerging from this synthesis is a common perception that diversity-promoting efforts necessarily violate meritocracy. The resulting internalization of a presumed diversity-quality trade-off in engineering further thwarts the potential emergence of a feminist critique of engineering from within.

(a) *Signals of marginality: Popular notions of men's and women's talents and roles.* A particular event during the years of data collection

stood out: In January 2005, then President of Harvard University, Lawrence Summers, presented remarks at an NBER Conference on Diversifying the Science and Engineering Workforce. Summers prefaced his remarks by stating that he aimed to be provocative. He succeeded, both at the conference itself and in the barrage of media coverage following. For our purposes here, we quote one summary point from his remarks to recall his argument:

> So my best guess, to provoke you, of what's behind all of this [discrepancy in the retention patterns of men and women in high end science and engineering fields] is that the largest phenomenon, by far, is the general clash between people's legitimate family desires and employers' current desire for high power and high intensity . . . [In] the special case of science and engineering, there are issues of intrinsic aptitude, and particularly of the variability of aptitude, and that those considerations are reinforced by what are in fact *lesser* factors involving socialization and continuing discrimination. (Summers, 2005)

Summers' statements provided a serendipitous opportunity to ask our diary writers to respond to these commonly held explanations for women's minority status in engineering.[7] The student reactions displayed three patterns. First, while one woman, Aurora, reported that she did not care what he said, most of our respondents took exception to Summers' argument. Second, students embedded their critiques of Summers' remarks within claims that they are "not a feminist." Third, in taking exception to Summers, they nonetheless expressed quite traditional and stereotypical views about the differences between men and women by way of their ability in math and science, the ways in which they are "different," the "appropriate," if gendered, roles of childrearing, and their unquestioning expectation that one can achieve anything if only one works hard enough. For example, Kelsey writes:

> Living and breathing engineering at this school meant that I knew about [the speech] right away... [But,] there were many more things that were more important to me than what the president of Harvard had to say about women in engineering (such as, being a woman in engineering). . .

> Regardless of what he hoped to accomplish, it made me think . . . Where did I see my career as an engineer going? Do I plan on spending eighty hours a week on a job? I do want a family, I know, and kids—but how will that affect my career? I am so academic-oriented now, will I become

so career-oriented later that I will never actually marry and have kids? Will I sacrifice my career for my children? Where do I see my career—as an engineer, as management, as a freelancer? What in the world do I want in my life? I have no answers right now.

In reflecting on Summers' speech, Kelsey raises the question of work–family balance, taking for granted that she is challenged, as a woman, to find a personal solution (Levitsky, 2014; Seron, 1996). Note further the absence of a critique of a field that requires 80-hour work-weeks, or of a gendered division of labor that might require such a "sacrifice." Describing personal solutions to what may call for collective solutions is a recurring theme among diarists, a theme that recurs when describing opportunities for sharing experiences at meetings through the Society of Women Engineers (SWE), a theme we elaborate later.

Megan described the speech as pretty "lame," noting that she is not "really political," but had this to say:

What Lawrence Summers said was probably a dumb political move; I'd have to agree. But personally (and I lead a very self-centered life), I don't think it matters. I know I'm good at what I do, and I'm always pretty competitive and aggressive. I don't like to walk around with a chip on my shoulder because I'm female, because I have gotten so many other advantages in my life that I'm way better off than most people. There, is, however, still a lot of male/female comparing [that] I don't think really needs to happen. But I think it's a thing that will change with time, which is already starting.

Megan's reaction to Summers' commentary points to her own individual hard work and experiences. She sees herself as exceptional, compared with both women *and* men; after all, she enjoys being "competitive and aggressive," she has "gotten so many advantages," and is "way better off than most people." Yet, she seems to accept that things "will change with time," and that progress is somehow inevitable. Megan remains silent about the collective and agentic steps required for such progress. She sidesteps a critique of either Summers or of the field of engineering. Each time she offers a critique, she counters it with an ideologically appropriate, recognizable, and nonthreatening trope consistent with conventional engineering discourse. She says that Summers made a "dumb political move" and she does not appreciate the "male/female comparing" that goes on in her program, but she agrees with the fundamental claim of biological difference (essentialism), puts the

burden on herself to work hard despite this challenge (exceptionalism), and believes that, eventually, the system will work to reward those with the requisite talent and drive (meritocracy).

Again responding to Summers' comments, Kelsey notes that patterns of underrepresentation may be because of individual "choice" more than discriminatory selection:

> One of my male friends even organized a panel at MIT to discuss the impediments women face when entering the work force. While I admired his efforts, I felt no need to attend this panel. In my mind, a woman will succeed if she wants to succeed. Maybe this is an overly idealized thought, but I'm going to live by it. . .

> Should such a policy [of affirmative action] be introduced to work fields such that every workplace would be comprised of fifty percent females and fifty percent males? . . . In my own opinion, however, I think it isn't right . . . I feel that the best person should get the job, regardless. I don't really approve of affirmative action because being a white girl I feared that I would be rejected because the admittance of a less-qualified African American male was necessary to meet some quota. Being female, I will be the subject of such affirmative action policies in the work field . . . I would always wonder if my employers really found me to be qualified. I do not want to be a pity hire.

Kelsey makes clear that she arrived at college already skeptical about feminist values around affirmative action and her experience of marginalization thus far has not shaken those core values; rather, whether a woman succeeds is a matter of choice—a belief that she holds inviolate. Kelsey's discussion of affirmative action demonstrates her fundamental assumptions about individual choice and merit: She does not want to be judged, or disadvantaged, through an affirmative action lens. She goes on to note in her diary that she finds Summers' comments about women's stamina to "do" science offensive; nonetheless, she writes that she fully expects to have "two full-time careers" to balance, and does not criticize the idea that the demands of the engineering profession and of childrearing are essentially a woman's responsibility. Overall, her diary entries reflect ideologies of essentialism ("men don't give birth to lives. Women do," she notes), exceptionalism (I plan on having a life and a career), and meritocracy (maybe some women can't handle it and consequently take a few years off).

Kimberly does, however, reflect on the ways in which gender roles are socially shaped and describes her reaction to Summers' comments this way:

> Going back to what the president of Harvard said, about how maybe women do have fewer innate abilities regarding ability to understand engineering—it's true to an extent, I would say. Women are less encouraged to be focused in math and science during high school; there are still cracks made about how women belong in the kitchen, in the softer sciences, English, etc . . . So yeah, the only reason why women aren't as innately prepared for engineering as men is because we're not told from the beginning that engineering is the field in which the smartest, most intelligent of our gender go into. We are taught that having children is great, that maybe college would be good to have, but only so you can help your children—mostly your sons—when they are in school themselves. My parents raised me very differently, maybe that was because they didn't have any sons.

Kimberly generally agrees with Summers but, again, positions herself as an exception to these patterns.

Embedded in their critiques of Summers' argument, these women raise familiar, if contradictory, perspectives, ranging from an essentialist assumption that work–family balance is a woman's issue that we observed in Kelsey's comments to an individualistic and instrumental approach leveraging gender for success while also noting their exceptional status, a theme that both Megan and Kendra elaborate; to assuming that success is achieved meritocratically, grounded in individual choices, and granted to those who work hard and are the "'smartest, most intelligent," a point shared by all. There's no need for women to carry a "chip" on their shoulder, Hannah argues, and all of this talk raises the specter of affirmative action and the possibility of "quotas" and "pity hires." Yet, laced through some of these women's comments, there is a hint of the ways in which they recognize that gender roles are socially constructed (ironically, a theme they no doubt are exposed to through their liberal arts course requirements and may learn in interactions with more socially minded peers), suggesting that these respondents often express simultaneous and paradoxical interpretations: Women are what women are because they can bear children (essentialism), and women are what they were raised to be (socialized to women's roles). If they are exceptional, they believe they should be able to put their intelligence to good use and work out ways to balance these demands.

(b) *Signals of marginality: Evidence of inequality in engineering*. Kimberly describes her reaction to learning about the ways in which minorities and women, compared with White men, respond to negative signals in engineering:

> The research I am doing talks about how women and minorities in engineering will place all the blame internally when they do badly in engineering, while white males tend to blame external factors—teachers, teaching assistants, having a bad day, etc. Also, white males are given more opportunities than are any other race or gender mix; they make up the majority of engineering, is it any wonder? I hardly think that there's a reason to be all crazily feminist though; I think the answer to getting women and minorities to increase retention in engineering is just to wage a long battle in which slowly but surely progress is made.

A number of assumptions are embedded in this quote. First, Kimberly seems to assume that it's no surprise that men enjoy the luxury of blaming others for their shortcomings whereas those of a minority status internalize their experiences, but her solution seems to be that women and minorities should tough it out and move on. Second, there is an implicit assumption that change will move in a progressive, incremental direction, in keeping with central notions of scientific progress. Third, while Kimberly points out that one does not need to be a "crazy" feminist to "get" that this research is persuasive, she recognizes that some underlying structural factors may affect the advancement of women and minorities. In some sense, this quote adds support to the notion that many of these diarists are rejecting "feminism" as particularistic—benefiting only women as a particular group, and radical—because it seeks immediate change in the status quo. The statements simultaneously embrace a liberal individualism based, at least in part, in support of a universalistic/gradualist approach to social change.

Toward the end of her fourth year, Hannah describes her reaction to a study presented in her class that demonstrates the persistent discrepancy in earnings between men and women, net of experience, education, and other factors.

> Am I going to be a part of the statistic? For one reason or another, I'm generally immune to statistics; I hold the belief that I live my life and set my goals and achieve or don't achieve based on my own merit. But for whatever reason, this finally got through to me, this perception that there is some external trend that exists that I am subjected to, that I have no

power to change or resist. I guess I'm just a control freak, and I'm certainly used to having control over my own life, and so I don't know how to respond to this. I don't know. This is certainly one of the most inconclusive or unresolved entries I've ever written, but I guess that reflects my position on the matter. Who knows?

Hannah finds this assigned reading about women's persistently lower earnings disturbing, putting her in a position of self-conscious uncertainty; she does not seem comfortable reconciling the implications of research on systematic discrimination in income between men and women with her own commitment to individual achievement and hard work, which has, after all, been her experience to this point in the life course.

(c) *Signals of marginality: Feelings of inferiority*. Many women describe doubts about themselves, lacking self-confidence in their ability to navigate a world that seems easier for their male peers. Their interpretation of their own perceptions of inadequacy is, again, filtered through the lens of these engineering ideologies. Following a "women's discussion," Taylor "realize[d] that I need to be more confident and say what I know is true and not just think it in my head or say 'I think, I believe.' Hopefully, I can be more confident!" Kimberly recognizes that many of her female classmates do not enjoy the same self-confidence as her male counterparts and, further, that research shows that women tend to react differently to negative feedback by internalizing doubts about their ability. But, she proposes a different tack:

> Don't be afraid to start your problem set because you know you won't be able to finish it. Don't let the boys on your team overshadow you because "they know what they're talking about." You need to fake it 'til you make it! And it's true—that has been my phrase of choice lately. Fake it 'til I make it—you can make yourself believe anything. Isn't that really what confidence and self-confidence is all about, believing in yourself whether or not you have legitimate reason to? And women, despite thinking we don't have as much, if not more, reason to believe in ourselves [than men do].

The SWE is, for many of our informants, an important anchoring point in their education; SWE meetings and events present opportunities to move from the individual solution to the collective call for change. Yet, SWE events, at least as interpreted by these women undergraduates, actually reenforce the dominant values of engineering science.

SWE's role is to work with women to "Aspire, Advance, Achieve at Every Stage of Your Career."[8] Our diary entries suggest that the vast majority of our writers have had some exposure to SWE often beginning in their first year of college. For example, Smith and UMass students describe trips to Cambridge organized by SWE to meet women who are pursuing graduate degrees or on the faculty in STEM fields at MIT and Harvard. "Fake it 'til you make it" often comes up in the context of discussions about SWE. By participating in SWE activities, these women also describe how they learn to "try on" engineering (and professional) personas, including networking and negotiating skills. For example, after returning from an SWE conference, Sophia describes how she was told that professionals write thank you emails:

> We had a SWE meeting today. We talked about the conference and strategies for networking. It had never occurred to me to send follow up e-mails to everyone that I met at a conference or meeting or event. Apparently that works very heavily in your favor though. The person you met remembers you and sometimes they offer you things. I'll have to make sure to do that in the future.

Or, after attending a seminar on the "Cost of Not Negotiating," Taylor notes, "It was interesting to learn how women negotiate differently than men and sometimes do not ask for what they deserve." SWE activities are designed to encourage young women to recognize that they are capable of effective and meaningful careers in engineering. As the conferences and activities of SWE imply, it may be necessary to take the time to reenforce one's self-confidence, to "learn" what the "boys" seem to know by way of "faking it," negotiating and networking.

On balance, participation in SWE is a positive extracurricular activity for many of our diarists. But, these findings suggest, coming together at what might be a more collective moment to think beyond individual solutions to structural and cultural challenges is consistently absent. These findings in fact illustrate quite the contrary: participation in SWE is a site that reproduces cultural values of essentialism, meritocracy, and exceptionalism.

Perceived diversity-quality trade-off. In accepting engineering as a meritocracy, respondents interpret success in engineering as demonstrations of personal merit. Similarly, those who leave engineering do so because of their own preferences, deficiencies, or mismatches with the profession. From this perspective, the enduring underrepresentation of women is seen as unfortunate but natural, and the only solution is better

prepared women. As Megan's and Kimberly's quotes mentioned earlier illustrate, achieving this solution requires more patience than action.

Within this perspective, actively promoting the participation and success of underrepresented groups is tantamount to reverse-discrimination and opening professional membership to the unqualified. For this reason, we observe little support for diversity programs in the abstract. Support programs such as those offered by SWE are not viewed as either diversity programs or committed to feminist values; rather, these support programs are designed to pass on the "tricks of the trade" to achieve in engineering on the profession's terms (Fisher, 2012; C. Williams, Kilanski, & Muller, 2014). In contrast, diversity programs do not pass along tricks of the trade but are conceptualized as preferential treatment or quota systems. Defining diversity in opposition to meritocracy necessarily entails a diversity-quality trade-off. The promotion of one necessitates the sacrifice of the other. Although students enter college with a variety of perspectives on the validity of diversity efforts, engineering socialization reinforces the idea of a diversity-quality trade-off, although existing empirical evidence challenges the existence of such a trade-off (Eckbo, Nygaard, & Thorburn, 2016; Hughes, Paxton, & Krook, 2017; Post & Byron, 2015). Upon embracing engineering culture, it becomes easier for women engineers to accept their underrepresentation than to question engineering's meritocratic claims. Accepting this trade-off limits support for both diversity efforts and identification as a feminist. As such, it is a potent force for resisting change in engineering.

Discussion

Much sociological research documents the structural foundations of educational persistence and achievement in STEM fields (Xie & Shauman, 2003). In this article, we demonstrate the importance of several structural-cultural factors, specifically the role of professional culture in driving token experiences. Collective and institutionally persistent ideologies within the culture of engineering play distinct roles in shaping women's experiences in engineering. Specifically, we show how the depoliticization of gender inequalities in engineering (Cech, 2013; Seron et al., 2016) emerges as women engineers embrace the profession's ideologies of meritocracy and individualism. While the four educational sites take somewhat different pedagogical approaches (Seron & Silbey, 2009) and one site, Smith College, is a women-only program, the interpretations by these women are remarkably consistent across these engineering schools.

   Despite frequent public discussion concerning the absence of women in STEM fields, supported by large bodies of empirical research that consistently show how engineering education relentlessly reproduces gendered inequality (Bailyn, 2003; Xie & Shauman, 2003), these young women articulate confident optimism in the values central to engineering culture. They recognize their small numbers, and may acknowledge their marginal status. Nonetheless, they explain their own experiences and the status of women generally within engineering by giving voice to the cultural ideologies of an apolitical, objective space that denies these very same empirical facts while claiming to promote meritocracy. Their individual achievements reinforce the profession's conventional narrative of itself: a meritocratic occupation for especially smart, hardworking persons who succeed because their objective abilities are duly recognized and rewarded (National Academy of Engineering, 2008).

   Among these bright, insightful young women, there are those who carve out a progressive agenda for changing the gender composition of the profession. But that agenda builds upon the underlying claims and assumptions of scientific objectivity and engineering professionalism. While their writings are probing, thoughtful, and sprinkled with humor, they do not provide a critical commentary on or distance from the profession's core commitments. Although these young women may find Lawrence Summers' comments that women are perhaps ill-suited for "high power," "high intensity," "high end" jobs in science/engineering offensive, they do not interpret these derogatory comments as a call to action. Rather, such comments propel them to—independently and individually—work harder to build their pedigrees. Exceptionalism becomes an explanation adopted to account—in a manner consistent with meritocratic ideology and individualism—for their own membership in engineering simultaneously with an acknowledgement of women's underrepresentation. As a result, the people who would ordinarily be expected to be the primary agitators for change instead work to reify the status quo. Steeped in these ideologies, they see diversity initiatives and values as competing with quality, a trade-off they are not willing to embrace, thus frequently saying, "I'm not a feminist, but. . ."

   As these young women navigate engineering culture, the oft repeated "but. . ." reveals the starting point for a possible critique of engineering. Any one of these critiques are ripe avenues for taking the next step of questioning the underlying premises and values of engineering that might provide transformative insight or what Levitsky (2014) has

described in a different context as an "injustice frame." Rather, these women remain comfortably tucked into the "legitimating frame" of engineering culture (Levitsky, 2014). At that very moment of potential critique and in the face of signals of their marginality, our findings show that these young women remain deeply committed to meritocracy and individualism—ideologies that frame their observations and accounts in ways that minimize the incipient critique's threat to the engineering status quo. This, then, is a story of how a marginalized group's criticisms—many of which derive from their experiences as tokens—get folded into the dominant culture about what it takes to achieve professional success while the possibilities of real critique itself seems to fade from view. Scholars and activists interested in advancing equality in this profession cannot assume that those most disadvantaged by the culture of engineering are, by that virtue alone, allies in critique and social action.

In sum, across four diverse sites of engineering education, we observed an anchoring point of this student subculture, represented in our organizing theme, "I am not a feminist, but. . ." Beginning with the premise that feminism is about political or collective action irrelevant to the professional engineer, or even antithetical to its definition of objectivity and quality, we have shown that most of these young women reject a critique that identifies both structural and cultural grounds of women's marginality. They associate feminism with preferential treatment, which undermines what they take to be their individual and meritorious achievements.

Conclusions

Feminist scholars of science have argued that we need to explore science and engineering endeavors, shaped primarily by men, from the perspectives of marginal and less powerful social groups, including women. The undergraduate engineers we studied report many stereotypically gendered encounters. Indeed, some describe studying the research on women and science that is actually written by feminist scholars of science, technology, and society. But, during their years as engineering students, most reject more structural-cultural (Ewick & Silbey, 1998) arguments about the consequences of marginality and power. Rather, they interpret the research on gender inequality as more of a toolkit that provides survival strategies for individually talented women to adopt, with the oft-repeated phrase "fake it 'til you make it." Almost all of these young women participate in SWE, where they share tips for

navigating the cultural values of engineering. But even here, emphasis is placed on depoliticized technical problem-solving, an abiding commitment to individual and meritocratic achievement. SWE is a safe space for building confidence in their talent in math and science. Kanter (1977) hypothesized that women's entry into the professional labor force as tokens of difference would likely be a transitional stage for women. The longevity of women's minority status in engineering and the continued efforts to overcome that status, such as SWE, has produced an institutionalized subculture of tokenism in engineering, but one that remains faithful to the profession's central commitments and values. Rather than telling what Ewick and Silbey (1995, 2003) describe as a subversive story—a narrative that challenges the taken-for-granted norms by making visible and explicit the connection between particular lives and social organization (c.f. Mills, 1959)—these women engineers are often reproductive agents of the ideology of meritocracy, helping perpetuate existing relations of power and inequality.

Some authors have proposed a specific form of hegemonic masculinity (Connell & Messerschmidt, 2005) to characterize women's persistent subordination in the engineering profession (Faulkner, 2007; Frehill, 2004; Miller, 2004; Page, Bailey, & Van Delinder, 2009; Schleef, 2010). Hegemonic masculinity refers to a collection of social processes and understandings that preserve a hierarchy privileging men, masculinity, and male-typed behaviors and characteristics to the detriment of women, femininity, and female-typed behaviors and characteristics. In examples from the military and professional sports, hegemonic masculinity explicitly labels as masculine identified traits, behaviors, and performances associated with success, and labels as feminine the behaviors associated with failure. In these binary associations—male characteristics predict success and female characteristics predict failure—an explicit gender hierarchy is created with meanings extending beyond biological sex (Connell & Messerschmidt, 2005). In such gender-hierarchical male-dominated professional environments, female members may need to reject femininity and embrace masculinity to persist and succeed.

The meaning, significance, and consequences of gender identity seem to vary with the sex composition across levels of an organization's or profession's hierarchy, with sex roles that are more stereotypical and more problematic in firms with relatively low proportions of senior women (Ely, 1995). Within engineering, a range of processes and practices lend themselves to a hegemonic masculinity perspective (e.g., Miller, 2004). Our data suggest, however, that women in engineering

do not reject femininity and embrace masculinity. These women engineering students embrace their femininity and womanhood at the same time that they explicitly reject feminism, which they define as demands for special treatment. Therefore, we question the notion, implicit in hegemonic masculinity, that an explicitly gendered hierarchy is necessary for the preservation of gendered inequality in the profession.

Beyond hegemonic masculinity, we suggest that central to engineering's dominant culture as the hegemony of meritocratic ideology, which is reinforced by the ubiquity of this ideology among the American public more broadly. Meritocracy is so taken for granted that acknowledgment of differential treatment rewarding exceptional performance can be articulated by respondents without any association or implication of more general political preferences or normative evaluations.

Belief in the presence of a meritocratic system nonetheless has strongly gendered implications, even if it is not explicitly a masculine hegemony. It acts both to justify an existing system of obvious inequality (Jost & Hunyady, 2003), and to license the expression of biases and discriminatory behaviors (Castilla & Benard, 2010) through (a) tropes sustaining existing status hierarchies, (b) widespread ideologies of equal opportunity and consequent beliefs in exceptionalism explaining success of some subordinate group members, and (c) theories asserting necessary trade-offs between diversity and quality. These aspects of hegemonic meritocracy cumulate to undermine a critical resistance to the gendered consequences of engineering professional hegemony.

When faced with changes or threats to conventional practices, professional cultures often reinterpret and renegotiate understandings of membership in ways that can act to preserve existing status hierarchies. In recent decades, as American society has increasingly accepted and embraced the inclusion of women in the workforce (Cotter, Hermsen, & Vanneman, 2011), some advocate replacing previously explicit gendered understandings of merit in engineering (Frehill, 2004) with those based on gender-neutral meritocracy. Suggesting such reframing, our diarists frequently acknowledge the likely existence of explicit gender discrimination previously in the profession, but generally deny its existence in the present.

While some notions of meritocracy were originally pejorative (Young, 1958), the notion eventually became a positive, democratically inflected ideal. In the United States, the meritocratic ideal was fostered by culling from the masses the cream of the population to constitute an elite class of civil servants to administer and govern a modern bureaucratic state, much like the French and Japanese civil service systems

(Lemann, 1999). Over time, however, the democratic notion of meritoriously selected public servants "evolved into a more general way of distributing opportunity to millions of people, fitting them into places in [a] highly tracked university system that leads to jobs and professions" (Lemann, 1999, p. 344). "The idea of meritocracy as a form of governance has," however, "yielded to a structure of distribution, perhaps breeding a greater sense of entitlement among those who believe that they have earned whatever rewards they have come to possess" (Liu, 2011, p. 386).

Because of the belief in meritocracy, current engineers understand their own membership to arise from their own efforts. In their interpretations, diversity aspirations compete with merit and thus feminists who seek special accommodations work against engineering quality, which these students are able to achieve without demanding differential standards. By the same token, those seeking to become engineers, but do not persist do so because of their own preferences, deficiencies, or mismatch with the profession. From such an understanding, the pervasive and enduring underrepresentation of women is seen as unfortunate, but understandable. The perceived solution to this underrepresentation is better quality women students. This solution reveals the underlying belief in a gendered allocation of engineering-relevant skills and merit. Achieving this solution, as demonstrated in the quotes from Megan and Kimberly mentioned earlier, requires no action beyond patience.

From the perspective of this meritocratic ideology, active efforts to promote the participation and success of underrepresented groups are viewed as tantamount to opening professional membership to the unqualified as well as potentially reverse-discrimination (in the context of finite engineering jobs and engineering school enrollment capacity). Perhaps for this reason, we observe little to no support for diversity programs in the abstract, neither among engineering men nor women. Diversity programs are conceptualized as affirmative action or quota systems. The broad rejection of feminism we observe derives in part from the perceived association between feminism and advocacy for affirmative action for women (e.g., Kimberly, p. 13). This perceived diversity-quality trade-off is widely accepted in the profession because it can explain the pervasive and enduring underrepresentation of women in a manner consistent with the individualistic and meritocratic values of the profession. In addition to resolving the issue of women's underrepresentation, belief in this trade-off limits support for both diversity efforts and identification as a feminist. As such, it is a potent tool in the preservation of the status quo within engineering.

As a powerful force not only in engineering but in American society generally, hegemonic meritocracy resists mobilization for structural change. Daniel Bell (1973) famously claimed that "the post-industrial society is, in its logic, a meritocracy" (p. 30). Societies organized for maximum productive efficiency harness their genetically based and educationally evoked intelligence in service of optimal efficiency for a dynamic, often capitalist economy. Although meritocracy may be an efficient and rational way to match jobs and individuals' talents, existing scholarship reveals that presumptions of organizational or institutional meritocracy can paradoxically yield higher levels of unchecked expressions of bias by organizational members as well as inefficient outcomes (Castilla & Benard, 2010). Belief in the existing system's just allocation of rewards enables uncritical associations between ascriptive categories, such as sex/gender, and achieved statuses, such as organizational or professional positions; such misidentifications of merit lead, in turn, to misallocation of reward. While such inefficiencies might seem to work against the legitimacy of hegemonic meritocracy, they are nonetheless functional, protecting conventional institutional practices from more sustained critique (cf. Ewick & Silbey, 1999) because, as some sociologists suggest (e.g., Bourdieu & Passeron, 1970; see also Collins, 1971), meritocracy "is an ideology," often a hegemonic ideology, "that convinces members of that society that one's social position is deserved" (Duru-Bellat & Tenret, 2012, p. 223).

While those within its protection—the beneficiaries of the meritocratic ideology—are likely to have high morale, those excluded from the ranks of meritorious become increasingly disaffected and alienated (cf. Cobb & Sennett, 1993). Thus, the women engineering students welcomed into the ranks of the meritorious can describe their marginality, which they excuse as simply the outcome of rational objective sorting, while vociferously claiming "But, I'm not a feminist." Rather than resisting hegemonic meritocracy, these brilliant young women engineers are its active promoters.

These aspects of hegemonic meritocracy cumulate to undermine a critical resistance to the gendered consequences of engineering professional hegemony. It is not just those who benefit from them most (i.e., White men) who hold tightly to these ideologies. It is difficult for neophytes to establish standpoints that critique the dominant cultural ideologies and practices of their aspiring profession and still see themselves as members of that profession. To "be an engineer" means not only to master the technical tasks and knowledge of engineering, but also to adopt the characteristic commitments of the profession as one's own.

There appears to be little room for—and very few examples of—individuals who are simultaneously incorporated into the folds of their engineering education and who are able to develop a robust critical standpoint toward it. Thus, this research speaks to the powerful stability of professional culture and socialization to cabin dissenting views and to maintain the common practices and perspectives of that profession. Scholars and activists interested in advancing equality in this profession cannot assume that those most disadvantaged by the culture of engineering are, by that virtue alone, allies in critique and social action.

The findings from this study of engineers raise the question, is feminist critique, collective action, and change possible in *any* profession? To what extent does the structure and ideology of professionalism preclude the possibility of cultural change? Comparing developments in law, medicine, or architecture to engineering, there is evidence to suggest that the entry of women into these professions has indeed challenged the status quo, if not monolithically, but certainly in significant nooks and crevices. Notably, in each of these professions, women constitute between 40% and 50% of the students, and over 36% of the professional membership. These numbers have had observable effects on professional cultures. For example, in the case of medicine, one obvious example is changes in practice in the subfields of obstetrics and gynecology (Boulis & Jacobs, 2008). Kellogg (2011) provides another example in the subfield of surgery, where female surgeons allied with younger male surgeons to effectively challenge the power of the elite old guard, iron men of surgery as they were called, in changing rotation patterns. Beckett and Hoffman (2005) have also documented the ways in which creative and persistent collective action by feminists took on the medical establishment to revive the tradition of midwifery. In the case of law, women have had a decided impact on the jurisprudence of family law (Mather, McEwen, & Maiman, 2001) as well as sexual harassment and discrimination (MacKinnon, 1989). In the case of architecture, women gave voice to new ways of designing the home to complement the needs of the modern family (Friedman, 2007). From these examples, we speculate that the epistemologies of these professions—embracing as they do discretion and judgment at the heart of medical, legal, and architectural practices (Abbott, 1988)—provide more capacious sites for critique and collective action to transform their professional cultures. Of course, here we may only speculate. The depth and breadth of women's impact on core values across the professions remains a rich site for further comparative study.

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Notes

1. All names are changed to protect confidentiality.
2. Women are significantly more likely to leave engineering compared with men, net of grade point average (GPA). On average, women leave engineering with higher GPAs than their male counterparts (Seymour & Hewitt, 1997). Recent research shows that women are more likely than men to leave engineering for another scientific or math major. When men leave engineering they depart science, technology, engineering, and medicine fields altogether (Cech et al., 2011). This finding suggests a particularly "chilly climate" in engineering compared with other science fields.
3. Although women are underrepresented in the higher ranks of law and medicine, law and medical school enrollments exhibit approximate gender parity (Pecenco & Blair-Loy, 2013; S. Williams, Pecenco, & Blair-Loy, 2013).
4. This debate occurs within legal and medical education in addition to engineering education (Seron & Silbey, 2009).
5. Whether this is the result of a selection effect or socialization at Smith is irrelevant; either by choice of or exposure at Smith, these women are situated in an environment with a long tradition of feminist scholarship.
6. Meritocracy and individualism are also foundational to American culture. It would be naive to assume that they do not share these values at college launch. It is also evident, however, that neither their course work nor their experiences lead to some fundamental questioning or skepticism around these values.

7. Respondents were presented with Summers' remarks and then simply asked to respond to them in the next diary entry.
8. By providing participants with strategies for individual success, such activities may leave unchallenged individualist explanations of achievement.

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