"Plotting Something Dastardly"

Hiding a Gender Curriculum in Engineering

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Several years ago, women faculty happened to sit together “down front” at a faculty meeting. When women faculty left the meeting, some of their men colleagues accused them of “plotting something dastardly” and of “conspiring against them.”

—A story that circulates on an engineering campus in the U.S. mid-continent

Most faculty knew the tale. No one disputed that it could have happened, yet no one was sure of the year, the women involved, or the men who spoke in these terms. It was commonly agreed that these untoward behaviors no longer occurred, and that was taken as an indication of progress; yet I wondered if this story and its retelling illuminate current practices. As a twice-told tale, it functions to establish women faculty’s subordinate place on campus. The original telling by men in power equates women’s entering previously male bastions to a kind of assault on a sacrosanct society. The retelling as a parable serves to consolidate the power of men by dismissing sexist practices as something “other people” had done in a bygone era. Apocryphal or not, statements like this emerge from and reinforce men’s opposition to women’s presence as full-fledged members of engineering education.

Late in my final semester of fieldwork, as I completed interviews with engineering faculty members, a woman professor and I were talking about what it was like to be a woman in engineering. Out of the blue, one of her colleagues stuck his head in the door to say hello. He had a reputation for treating women colleagues and students with
respect and, although I had not observed his classes, I knew him informally. Turning to leave, he quipped, “Are you guys plotting something real dastardly?” Neither professor seemed to notice the exchange, but I did and began thinking about what engineering faculty and students learned to not-notice. Learning to not-notice proved crucial to my examination of sociocultural productions that favored men over women and some forms of manhood over others. In this chapter, drawn from a large-scale ethnography of an engineering campus (Tonso 1993, 1997), I describe processes for “hiding” the campus gender curriculum. Because the curricula I describe were in plain sight, like the emperor’s new clothes, “hiding” means learning to not-notice.

GENDER IN ENGINEERING

Women’s circumstances in engineering are among the most difficult of all scientific disciplines (Carter and Kirkup 1990; Mclwae and Robinson 1992; Rossiter 1982, 1995). Three key indicators mark women’s circumstances in engineering:

- Women are represented in very low numbers. At the time of my study, fewer than 8 percent of practicing engineers were women, and women earned fewer than 17 percent of undergraduate degrees. (National Science Foundation 1996)
- Women leave engineering majors at higher rates than men and report greater alienation from the discipline than do men. (Agogino and Linn 1992, Seymour and Hewitt 1997)
- Women experience downward mobility over time in careers. Significantly, many women who start in high-status design jobs move into less prestigious jobs. (Carter and Kirkup 1990, Mclwae and Robinson 1992)

Taken together, these suggest that processes for becoming an engineer build (some) men’s strengths and engineering affiliations, but not women’s, alluding to a gender curriculum. However, no research had been devoted to studying how this “favoring” is accomplished. My study follows in the tradition of critical ethnography, melding sociocultural theories of learning (Chaitkin and Lave 1993; Lave and Wenger 1991; Levinson, Foley, and Holland 1996; Nespor 1994) with feminist critiques, including science (Eisenhart Finkel, Behm, Laurence, and Tonso 1998; Harding 1991; Kalhe 1985; Keller 1985; Longino 1990), post-secondary education (Holland and Eisenhart 1990; O’Conor 1998), cultural relativism (Friedman 1987; Young 1990), and democratic principles (Gutmann 1987; Howe 1993).

Following Margaret Eisenhart and Nancy Lawrence, I sought to make visible the cultural model of belonging on an engineering campus:

Cultural models, or taken-for-granted sets of ideas about how the world is supposed to work, are frames of reference that people use to make sense of, and debate, the meaning or interpretation of events. . . When a cultural model is invoked, it establishes one way of interpreting an event, and in so doing it limits and simplifies the interpretations that people are likely to give to the event. . . . [A]ctual events are not determined or dictated by a cultural model, but experiences are anticipated, extrapolated, or evaluated in light of it. When someone acts or speaks in such a way as to evoke a familiar aspect of the model, people are likely to assume that other aspects of the model apply as well. (Eisenhart and Lawrence 1994, 98; emphasis added)

Thus, an action or behavior intended in one way by its performer could in fact be taken to mean something altogether different in a cultural context, just as two identical actions when performed by different persons could mean different things. Therefore, I thought it important not only to observe how it was that people acted and interacted, but also to understand the culturally salient lens through which those actions were given meaning.

Two works in sociocultural theory suggested how to study both the practical work of engineering design and the academic-science work of conventional engineering courses. First, the situated learning theory of Jean Lave and Etienne Wenger (1991) provided a starting point for thinking about the real-world, out-of-school nature of practical engineering and how design class activities might promote this kind of learning. They explained how apprentices learn a trade, such as becoming a tailor or butcher. Novices participate in the community and learning occurs through working with “old timers.” According to Lave and Wenger, identities such as “expert tailor” motivate novices to learn. However, the theory seemed to assume that becoming a member of a
community was somehow uncontested, that there was a single “tailor” identity being produced that was available to all novices. This seemed too simple to explain the circumstances in engineering.

Second, Jan Nespor (1994, 9) examined how academic disciplines structure professionalization in some majors. He found that physics and business majors (but not sociology and education) channeled students into prescribed, discipline-appropriate ways of belonging that constrained who belonged and what belonging entailed. For these academic disciplines, he argued:

“Communities” aren’t just situated in space and time, they are ways of producing and organizing space and time and setting up patterns of movement across space-time: they are networks of power. People don’t simply move into these networks in an apprenticeship mode, they are defined, enrolled and mobilized along particular trajectories that move them across places in the network and allow them to move other parts of the world into that network. (italics in the original)

Nespor’s (1990) analysis of curricular structures provided a tool to characterize the extent to which academic disciplines define and control belonging. I found that trajectories embedded in engineering coursework exerted even more control over students’ futures than was true for physics and business majors; little latitude existed for student engineers to shape their academic lives. I doubted that disciplinary control was enough to create a singular entity encapsulated by the term engineer and wondered how such a system was revealed and produced in everyday interactions.

Dorothy Holland and Margaret Eisenhart (1990) provided insights into the ways in which interactions produce cultural ways of life. They studied women college students’ proclivity to begin college with high expectations and ambitions for careers that evaporated only to be replaced by aspirations for becoming romantic partners of men. As women became disinterested in their academic work, they engaged in a campus “culture of romance.” Through their participation in extracurricular, on-campus peer groups, women whose academic work contained little to inspire them learned to think of their value primarily in terms of romantic relations with men. I studied a set of engineering courses at the intersection of real-world engineering practices, academic practices, and a culture of romance.

RESEARCH METHODOLOGY

I conducted the research at Public Engineering School (PES), a state-supported college of engineering with programs typical of many engineering colleges. PES had about twenty-three hundred undergraduate students (20 percent women and 14 percent ethnic minorities) and has always been coeducational. This college stood out among engineering colleges as a place with more women students and more women professors than national averages, as well as a place with considerable collective will to change the curriculum in ways intended to address concerns about women’s education in engineering.

Successful engineers need an excellent grasp of engineering, scientific, and mathematical principles, as well as a wide range of historically nonacademic and nontechnical skills. Engineering employers still call for better preparation in applying scientific and engineering principles to real-world problems, working in teams, and communicating (e.g., Dutson, Todd, Magley, Sorenson 1997). Engineering design courses are one way that PES responded to the industry’s concerns, combining out-of-school engineering practice with in-school “book-learning.” Design provides opportunities for student engineers working in teams to complete real-world projects that require not only the application of scientific, mathematical, and engineering principles to specific situations, but also gathering information from clients about their needs and interests. Students similarly must learn to communicate their ideas to teammates and to industry employees ranging from hourly laborers, to engineers, engineering managers, and nontechnical managers.

Two portions of the research project proved critical to understanding the cultural model for belonging: gathering participant-observation field-data to document actions and behaviors and eliciting categories for belonging. The research began in 1993 with a pilot study in a second-year class, then added fieldwork in first- and fourth-year classes in 1995 and 1996 (Tonso 1993, 1997). I selected classrooms taught by engineering educators known for their skills in teaching engineering design. Because the sophomore-class professor promoted a classroom climate that alienated women (Tonso 1996c), when I expanded the study, I sought professors recognized for their contributions to women’s participation. Within these classrooms, I selected teams of women and men students that had more than one woman, as being the only
woman on the team is known to be alienating (Agogino and Linn 1992, Tonso 1996a). I followed three teams in a one-semester, first-year engineering design class (seven women and five men), two teams in a one-semester, second-year class (four women and six men), and two teams in a two-semester, senior-year engineering design class (four women and seven men) (Table 9.1). I participated as an engineering colleague on each of these seven teams, attending all of their whole-class meetings and many of their out-of-class meetings. During four semesters collecting data, I interviewed twenty-four students on teams twice, eight students on teams once, and design class professors once (four women and five men). Analysis proceeded using semantic domain techniques and an interpretive approach (Spradley 1979, 1980).

To elicit engineering-students’ categories of belonging, I modeled my data collection strategies after Holland and Skinner’s (1987) study of the cultural models behind Americans’ talk about gender types. Using a two-stage elicit-and-sort interview protocol, I first asked seventeen student engineers (six women and eleven men) to list “all of the terms they use to refer to each other as student engineers” and to describe each of the terms in the list. After eliciting terms, I made a comprehensive list from audiotape transcripts. Of the 126 terms given, 36 occurred more frequently in interviews and field notes. In the sorting stage I asked eleven students (seven men and four women) to sort the most frequently elicited terms into “categories that make sense to you” and to “tell me why you put terms together in each group and to describe how the categories differ.” The sorting interviews coincided with my fieldwork in senior design and came at the end of my final ethnographic interview with senior student engineers.

As detailed elsewhere (Tonso 1999a, 1999b), the cultural model of belonging, through which events and actions were interpreted and given meaning, was organized by two interlocking ideologies: academic-science prestige and gender status. “Recognizing” proceeded by measuring flesh-and-blood student engineers against hierarchically arrayed engineering-student images. Students talked about the kinds of engineers recognized on campus, describing how various “oldtimer” identities were ordered. The culture favored men (and a few narrowly recognized women) who employed academic-science forms of practice, primarily drill-and-test, decontextualized principles without substantive applications. This “preferred” sort of engineer became the prototype against which other forms of practice were measured. Thus, men practitioners of another form of practice, one closely matched to the industry’s purported needs that incorporated site-specific applications and other nonacademic and non-technical skills, came to be considered inferior. The categories of belonging were profoundly gendered (Tonso 1999b). Gender-neutral (unmarked) terms (e.g., nerd, dork, hard-core overachiever) occurred in terrain recognizing “acting like engineers” and referred only to men. Gender-marked terms such as frat boy and sorority woman, occurred only in the portion of the belonging terrain where social achievement was celebrated. Here, women were expected to be men’s (subordinate) romantic partners. By not “seeing” women when they acted like engineers, the culture conserved the status quo.

Thus, campus “authorities” recognized some kinds of action as deserving respect, other action as less deserving of respect, and, when practiced by women, some actions fell outside the recognition system; that is, were invisible. It was especially distressing that the quality of engineering practices (and I take those needed for real-world engineering to be the rightful goal of engineering education) were inversely related to recognition. That is, those with the highest status exhibited virtually no real-world engineering expertise on design teams, while those with exemplary engineering skills (purportedly valued by industry employers) received limited recognition, if any. At all levels, in and out of classrooms, women’s presence and potential collaboration was
“recognized” as an intention to reshape the campus culture. Thus, women’s actions were interpreted as threats to the survival of a hegemonic, male-centered, academic-science form of practice preferred on campus.

HIDING THE GENDER CURRICULUM

The gender curriculum was “hidden” via various cultural performances that spanned campus contexts. The examples that follow illustrate how talk about gender, codes of dress, appreciation of women students’ work, faculty attention to superficial rather than substantive features of engineering practice, and the dismissal of women’s interpretations of campus norms constituted a hidden curriculum that produced women as “not-engineers.”

Being a Man versus Being a Woman

I asked first- and fourth-year student engineers and engineering faculty what it was like to be whatever gender they were, and then followed up by asking if they thought it would be different to be the other gender. I compared these answers to their answers to questions about treating women and men “equally.” Though almost all men and women thought that everyone was treated equally, every student also gave examples of strikingly unequal campus circumstances (Tonso 1996b).

Being a man engineering student meant that people just like yourself surrounded you. Though none characterized this as “privileged,” men were aware of the extent to which it made their lives easier. For instance, it meant “just being one of the guys” (freshman man), “fitting into a role where you’re more accepted” (senior man), and “not being subjected to the pressure of people thinking men can’t do engineering” (senior man). In the words of a freshman man, “It’s about as conducive a situation as you could hope for . . . because it retains the white males’ approach . . . and you’re welcomed with open arms.” And another freshman student, said I would much rather be a man going to a campus like this, [because] that’s what I’ve been prepared for . . . to be a male in society.”

Being a woman student meant that you had to learn to “deal with” men, that you had to work harder to fit in, and that you would associate with many more men than women. Women’s remarks included that they “have to get along with men” (freshman woman) and “have to deal with guys that think women shouldn’t be here” (senior woman). However, one freshman woman student thought that “being associated with men more is good for women” since that is what a woman can expect on the job. Three of the men students thought that women received preferential treatment. But most men recognized negative attitudes toward women, commenting that “women are kidded about getting ‘girl points’” (senior man) and “women [have to put up with] standard-issue stereotypes of women in engineering, such as being unattractive, overweight, and picky about men” (senior man). Students thought women had to work harder to receive the same amount of respect. Men stated that women who “have avoided society’s push toward art, sociology, and psychology” majors to study engineering (freshman man) must “learn a new language, a language developed by men” (freshman man). Women must be “more determined and have to prove everybody wrong” about women’s lack of aptitude for engineering (senior man). Students commented on “professors grading women’s work harder” (freshman woman) and on “having to try twice as hard to be heard” (senior man).

Yet, almost without exception, student engineers professed that everyone was treated equally on campus. This suggests an ideology of learning to not notice differences in women’s and men’s circumstances. In fact, learning to ignore the realities was one of women’s survival techniques and a key way that they “went along,” which tacitly promoted the status quo. Likewise, men’s learning to not notice their privilege functioned to reinforce it. But these interview data tell little about how social interactions between and among students and faculty contributed to hiding the gender curriculum. Let us turn to a few illustrative examples.

Dressing Like Women

Professional dress was one area where women found they did not fit perceptions about engineering (Tonso 1993). Design class students were expected to wear professional dress when they met with clients and for formal presentations to faculty and other design teams. The sophomore class professor gave these instructions: “You should be at least as formal as the client. If he has on a coat and tie, you keep your coat on. If he is in a shirt and tie, you can take off your jacket.” This posed dilemmas for women that did not exist for men.

First, what is the analogous form of dress for women? On Team A,
Franci wondered: "Do we have to wear hosiery? Not ya'll [the men in the group], but us [the women]." After discussing the issue further, Paul stated, "We should look nice, but not necessarily a suit and tie," and Amy immediately added, "Or a jacket and skirt." Franci suggested that "the guys could all wear a tie, white shirt, and blue jeans." Aside from the "hosiery" comment, which Doug teased Franci about by remarking that he would wear "fishnet stockings," none of the student engineers gave specific examples of women's clothing.

Second, wearing a dress on campus did not indicate that women belonged, though wearing a tie and jacket conferred belonging on men students. As they tried to decide on a time when the team could carpool to the client's office, Franci suddenly realized that she was the only team member who had another class before the design meeting. If she had to meet the group when they would usually attend design class, there would be no time to change and she would have to wear a dress to her other class. This was troublesome because "everybody hassles you in class [when you wear a dress]." Most other team members nodded or "uh-huh'd" their agreement. Franci added, "I hate for them to notice that I am wearing a dress." However, Doug disagreed, saying, "It's not that big a deal. Everybody knows you're in [this class] or have an interview." Franci was not convinced and the team alleviated her concerns by agreeing to depart ten minutes later, allowing her to change after her other class.

The explicit curriculum of faculty directives encouraging professional behavior took men's clothing for granted. This left women to interpret these directives, knowing that women's clothing was not a marker of affiliation but one of not-belonging. And in the social interactions between women and men, when women discussed the contradictions of fitting into an engineering way of life, some men (Doug in this instance) ridiculed their attempts by alluding to inappropriate forms of womanhood—fishnet stockings.

Though one woman professor worked diligently, but unsuccessfully, to incorporate guidelines for women's dress in design courses, her men colleagues steadfastly failed to see the importance of doing so. In particular, there were no avenues except the design-course organizational meetings where this issue could be discussed. In her words:

There wouldn't be any place to go over the head of [the design program director]. I mean who would you go to? The [Academic]

VP [a man recently caught in a compromising situation with a staff member]. . . . That would have been a real waste of my time. So I don't think there was any place to go talk about it. I don't think it would have done any good if there was, because I would have been typecast even more than I already am as, you know, this sort of extreme fringe.

The system punished her for trying to improve circumstances for women students as behaviors of a person who did not belong at PES, someone on the "extreme fringe" who threatened engineering. Ultimately, her working for this one seemingly minor issue of women's inclusion became a reason for colleagues to doubt her expertise in her academic specialty (Tonso 2000).

**Controlling and Exploiting Women's Engineering Work**

Because women had limited access to the cultural machinery through which one garnered prestige, they were easy targets for exploitation. This was evident on the senior Mercury Team, comprised of two women (Carol and Pam) and four men (Carson, Pete, Samuel, and Shane). They worked for A-Tech, a small company developing environmental technology for large power plants and created a mathematical model of a proprietary technology for removing mercury from power-plant flue-gas emissions. Their project—moving gigantic volumes of flue gas (one million cubic feet per minute) through a "sorbant" bed with negligible pressure drop and amalgamating trace amounts of mercury—was a technological challenge. This technology is analogous to a car's catalytic converter, though the Mercury Team was designing a catalytic converter that would be about the size of a high school gymnasium.

On the Mercury Team, Carson routinely demanded that Pam explain all of her work to him, ostensibly so he could check it. Their rapid-fire exchange during a mid-February team meeting is representative of how he controlled her work:

**CARSON:** Well, are we going to be able to extrapolate the trend in the sorbant efficiency with time?

**PAM:** That's exactly what I'm inferring [answering him curtly].

**CARSON:** Well, where's the total amount of sorbant per day?

**PAM:** Why? [She's beginning to bristle.]
CARSON: Well, so how much? 

PAM: Well, the client and three professors told me to do it this way. 

What's the problem? [She's becoming more irritated with Carson.] 

CARSON: I'm not doing heat transfer. I'm doing how much we need. 

[He's supposed to be doing heat transfer.] 

PAM: Why? That's what I'm doing. 

CARSON: So we can check each other. . . . [He turns to his calculator.] 

Differences in disciplinary expertise made it highly unlikely that Carson (a mechanical engineer) would be able to “figure out what’s going on” to the same extent that Pam (a chemical engineer) could. In this situation, chemical engineers worked on mass transfer, aspects of an amalgamation process moving vapor-phase mercury carried in flue gas onto the gold catalyst embedded in a porous media (a complicated form of fluid flow not covered in Carson’s course work). By comparison, mechanical engineers dealt almost exclusively with the piping and equipment needed for holding and transporting flue gas streams, and for heating the catalyst to drive off amalgamated mercury. They focused on heat-transfer and corrosion characteristics of the metals and plastics used in the equipment. In spite of the fact that Pam knew what she was talking about and spent considerable time and energy studying advanced engineering texts and conferring with experts about the issue, Carson doubted her at every turn. He acted as if it were Pam’s job to teach him advanced chemical engineering. 

In fact, though needing to share information, neither had enough expertise in the other’s specialty to check the work, and not performing heat transfer calculations precluded anyone checking Carson’s work. Nonetheless, when the team met with the client, Carson took center stage and proffered information he had gleaned from Pam, as if it were his own work. Until late in the second semester, when a draft report became due, Carson’s only contribution to the team’s engineering work was to control Pam’s work. Yet no one ever interrupted Carson’s academic harassing of Pam. Ultimately, Pam doubted her expertise, though it sustained the entire team. 

Carson’s actions violated the engineering code of ethics distributed in class. In particular, “ethical” engineering is restricted to that which one is qualified to perform, one has performed, and which respects the expertise of engineers working in other specialties. Acting as if he were

qualified in Pam’s area of expertise, treating her as if she were not qualified, and later taking credit for her work were unethical practices. Faculty contributed to reinforcing such unethical practices by failing to teach students how to apply the code of ethics and failing to use ethics as a yardstick for students’ behavior. 

In end-of-fieldwork interviews, Pam’s teammates expressed disgust with Carson’s mistreatment of her. For instance, consider Samuel’s appraisal of teamwork contributions: 

Pamela’s done fairly good, I think. She’s been like our best member because she does stuff. I think that’s the most important thing, going and doing it and then coming back to the group and saying: “This is what I found. Does this make sense? Can we talk about this? Do you have suggestions?” . . . Carson’s done a fair amount. . . . It’s just, like Carson’s contribution is going to be to sit back and critique what other people have done, and that won’t work. 

Yet no one characterized Carson’s behavior as unethical, affirming my growing suspicion that students could not interpret or apply ethical standards in real-world situations. Ethical behavior became just another set of “rules” to dodge, another arena where students must “dupe” faculty. 

Others on the team colluded to keep Pam’s engineering work from being recognized outside team meetings. In particular, when the team gave oral presentations to the design class and to their client, Pam’s teammates volunteered to give presentations because “Pam has already done so much.” In blatant disregard for ethical behaviors, every oral presentation except the last one was almost entirely limited to presenting engineering work that Pam had performed. “Teamwork,” as practiced by the Mercury Team, meant Pam’s work, something the faculty could not discern when students successfully misrepresented their contributions. 

Faculty’s Pathological Control 

Though design-class objectives intended students to learn to communicate through oral and written presentations and engage in teamwork and real-world engineering practices, evaluation of student work focused on superficial aspects of oral presentations and written work, overlooking both teamwork and the engineering work
itself. Faculty grading and feedback contributed to a climate where inconsequential issues of form took center stage and issues of substance were neglected.

For instance, in the senior design class, students heard Dr. Stanley, a man and the Mercury Team’s advisor, describe the form their final project was to take. The form was inexplicably patterned after National Science Foundation funding applications. In fifteen years as an engineer, I never saw this format employed, but I did recognize it from efforts to secure funding for social science research. This suggests that engineering faculty continued to model the academic way of life, precisely the set of academic-science-affiliated practices that design courses were intended to reform.

In my field notes I commented that students paid little attention to Dr. Stanley, assuming the “attentive student” position: outstretched legs crossed at the ankles, arms folded across the chest, relaxed in the chair, looking toward the professor with a blank look, and occasionally nodding. However, students referred to the report-format document repeatedly as they wrote their drafts, writing something for every heading even when they had done no work in an area. As a member of student teams, I observed that portions of reports were boiler-housed, an engineering term for creating the illusion of work. Faculty read the drafts, checked that all sections were in place, and marked copy-editing mistakes and formatting errors. They did not seem to be able to tell the difference between imagined and performed engineering.

Feedback on oral presentations was even more focused on superficial behavior. Two pet peeves received most attention in the senior design class: time limits and standing by the overhead projector, instead of at the front, thereby blocking the audience’s line of sight. When a team exceeded the limit, they were immediately interrupted, told to sit down, and not allowed to finish. They chose between being graded down and leaving out crucial information. Though only one of the fifteen professors or guest speakers giving presentations stood by the screen, students were publicly upbraided for this transgression. Attending to trivial aspects of engineering practice was a hallmark of the PES way of life.

Taken together, faculty attention to superficial details set the tone for what counted as good engineering, and overlooked ethics, teamwork, and engineering quality. By failing to recognize bogus engineering, faculty came to be thought of as people who could be duped.

a skill that high-status students used to succeed. Being easily duped established faculty as not “real” engineers. Subsequently, they could not claim students’ respect, a fact that reduced faculty’s ability to counter the sexist practices of powerful men students, as illustrated in the following example.

**Dismissing Women’s Interpretations of Sexist Practices**

Marianne’s circumstances on the senior Sludge Team were remarkably positive (Tonso 1997). Her teammates treated her with respect, did not exploit her considerable engineering contributions, and took her out-of-school social commitments seriously enough to balance them with her teamwork commitments. However, her otherwise progressive colleagues failed to defend her in a whole-class setting when a vocal minority of sexist men shouted down her characterization of a sexual-harassment case study.

On the day in question, a guest speaker arrived to discuss affirmative action and sexual harassment policies with the senior design class. As the fifty-minute session unfolded, a small group of men students sitting in the back corner began to behave in ways that violated classroom decorum standards. When the guest speaker asked what one did if he or she were discriminated against, one of these young men shouted out “SOOOO-EEE!” from the back of the room. It took me a minute to realize that this referred to filing a lawsuit. The faculty, who in other classes had set narrow behavior standards, did not intervene. Things quickly got out of hand and a vocal minority took over the class to shout down students and faculty alike.

After a few minutes of team conversations about a case study ostensibly illustrating a successful hostile-climate sexual-harassment claim, the guest speaker asked each team whether in their interpretation of the facts the case study was sexual harassment and if so whether an example of quid pro quo or hostile climate. The first team reported: “Yes, hostile climate.” Marianne spoke for the Sludge Team and gave our answer: “Yes, hostile climate.” Next, an all-men team in the corner reported: “No,” and a woman spoke for the fourth team: “Yes, hostile climate.” One of the men from the all-male team stood up, placed his fists on the table, glared at the woman on the fourth team, and loudly reiterated his team’s position: “This is the way things were before the woman arrived.” The woman student said nothing. One of the man’s teammates (also a man) stood up and said, “If they can’t
stand the heat, they should get out of the kitchen. That is the way it was and how come they [the men] can’t keep doing this, just because she came in there?"

Marianne, sitting next to me, was the only student who argued against the vocal men’s position, saying, “This is not fair. Why do I have to work in a place like that?” When they repeated what they had said earlier, she rolled her eyes, and tsk-tsked, saying (to those of us sitting near her) “I can’t believe it; these men are so clueless.” No other student took up the counterargument, even though three other students at our table and two other teams identified this as hostile-climate sexual harassment.

Faculty efforts to defend the sexual-harassment interpretation were likewise shouted down. Bob Thomson argued on the basis of fairness: “She’s not going to be able to go to work here because of this environment? Why? Why is it that you [the men] get a different set of choices than she gets? That’s not fair.” When the vocal men countered that the woman who filed the claim should put up pictures of scantily clad men in sexually-explicit poses, Mary Austen replied, “Two wrongs don’t make a right.” These comments were not persuasive because logical argument and respectful relations had been abandoned.

Nothing seemed to be at stake for the vocal men in this class session. Acting in clearly indecorous ways and exhibiting patently anti-woman behaviors incurred no threat to their place in the campus community. There was a very lopsided logic of acceptable behavior in the senior design class. On the one hand, faculty held absolute sway over inconsequential matters related to forms of speaking and writing and, on the other hand, faculty power counted for naught in the face of entrenched sexism.

WHO IS PLOTTING SOMETHING DASTARDLY?

For a critical ethnographer, there was nothing about this curriculum that was “hidden.” It was in plain view at every turn. This was not the case for insiders (Martin 1994). The sexual harassment class became a focal point of final interviews when students recalled it as one of the few classes that “stood out in their minds.” Many students and professors referred to other classroom experiences by saying: “like what happened that day in the sexual harassment class.” However, these lived experiences in classrooms did not extend to questioning PES as gender-biased or male-dominated. When interviewing Nate at the end of the two-semester course, we discussed the fact that campus insiders seldom talked about what happened in the senior-design sexual-harassment class. In fact, like other students, he was surprised to be talking about it during an interview. In trying to explain why no one talked about these matters, Nate said:

It’s almost like because there’s that sense of, you know, everyone wants to make sure that we’re all equal engineers. And when you start talking about sexual harassment, and that says, “Well, wait a minute! That treatment implies that we’re not all equal.” And the people say: “Well, we don’t want to admit that,” you know. ‘Cause we are [all equal]. I think that’s the biggest thing.

Learning to take for granted that “we’re all equal engineers,” rather than learning to notice just how unequal women student engineers’ circumstances were hid the realities of gender inequality.

These findings suggest the importance of the data-collection strategies educational researchers use to examine learning settings, especially to unpacking how a “hidden” curriculum is hidden. Attempts to hide the gender curriculum at PES became most visible in the everyday social interactions between and among students and faculty. This was in marked contrast to student and faculty observations on campus life during interviews, where students and faculty seldom volunteered information indicating that they “saw” this curriculum. When I identified key examples of students and faculty not noticing gender-biased customs, such as the sexual harassment class or Franci’s comments about being hassled for wearing a dress, the gender curriculum could bubble to the surface and come under scrutiny by some insiders. But this was something that only surfaced during out-of-context interviews when I initiated the conversation. Clearly, as currently constructed, PES culture provided no social spaces where an awareness of the gender curriculum could be mentioned. Moreover, as I argue elsewhere (Tonso 1999b), to notice the gender curriculum was to mark oneself as someone who did not belong. In fact, part of the dilemma of representing myself on campus as a “pretend” insider, while seeing as an outsider, was my premonition that making my observations
known would limit my access to the social interactions central to the hiding processes.

Who is "plotting something dastardly" at PES? It depends on the vantage point of the person making the determination, which is what makes cultural models difficult for insiders to examine and for outsiders to change. According to the cultural model, women do not belong, except as heteronormatively subordinate partners of men. Other forms of women's participation were interpreted as coming from someone who doesn’t belong, someone meddling in engineering's internal affairs. These cultural scripts, or habitus, are grooves built into everyday life. By not examining critically the gender bias encoded in custom, the gender curriculum had the same force as an antifeminist conspiracy. Recall the man engineering professor who interrupted my interview with his female colleague. He invoked a social control routine to mark a woman-only conversation as inappropriate behavior. His action, like Carson’s persistent grilling of Pam, as well as the silence of men who fail to chastise colleagues for their sexist practices, were performances of social practices marginalizing women. These practices sought to establish that women belonged only to the extent that they were willing to defer to (some) men’s definitions of engineering. Such a gender curriculum (re)produced male hegemony.

As I detail elsewhere (Tonso 2000), women and men senior students who expressed concerns with the unethical behaviors of their colleagues and with sexism were moved/moving to the margins of engineering or out of the discipline. All told, six of the eleven senior students did so—two women and four men, the best engineers of the lot. This further consolidated the power of engineers willing to exploit others, increased the proportion of engineers willing to be exploited, and depleted the ranks of engineers prepared for practical engineering work. McIlwee and Robinson (1992) noted that industry-employed engineers fall into two large categories: managers and engineers (who are further ranked via design/research, production, and sales/service assignments). PES elevated two sorts of student engineers: those with propensities to exploit others—possibly the sort of individual who would make a good manager—and those with academic-scientific skills. In spite of the industry’s purported preference for engineers who can apply engineering and scientific principles to real-world situations, these were the lower-status graduates at PES. This is a more compli-
NOTE

1. After fifteen years as an engineer, I left the only career I ever really wanted as a survival strategy. In casting about for a meaningful way of life, I gravitated toward high school math teaching, the second-career choice of many former engineers, where I studied explanations for women's underrepresentation in math and science careers. I took considerable umbrage with the predominant arguments, which cast the dilemma in terms of what was wrong with women (critically reviewed in Eisenhart et al. 1998). I decided to use my engineering sense to study what was going on. I drew on my expertise when gathering and analyzing data and did not take on the guise of a disinterested bystander. Making judgments about who knows what in engineering discussions is technical work for which I am qualified. It matters to the analysis whether an engineer who claims to have things figured out can actually give a bona fide engineering explanation grounded in technical details. Seeing what goes on also requires someone who understands, but is not enamored with, the "watched" practices. Although no advocate of engineering culture, I could "pass" when it was convenient to do so. Moreover, being taken for an insider meant that I had access that might not be available to other researchers. For instance, students and professors with incredibly sexist ways of talking believed that I agreed with them, and my not disrupting this assumption reinforced my insider status. Research strategies deepened my understandings of engineering culture.