

The Diversity Hire

Ingrid Scheel

Electrical Engineering and Computer Science

Oregon State University



Author Note

Ingrid Scheel:  ORCID <https://orcid.org/0000-0001-9890-5702>

Correspondence concerning this article should be addressed to Ingrid Scheel, 1113 Kelley

Engineering Center, Corvallis, OR 97331. Phone: 503-975-0533.

Email: ingrid.scheel@oregonstate.edu

The Diversity Hire

Whenever someone freaks out suddenly or reacts to a small problem as if it were a catastrophe, it's often a trauma response. Something in the here and now is rekindling old pain or discomfort, and the body tries to address it with the reflexive energy that's still stuck inside the nervous system. This is what leads to over the top reactions. . . Over time, these can become embedded in the body as standard ways of surviving and protecting itself. When these strategies are repeated and passed on over generations, they can become the standard responses in families, communities, and cultures.

Resmaa Menakem, from *My Grandmother's Hands*

Background

I am an educator. I teach electrical and computer engineering (ECE). The electrical engineering undergraduate degree is one of the least likely to be pursued by and awarded to (i.e., earned by) women. A mere 15.5% of total degrees are awarded to women (Meiksins et al., 2023). The least likely degree to be earned by women is computer engineering. Basically, the two undergraduate degrees least likely to be earned by women are combined in my department.

I consider myself lucky to still be working. Since 2021, the previously upward trend of increasing representation of women in STEM fields has taken a sharp downturn (Ozdenmoren, 2023). Although we make up less than 40% of the tech sector workforce, 46% of recent layoffs were women (Meiksins et al., 2023). These two pieces of information combine into a cautionary tale. Women are entering the workforce less and less, and when they do enter, they are pushed right back out.

I, like many other White women in academia, am uniquely positioned as an oppressed oppressor (Yescavage, 1999) to wield power and drive change in the academy (Bell et al., 2021; Campbell-Montalvo et al., 2022; Jackson & Rao, 2022).

This is the purpose of this paper.

My 100-word biography reads like a who's who of volunteer organizations and professional societies working to include women in science, technology, engineering, and math (STEM). I go out of my way to advertise and attend events, network with, and support these groups. I do this because I am determined to make things better. I do this because I have been betrayed and am still grieving my own personal STEM trajectory. Earning my Bachelor of Science in electrical and computer engineering was difficult beyond typical scholastic rigor. Moving forward, I would like pursuit of STEM degrees to be more accessible and less traumatic for feminine-presenting and Queer students. Because the worst traumas are rooted in a sense of isolation or helplessness (Levine, 1997), I take any chance I get to be a sounding board for struggling students or represent publicly as a woman in STEM. Community is made of those who stay when things get hard, and I am determined to stay.

In this autoethnography, I describe my individual experiences as a White, feminine-presenting, Queer woman in engineering education to promote understanding of why the term “diversity hire” is inappropriate and its continued use and colloquial acceptance is an act of institutional betrayal. I live at an intersection of identities. Intersectionality, defined by Crenshaw (1991), “highlights the need [to consider] multiple grounds of identity” (pp. 1245) because focusing on one potentially removes important context and considerations. Decontextualization in general may produce well-defined problem sets for engineering students (Leydens & Lucena, 2018), but it renders solutions inapt in practice. I exist in a body that consists of multiple

identities. I experience both privilege (being White) and oppression (being a woman). My Queerness can swing to either side of privilege because as a feminine-presenting woman whose partner is masculine-presenting, I have the option to walk invisibly through heteronormative society and I often do.

This paper is about my life experiences. It details the ways I have navigated the institutional landscape in pursuit of a STEM-based career. I examine the impact these navigations have had on my personal, professional, physical, and emotional life. My purpose in writing this paper is to highlight my specific and first-hand experiences of institutional betrayal to contribute to a growing body of knowledge around supporting students who embody traditionally marginalized identities in engineering education. So, in the spirit of calm observation, integration, and authenticity, in this paper I present relevant, chronological events from my life. The tale spans surviving engineering as a student, briefly summarizes applicable themes from earning my master's degree and a particularly dire experience in industry, and finally culminates in how these themes perpetuate and thrive invisibly around me even though I am now in a position of relative power as engineering faculty.

Secondary contributions include insight into how to create inclusive academic spaces, and sharing a roadmap for others whose path to STEM is nonlinear. My squigglier approach to pursuing a career in STEM has benefited me, my students, my colleagues, and my career, and has positioned me to challenge the siloing of engineering from its sociocultural context as a daily practice. Sociotechnical integration, or the combination of sociocultural and technical content in courses (Leydens & Lucena, 2018), is my motivation for staying in engineering education. Here I review relevant research concerning the incorporation of sociotechnical content into engineering education and its emerging benefits.

Engineering Education: Fostering and Stymying Diversity

Engineering Education Becomes Engineering Practice

Engineers create practical solutions. “Planet Earth cannot, without help, support the number of people that inhabit it” (Kersten, 1996, p. 149), and engineers must help create sustainability to support human lives. Engineering education is the “causal relationship” that transforms students into the developers of technology and products (Kersten, 1996). The curriculum, interactions with faculty and peers, and course options make it clear what skills are “necessary” and which are “optional.” Industry needs engineers who see complex problems as challenges and opportunities to work with and across differences and disciplines (Rock et al., 2016). Necessary “soft” skills and context-based cultural communication techniques to navigate these environments have been left out of engineering undergraduate preparation for decades despite consistent requests from industry partners and stakeholders for their inclusion (Stiwne & Jungert, 2010).

University programs focused on distilled, decontextualized curriculum have been found to perpetuate the myth that communication, collaboration, and concern for other humans are “optional” skills for engineers (Berdanier, 2022). Stripping complex problems of their contexts has huge societal ramifications, such as a culture of disengagement in engineering education (Cech, 2014) and an exclusive rather than inclusive environment (McGee, 2020). Those skills ignored in, or siloed from, technical courses are perceived by students as optional or less important (Cote & Branzan Albu, 2019). Decontextualization perpetuates the separation of sociocultural and technical content in engineering education. It perpetuates the status quo, and the use of discursive constructs that continue to keep ethics and sociocultural issues out of engineering spaces (Lönngren, 2021). In other words, opportunities to engage the diverse,

innovative minds necessary to ensure humans survive on this planet (McGee, 2020) are undermined out of habit.

Students who feel increased belonging and engagement are more academically persistent and successful (Calabrese Barton & Tan, 2020), and they are more likely to engage with their work holistically and ethically (Alpay et al., 2008). When students are encouraged to link their home knowledge to the school knowledge, belonging and engagement are reinforced, which is especially important for students with traditionally marginalized identities (Estrada et al, 2016; Lee & Buxton, 2010).

Better solutions come from diverse project teams (Estrada et al., 2016; Herring, 2009; Rock et al., 2016), and teaching decontextualized technical content severs motivating connections students could make between course content, their lives, and their career aspirations (Alpay et al., 2008; Leydens & Lucena, 2018). Students with traditionally marginalized identities stay in university programs when they see the link between their work and improving society (Estrada et al, 2016), so clear connections between engineering education and social impacts may lead to a more diverse engineering population.

Engineering Idealizes Control

In *Brain of the Firm*, Beer (1981) used the analogy of a human brain and nervous system to describe complex (i.e., institutional) systems. He described emergent behavior in these systems as untraceable due to internal complexity. In other words, no direct relationship between inputs and outputs is well defined. Beer posited only the most imperative and important messages get sent to the CEO (the prefrontal cortex, or thinking brain, in his analogy) while nonessential operations were left to autonomous directorates. He was wrong. In human nervous systems the most essential decisions are never destined for the thinking brain (van der Kolk,

2014). In fact, the most vital signals, those of pure survival, bypass all rational thought. The lizard brain, which controls the fight, freeze, or flee response, bypasses cognition during potentially traumatizing events (Menakem, 2017).

In family systems theory, when trauma is persistent and necessary to survive in relationship to others, the role of the individual is so engrained in traumatic response, it becomes part of who they are, and the triggered person often cannot identify the root cause (Gibson, 2015). The first step to unraveling this mystery and healing trauma is to notice the symptoms without judgment (Menakem, 2017; van der Kolk, 2014). Because students in engineering are often in survival mode, it falls to faculty and administrators to notice the emergence of symptoms that do not serve institutional goals and speak up. This special issue of the *ADVANCE* journal points to an existing gap in the literature in this area. It is a call to notice and address these institutional symptoms. There are many unanswered questions.

What is rendered invisible because it passes the thoughtful, thinking brain and goes straight to reactive habits? What mechanism facilitates these habits in institutions? Can we find a pattern? How might the nervous systems of each student, faculty member, and administrator perpetuate legacy practices or liberal white supremacy (Bell et al., 2021) in academia? Can we, as educators, view the institutions where we work and live as deeply contextualized and complex systems, where these reactions might be hiding oppressive power structures? If so, what can we do as agents of the institution?

Lessons From Universal Design: How Changes For The Few Can Help The Many

Belch and Barricelli (2004) demonstrate that accessibility in postsecondary education works best when it is fully integrated into an academic program. The integration of accommodations means less overhead for specific individuals, and benefits all students. In

engineering education, concepts such as inclusive professionalism, professional development, and collegiality are omitted in favor of repetitive mathematical proofs or algorithmic problem-solving practice (Leydens & Lucena, 2018). The traditional definition of engineering education as “rigorous” and “purely technical” is detrimental to students’ abilities to: communicate creativity effectively (Berdanier, 2022), work in healthy teams (Rosemond et al., 2020), access or innovate rewarding careers (Jones et al., 2024), and apply cultural or home knowledge to scholastic concepts (Calabrese Barton & Tan, 2020; Estrada et al., 2016; Lee & Buxton, 2010). Strategies exist in educational spaces to develop and improve inclusivity to increase student success (Estrada et al., 2016; Garcia et al., 2023; Lee & Buxton, 2010; Smart & Csapo 2007) that can be adapted to electrical engineering education. These strategies center context-based sociotechnical pedagogies and have been used to creatively engage students from varying backgrounds (Leydens & Lucena, 2018; Turner et al., 2013).

Why Engineering Education Needs The Sociotechnical Approach

Most of the literature on electrical engineering education before 1970 is vocational training pamphlets that simply list how people died (International Labour Office, 1969) in hopes of preventing it from happening again. Things started changing internationally in the late 1990s and in the United States around 2010 (Martin et al., 2023). Today, in commercial settings, skills like information gathering, critical thinking, and resource utilization are important qualities for businesses to save time and money and continue to innovate (Rodrigues, 2001). Searching for, deciphering information, and synthesizing it into comprehensible material is a skill in the age of the info-glut (Luker, 2010), where disjointed information is everywhere. Digesting, wrestling with, and taking the time to be thoughtful of social impacts when solving complex technical problems is one way to foster critical thinking (Leydens et al., 2021).

Engineering education has historically left these ethical and humanitarian aspects of complex problem solving to courses in other fields (Herkert, 2000). Meanwhile, practicing engineers make decisions that have direct impact on society, communities, and human welfare (Bednar & Reames, 2020). This technical/social dualism (Cech, 2014) is a form of institutional betrayal. The siloing of socio- from tech- “obscures how engineering is both shaped through social relations of power and produces particular social relations of power” (Niles et al., 2020, p. 493). In *Engineering and Social Justice*, Riley (2008) demonstrated the inextricable link between engineering and social issues.

Engineering practice needs unique and novel solutions to complex sociotechnical problems. The inclusion of differing perspectives such as from those who are women, neurodiverse, Black, brown, Indigenous, disabled, queer, pregnant, and other people of protected (and not-yet-protected) status is essential to the creation of those solutions (McGee, 2020). Engineering is a creative space where efforts to reduce barriers experienced by marginalized students and faculty must persist and flourish (American Society for Engineering Education, 2023). McGee (2020) demonstrated how exclusivity in STEM degrades quality of life for everyone. Transitioning into engineering is often difficult for students who do not have early access to understanding engineering career pathways, and more strategies to increase belonging for all students upon entering university are needed (Andrews & Knowles, 2019). The impact of the disconnect between engineering and society is felt in academia and industry (Belch & Barricelli, 2004; McGee, 2020). Sociotechnical approaches to engineering education will make the engineering professional more robust because engineering practice is deeply contextualized (Leydens & Lucena, 2018) and engineering education becomes engineering practice.

How The Sociotechnical Approach Will Set Institutions Up for Future Success

Momentum has been building in higher education to promote team building, context-based learning, and design thinking early in undergraduate curriculum (Montfort et al., 2023). In engineering programs this may combat STEM exclusivity and retain students from historically marginalized communities (Kilgore et al., 2007). Accreditation bodies are progressively requiring more effectiveness in the integration of social and technical solution spaces through changing programmatic outcomes for students. For example, 15 years ago, the US-based Accreditation Board for Engineering and Technology (ABET) included “the ability to: (1) function on multidisciplinary teams, (2) communicate effectively, and (3) understand professional and ethical responsibility” (Huntzinger et al., 2007, p. 227) in their criteria.

More recently, ABET acknowledged the importance of contextualizing engineering practice through their definition of impact areas that engineering graduates must consider in their education (Cote & Branzan Albu, 2019) such as “public health, safety and welfare, . . . global, cultural, environmental, and economic” impacts (ABET, 2022, p. 51). Recently proposed changes to the ABET requirements for faculty to have competencies around creating inclusive learning environments are paused given recent state laws prohibiting diversity, equity, and inclusion programs and departments (ABET, 2022; Flannery, 2024).

The institutions where we work and live are deeply contextualized and complex systems where power structures often render our collective agency invisible. This momentum and cultural demand for change must be supported to flourish. Utilizing sociotechnical approaches in our course design and classroom settings may help students make connections between what they are learning in technical courses and their innate desire to create change.

Frameworks

Definitions

The first important definition is *institutional betrayal*—this occurs when an institution does not hold itself to its own standards and ultimately causes its constituents harm (Smith & Freyd, 2014). This betrayal, when present in educational institutions, can result in academic trauma if it is persistent or of great magnitude. Institutional betrayal is a symptom of the decontextualization of institutions from their surrounding contexts and communities. We can combat this by positioning students as more valuable than the technology they are learning, modeling the limits of our own expertise as faculty, and by telling stories that emphasize application exploration and our own personal experience of engineering practice (Scheel et al., 2023).

The second important definition is *trauma*. Trauma is “a spontaneous mechanism used by the body to stop or thwart further (or future) potential damage . . . [in] response to an event—or series of events—that it perceives as potentially dangerous” (Menakem, 2017, p. 7). Academic trauma, then, is trauma experienced by the bodies of people in academia, resulting from their experiences in academic spaces, in response to real or perceived threats to their emotional, psychological, physical, physiological, or social safety. This trauma can be acute after a specific event, or chronic after many compounding events.

Engineering Students Deserve To Be Human

Exploring institutional betrayal and academic trauma with respect to engineering education spaces is imperative for the future of engineering. Engineering education must adapt for engineering practice to continue as a respected profession and for students to continue to pursue engineering degrees. Engineering students struggle more with moderate to severe mental illness compared to the general population (Danowitz & Beddoes, 2022). This finding has

permeated the media and popular culture for decades in ways that dismiss the gravity of it. Television shows such as *The Big Bang Theory* and *Young Sheldon* among others poke fun at engineers fervently enough to make it seem like, to be an engineer, you must be different, broken, weird, or an outsider.

Women have comparatively low feelings of belonging in engineering education environments due to “feeling isolated or being one of the few people like themselves in their engineering program” (Campbell-Montalvo et al., 2022, p. 668) and have higher rates of mental distress than their peers of other genders (Danowitz & Beddoes, 2022). Because we, as educators, cannot separate our classrooms from the larger social contexts locally or globally (Calabrese Barton & Tan, 2020), we know the social image of engineers from television shows negatively impacts *all* our engineering students. Similarly, we know feelings of isolation, while higher in women, are not unique to engineering students who identify as women. With these definitions and a constructivist framework as a guide, I have organized the narrative of my academic life and created a restory (Creswell & Poth, 2018) to present a cohesive and chronological contribution that draws from almost 20 years of experience in engineering institutions.

Methodology

In this paper, I apply a subjective and recursive constructivist ontology consistent with ethnography, and a constructivist approach (Creswell & Poth, 2018) to examine my experiences as a White, feminine-presenting, Queer undergraduate student, then graduate student, then instructor. I use a narrative research approach (Creswell & Poth, 2018), to present this autoethnography. My personal stories demonstrate multiple episodes of institutional betrayal. I employ a constructivist lens, because my understanding at the time of the incident and now are

used to provide evidence of how each institutional betrayal scaffolded into academic trauma. I address ways within the narrative that sociotechnical approaches and/or inclusive teaching practices could have alleviated some of this trauma and may yet in the future for others.

Spanning almost 20 years, I demonstrate that exploration, perseverance, and resilience were essential to my success as a woman in STEM. Because collective and individual healing is at the core of institutional transformation (Menakem, 2017), I started by journaling when I saw the special issue solicitation. I then dove into materials from my time as a student to verify timelines and events, and kept journaling. The materials I reviewed included old notebooks, emails, lab reports, and homework assignments. I took notes, made voice memos, and engaged in storytelling with trusted peers to jog my memory and make connections. These materials and my memory became the first draft of the Findings section of this paper.

I applied a recursive process to my primary materials which distilled my narrative to only the most essential pieces of my experience to tell the most authentic truth and relate to the body of knowledge presented in the “Engineering Education: Fostering and Stymying Diversity” section. I have a lot of privilege to have earned three degrees; I have experienced great challenges unique to a feminine-presenting Queer woman in STEM. Within the narrative I point out ways marginalized identities are de-centered and dismissed when pursuing STEM education, and link back to the literature and my own experience to understand what happened and determine what can be done to help future students.

Findings

“Choosing” STEM

My senior year of high school some educational policy changed, and every student suddenly had to declare a major. I was told I could not major in engineering because I had not

taken drafting, so I chose math. I had taken advanced placement (AP) Calculus, Literature, and History so it made sense to choose one of those three options and not delay graduation. I never wanted to go to university. I wanted to get a job and an apartment, live with my best friend, and take a break from academic achievement. My parents insisted I go to college; it was the nonnegotiable next step.

That first paragraph is packed with privilege. The idea that I could just go to university when so many people struggle to pay for applications is wild. But it is important to the story, and how vehemently I ended up somewhere I did not want to be. I had heard stories about college since I was a kid. I was an overachiever and ready for a break. But breaks were not allowed. My father sat me down at a computer and insisted I apply in the spring of 2005 to at least two local universities, and I did. I got in. I soon found myself in a single dorm room (dad insisted, so that no one, not even a roommate, would interrupt my studies). Many students end up at university due to outside influences. In this manner they are already primed to ignore their own self-efficacy, agency, and choice.

My First Term in Electrical Engineering

Ripped away from the only community I knew in the fall of 2005, there I was, stuck in a room without a roommate, a town without a community, a school without a clue. I struggled hard. At the time, it was important to declare a major immediately. The college, like my high school, thrived on categories. Not declaring a major had dire financial consequences. These consequences could be as small as taking one extra term over four years but could also mean taking one, or multiple, years over in different introductory engineering courses. I, almost randomly (except for my math background, my dad, and a grandpa who had worked on submarines in the Navy), declared ECE.

I quickly found myself one of at most four women in classes of over 200 students. These courses had associated labs where I searched for but never found another young woman to work with. I was told by one peer, “No thanks, I would rather work alone” when I asked him to pair up. When I did find someone willing to work with me, I was immediately appointed scribe while they kept their head down over the equipment, silently problem-solving on their own. When I asked the teaching assistants questions, I was generally either made fun of for not knowing the answer or leered at. Sometimes both. My questions were answered with, “Look at your lecture notes,” or “Don’t you see that in the instructions?” Now, as an instructor who trains teaching assistants, I understand those curt responses were likely due to the authority’s own confusion or lack of knowledge and training. If they were trained, it was likely on technical content only, without any mention of empathy, or how to explain concepts multiple ways, or even identify students in distress. As an 18-year-old, isolated by my gender, general confusion, and lack of experience, it was demeaning. I did not see a way to get help or answers to my questions without socializing with teaching assistants or other people in my courses. My bubbly personality in those classes was often “too loud” or a distraction to be ignored, so approaches I had used my entire life were worthless.

F This, I’m Switching to English

I chose another major, this time because I knew I liked writing. It was much more than that. I learned how to think critically, communicate my ideas clearly, and analyze texts in a way that included contexts and nuance. I met professors who took my endeavors seriously and were interested in my squiggly career trajectory and math background. I was still in college (which was, to me, the goal) without sacrificing my sanity and health.

Once I could breathe again, I found a large community in a small town. I discovered the cultural and resource centers on campus, including the Pride Center, the Hattie Redmond Women & Gender Center, the Asian & Pacific Cultural Center, the Lonnie B. Harris Black Cultural Center, the Centro Cultural César Chávez, and the Native American Longhouse (now named the Kaku-Ixt Mana Ina Haws). All these centers were (and are) aimed at building community and supporting student identities. I volunteered at the Pride Center, took facilitation training, and learned there were people working on how to include everyone in certain educational spaces. People did not mind that I was loud. Divergent ideas were encouraged and discussed rather than seen as bucking authority. I would carry these experiences with me in every future educational pursuit.

Graduating Into the Great Recession

In 2009, it was generally accepted that “soft skills” were unnecessary in engineering and thought of as useless pursuits for folks in STEM (Berdanier, 2022; Lopez, 2010), so I started copyediting technical documents and working in food service. It did not take me long to realize I not only wanted to finish my engineering degree, but I needed to. I was tired of odd jobs and copyediting documents. I missed math. Somehow, I still could not see past my preconceived notions that engineering was the answer. I did not even consider accounting, law school, or teaching.

The Post-Bacc Period

Being a postbaccalaureate student is easier in many ways than going to school at 18. Most of my general education requirements were complete, with a few exceptions due to new rules for incoming students. The less strenuous schedule and my years of personal growth allowed me to see degree pursuit for what it is: navigating a complex system. My experiences

were armor, and I was flanked by literary theorists. *How do people know things?*—ask Nietzsche. *How does authority create compliance?*—check out Foucault. In short, I had resources, was ready to use them, and I needed every single one.

Even smarter, wiser, and aware of the environment, I could not keep my experience as a post-bacc student from being riddled with instances of gender discrimination and toxicity. I was less often belittled, because I (a) read instructions thoroughly, (b) leaned hard on the newer and improved internet, and (c) knew to ask my peers rather than speak to the instructional team. And there were more women in the program, which helped immensely. I was nervous about my first term of Electrical Fundamentals, but was full of hope because I saw her. I approached another woman in the course and sheepishly asked if she could help me with the homework. She quietly and kindly agreed to meet with me after class. As soon as it was described to me as applied math, where all I had to do was visually identify variables and then plug and chug, I fell in love. And I mean, to this day, I am obsessed with electrical fundamentals. I became the person people approached for help. Suddenly people were willing to work with me. I went from helpless to helpful, and it was healing.

Starting Over and Gaining a Stalker

I made friends from scratch. I used the resource centers on campus and student social events. I found one engineering student I especially enjoyed studying with, who seemed to understand being an outsider. He shared with me pieces of his identity that were nonstandard in engineering. We spent hours together, coordinated class schedules, worked on projects and assignments, and applied to internships. For anonymity, I will call him Tim. I thought we were cultivating a friendship and each other as future colleagues. I got him to break out of his shell a

bit, and through him I glimpsed what the male-presenting engineering student might think. He sometimes made fun of me when I asked questions, but never cruelly.

A little after a year, Tim started to push my boundaries. He wanted to know everything I was doing. It started to go beyond what classes I planned to take and what events I was attending, and he started to focus on my recreational activities. I tried to keep him at a distance. We both got internships about two hours away from our college town at the same company at the same time. I commiserated with him that a large, older masculine-presenting person in my workgroup called me Trouble, and a younger, masculine-presenting lab manager called me Sunshine. At first, he thought I was upset about Trouble and enjoying Sunshine. I explained that both were inappropriate and made me uncomfortable, that just because something seems like a compliment does not mean it is. I explained that other interns saying I was hired because I am a woman was insulting and that no other interns in our crew had nicknames. Internships, by law, must be educational for students, and I learned a lot—but not about engineering.

One day, he came up to me, emotionally unregulated and livid. He screamed a profanity at me (the one that starts with “f”) while I was sitting in my cubicle. I was seated near my assigned workgroup, surrounded by people whom I hoped to make future references and mentors. My only thought was, “How do I get Tim away from the people I am trying to impress?” Now I remember most how not one person in my workgroup seemed concerned or checked in on the interns, one in distress, the other trapped. No one called him Trouble.

There was no one to report to at the university, so I told Human Resources and spent hours with security telling me how to provide Tim resources. I was on my own again. I tried to distance Tim and detach to a more professional relationship. I had whiplash from how fast it became inappropriate. During this transition, a company-sponsored field trip was scheduled. We

both signed up, and interns were expected to meet the company tour guides at the site. Knowing he assumed I would drive us both, I asked him how he planned to get there. This was my indirect, emotionally immature way of saying I did not want him in my car. I had no idea how to handle the situation. He was visibly upset and said, “I thought you would drive us.” I bent to the pressure to drive him, and the car ride was terrifying. I had and have never seen someone so viscerally angry. He was shaking. His hands were in fists, then shaped as if around someone’s neck, then back to fists. For a 20-minute car ride. I was scared, alone with him, and could barely focus on driving. I spent the rest of the internship focused on setting boundaries with him and did not attend any more intern events.

When we got back to school, I went to the office for equal opportunity and asked to be placed in classes he was not enrolled in. Turns out, the class schedule offered in the engineering program was so tight that there was no wiggle room. I had to choose between taking courses with Tim and graduating or taking another year. My circumstances had not escalated *enough* for intervention. The institution did not protect its constituent.

Work and a Master’s Degree (Online Where He Could Not Find Me)

I graduated in 2015 and immediately started an online master’s degree program. At orientation, we were asked to send our pictures and a brief bio to the program coordinator, so the cohort could be posted on the website. Marketing was crucial because online programs were still quite new. I asked for an exception and have hesitated numerous times since about having an online presence. The repercussions from the institutional betrayal that occurred in my engineering education still impact the choices I make today.

To complete my master’s I took one class at a time and worked as an engineer at the small firm where I had been a copyeditor. Industry is not the focus of this paper, but there is one

stark example from my professional experience that demonstrates that although STEM fields have become safer, they are not yet safe for feminine-presenting women and folks who embody gender on a spectrum. Working as an optical engineer, I deployed systems for field tests in very remote locations. I worked on teams with men accustomed to urinating at will on the ground (in the open) while I had to choose between purchasing incontinence management tools or being so dehydrated I could barely focus because there were no facilities and no hills or obstacles to hide behind.

Teaching to Save Lives

Traveling for work became difficult when I had my first child. With a master's degree, I knew I could teach. I got a part-time job at a local community college. In March 2020, I quickly pivoted online. I learned how to use Zoom and that my students needed much more support than remote instruction. That fall I started teaching full time in my current position. I taught capstone; seniors *so close* to graduation. The first students I taught were terrified. What was expected of them? Did they have to go to campus? Was it safe? Did they have to disclose underlying conditions? Some students were willing to risk infection to stay on track for graduation. Others did not believe the virus existed. The experience showed me the resilience of students in times of crisis and honed my skills as a mandatory reporter. It was a new, interesting, and exhaustive process that strengthened my resolve to advocate for student agency and engagement. I worked closely with the student support services personnel to make sure my students were supported through this unprecedented environment on their path to graduation. A large amount of institutional effort and commitment went into ensuring students had access to resources and tools, and I got a glimpse at what can occur when a common mission unites educators. It instilled in me a sense that this institution could be trusted.

Although the circumstances limited my ability to complete professional development activities such as attending or presenting at conferences, the experience made me a better person and a better teacher. It made me obsessed with accessibility and reminded me that “include” is a verb. After an exhausting, traumatizing academic year and a shaky second, when I was not two full years into my position, I experienced my first institutional betrayal as a teacher.

I walked right into it. Speaking with a hiring manager, I shared that I enjoyed teaching introductory courses and representing as a woman in ECE. He replied, “Well, yeah, that’s why I hired you.” Because I could see no safe way to reply, I responded, “Surely there were many reasons . . .” and paused. “No,” he said, “I hired you because you are a woman.” I went on automatic. I finished the meeting, told a colleague, contacted the union, and fought to keep going, keep teaching. It did not matter that I had the degrees, that I had won a teaching award my first year as a full time instructor—the crushing weight of those words, “I hired you because you are a woman,” echoed in my head. It brought it all back.

“No thanks, I would rather work alone.”

“Hey Trouble!”

The colleague I told was flabbergasted. The union said the comment was actionable, but it would be a long drawn-out process and involve lawyers. I kept my head down (typical ECE behavior), determined to succeed. Not long after the caustic comment, I was told to teach two classes where one hour of the weekly lectures overlapped. I was tasked with teaching at the same time in two separate locations and had less than a 10-week term to prepare. One was not even in ECE. I was told there was no other option than for me to help the team. I kept my head down again. I see now that this was a reactive and autonomic response. I was afraid to lose my job. I was afraid to say “No” and put it back on management to find another instructor or cancel one of

the courses. After months of prepping course content hours ahead of delivering it, planning and recording asynchronous lectures, and coordinating guest lecturers and graduate student support for two conflicting classes, I got physically ill. It took me a calendar year to recover, and I have learned to have better boundaries and work-life balance. This example of institutional betrayal, when the administration was willing to put an employee under that much stress, is the cruelest of my career. I must take responsibility for agreeing to teach two courses with a time conflict. And yet I will always regret conceding to this visceral example of stripping engineering education from its human and social elements. The values incorporated in education are implemented in practice and we need to do better.

Discussion

If we want to reignite innovation and passion, we have to rehumanize work. When shame becomes a management style, engagement dies. When failure is not an option we can forget about learning, creativity, and innovation.

Brené Brown, from *Daring Greatly*

In my professional experience, work has never been humanized. I am eager to go into my qualifications here. I want to describe how I had experience pivoting to remote instruction mere days before the COVID-19 shutdown was announced. I want to illustrate how portable my skillset from industry and how my strict interpretation of engineering ethics allowed me to hold the line of academic honesty in a virtual classroom setting. I want to prove I was worth hiring, even though I have been teaching for four years and have consistently had excellent evaluations. Even though I just got promoted. Even though I have been nominated for and received awards. I want to perform, perform, perform. And justify, justify, justify, on purely technical merit, why I am worthy of the role.

Writing about these experiences was difficult. At times I fell back into patterns and expectations of myself that emerge unwanted. For example, in the section, “Starting Over and Gaining a Stalker,” I wrote and then deleted, “Writing about the context around this incident makes me proud of my attempts to keep peace, despite my activated lizard brain.” Not only is this untrue, but it is also the antithesis of my stance. I am not a peacemaker. *If connecting students to their scholastic work can improve retention and feelings of belonging, isn’t it likely that faculty from marginalized communities might experience belonging and stay in jobs where they feel personally connected to their work?* So, this is my work. Write the narrative, be authentic, and hope it helps someone. I am writing this paper because I have started coursework toward a PhD in STEM education and continue to see symptoms of institutional betrayal. For me, this research is absolutely personal.

The expectation of women to be peacemakers; to get closer than necessary to their peers, professors, or supervisors; and to carry the mental and emotional load of being othered in STEM fields is a social justice issue in academic and industry spaces. Almost 20 years after first attending university, I am on a team that develops curriculum and supports faculty teaching introductory courses for first-year students. In the program, students are not permitted to declare a major until after their first full year of courses. This allows students the freedom to discover a major rather than be forced to choose without context or experience (Montfort et al., 2023). I cannot fathom where I would be now had the institution encouraged and enforced this flexibility when I started college (the first time). As educators, we want to ensure any invisible, autonomic stress responses from our institutions stop harming our students and ourselves. It will take practice and continued use of the “powerful weapon” that is refusing privilege (Preston, 2013, p. 103) to converse about dismantling institutional habits. The first step in this process is our

individual work to unpack the myriad ways the academy has impacted our bodies and minds as educators and decision makers.

Conclusion

The events outlined in this paper demonstrate examples of barriers to my own attempt at getting a STEM education. Limited career planning, unavailable lab partners and study buddies, unempathetic peers, disinterested teachers, and a lack of knowledge surrounding available resources compounded to yield a complete failure to launch. I can only surmise the hiring manager thought he was paying me a compliment when he told me I was only hired because I am a woman. That moment reinforced a deeply held lived experience of unworthiness and isolation. I chose to submit this paper because it makes visible an issue I know permeates academia: we need to notice and speak out against the absence of institutional trustworthiness. If faculty do not feel safe, how can students? Shame is one of the most powerful tools that keeps people from disclosing victimhood for fear of further harm or repercussions (Ferguson, 2005). I want future students who feel as I did to have a foundation upon which to stand and advocate for themselves. I want future students to know they can come talk to me about this stuff.

We must disrupt the othering in engineering education, both as students grappling with rigorous and enriching ideas and as faculty who give voice and intention to social justice in engineering classes. Students should be encouraged to build on everything we have to offer—our technical expertise and our humanity. I want my students to design robots, not become robots. These experiences have shaped my view of who I am and what I do. It is impossible to separate the sociocultural from the technical. I have tried; it is impossible. Social impacts permeate every aspect of my experience as an engineer. I have worked hard to carve out my personality, perspective, and ponderings to resemble the engineering norm. Two decades later, I am still

finding and revising ticks from my time(s) as a student that I must unpack and unlearn. I am, continuously and diligently, holding myself to a higher standard of understanding myself, my work, and my students.

For me, this means advocating for engineering education to evolve, to be designed based on the idea that students are whole humans experiencing complex challenges that will hone their sociotechnical skills, support their educational experience, and facilitate their transition to industry or higher education.

The practice of drafting this paper has been hard, upwelling unwelcome memories. I have acknowledged and let them go. Feelings about being excluded and ostracized are stored in a small corner of my cerebellum, part of me but not all. By writing this paper, I have freed up mental and emotional space to advocate for my students and give them specific, actionable steps to accomplish their goals. It will not be difficult, eventually, to teach sociotechnical material once the intentional separation of them is undermined. This paper is a step in that direction. In a social system where productivity is valued over compassion, teaching is a vocation where who we are matters more than what we know (Palmer, 2010). My job must include working against systems of oppression for the betterment of society and the engineering profession because of who I am.

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Ingrid Scheel teaches Electrical and Computer Engineering at Oregon State University. As an instructor she uses experiential methods that incorporate and improve best practices through an engineering lens. Her work includes project course design, curriculum development, program assessment, sensor and system design, prototype development and deployment, instrumentation, data acquisition and analysis, and reporting. She promotes equity and belonging in the classroom and workplace. Scheel volunteers for organizations including but not limited to: ChickTech, Tech Trek, Willamette Innovator's Network, InnovationX, Redefining Women in Tech, and the Society of Women Engineers. She is a past President of Optica/the Optical Society of America, Columbia Section, and contributes to the International Society for Optics and Photonics (SPIE) as a conference chair, editor, and author. She has twelve publicly available papers through SPIE and the American Society for Engineering Education (ASEE) and has presented at closed conferences such as the Joint Army Navy NASA Air Force (JANNAF).