



Engineer, Asian, and Gay AF: Counterstory as Means for Methodological Activism and Intersectional Healing in Engineering Education

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RESEARCH

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ABSTRACT

Background: Recent calls for methodological activism have highlighted the need for new methodologies that empower marginalized students for social change. However, what these methodologies may look like in practice remains unclear.

Purpose: This paper presents counterstory as one activist methodology that responds to the call for methodological activism. Counterstory both addresses the complexities of intersectional oppressions within multiply marginalized students' lives and provides avenues for theorizing about resistance, (re)affirmation, restoration, joy, and healing from traumas of oppression for marginalized engineering students to achieve liberation.

Method: To demonstrate counterstory in action, I construct an autoethnographic counterstory in short story format based on my lived experiences as a gay, Asian-American doctoral engineering student.

Results: I showcase how counterstory operates to challenge dominant discourses about spaces and identities, highlighting how unique modes of intersectional erasure, resistance, and healing can be elicited from the construction of counterstories.

Conclusions: Counterstory provides engineering education researchers with a critical methodological framework to continue unpacking systems of oppression in engineering while (re)centering marginalized student voices, agency, resistance, healing, and joy in academic literature. I provide ways for researchers and practitioners to use counterstory to work alongside marginalized students to fight for social justice.

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INTRODUCTION

Recent equity-based scholarship in engineering education has called for new modes of research problem generation, theorization, and methodology to challenge existing power structures in engineering education research (Martin et al., 2022; Mejia et al., 2018). While current research practices attempt to address the complexities of identity and power in engineering, without alternative methodologies, researchers risk reproducing existing hegemonic knowledge practices that constrain equity research. In particular, Martin et al. have called for *methodological activism* in engineering education research: intentionally developing alternative “research methods [that] are purposefully used to empower marginalized populations and enact social change” (2022, p. 81). This call raises the question, “What do activist methodologies look like?” In this paper, I introduce counterstory as one activist methodology that empowers marginalized students for social change.

Counterstory resituates marginalized student experiences at the center of equity-based discourse (Delgado, 1989; Delgado & Stefancic, 2001; Solórzano & Yosso, 2002). Counterstorytelling, a liberatory practice with roots in Critical Race Theory and queer Black feminist scholarship, seeks to reveal hegemonic, interlocking systems of oppression by showcasing the rich narratives, meaning-making, and lived experiences of those at the margins. As a holistic methodology that can utilize a range of methods, counterstory engages with theories of intersectionality to complexify intersections between privilege, power, and oppression and provide a path toward intersectional healing.

In this paper, I first make a case for counterstory work in engineering education, outlining extant epistemic and methodological challenges in exploring marginalized student experiences in the discipline. I then demonstrate an application of counterstory methodology to study the research question, “How do multiple engineering, queer, racial, and gender identities intersect to create unique lived experiences?” I apply autoethnographic counterstory methods to explore my own experiences inhabiting the intersection of engineering, queer, Asian-American, and doctoral student identities. Using the medium of short story, I showcase the restorative power of counterstory in my own journey of intersectional erasure and healing as a gay Asian-American engineering doctoral student. By engaging in counterstory, researchers and practitioners can position their praxis to fight alongside students toward transformative change.

BACKGROUND: COUNTERSTORY, METHODOLOGICAL ACTIVISM, AND INTERSECTIONALITY

COUNTERSTORY: A METHODOLOGICAL ORIENTATION

Storytelling has been used to transmit human knowledge for millennia. Historically, marginalized populations have used narrative storytelling as a means of survival and a weapon to fight against oppressors (Delgado, 1989). While others have explored narrative theory in engineering education (Martin & Garza, 2020; Secules et al., 2018; Sochacka et al., 2021), I forefront the Critical Race Methodology of *counterstorytelling* due to its prior use as a method for critique and liberation in education (Delgado & Stefancic, 2001; Martin & Garza, 2020; Solórzano & Yosso, 2002). While counterstory engages a broad set of epistemic and ontological foundations, theoretical and analytical frameworks, and methodological practices, as briefly discussed below, I focus on methodology in this paper to highlight its activist possibilities.

Counterstory and *counterstorytelling* are the processes, practices, and products of sharing the lived experiences of marginalized individuals, groups, or communities, often with the goal of challenging a dominant story. *Dominant stories* are the hegemonic discourses that enable, constrain, and constitute the societal status quo, exercising their power to push alternative stories to the margins (Storey, 2015). In engineering education, dominant stories produce specific images of who can become engineers—particularly young, White, single men (Leyva et al., 2022; Pawley, 2019; Rohde et al., 2020). Furthermore, dominant stories around competition, economy, depoliticization, techno-social dualism, and meritocracy reify engineering as impersonal, suppressing contributions of marginalized people to the broader narrative of scientific progress (Cech, 2014; Sochacka et al.,

2021). These dominant stories disproportionately impact students with identities not within the “ideal engineering student,” creating hostile environments, restricting access to institutional resources, and undervaluing the rich experiences that marginalized students bring to engineering (Pawley, 2019). While counterstories are not always constructed in opposition to a dominant story, counterstories often highlight contradictions in dominant stories to challenge dominant power structures and critique systems of oppression. I deliberately use terms such as “systems of oppression” to remind readers that macrosociopolitical processes including racism, sexism, homophobia, and ableism manifest within engineering in unique ways (Pawley, 2019).

According to Solórzano and Yosso (2002), counterstories serve at least four key epistemic, theoretical, methodological, and pedagogical functions:

1. They center the subjective lived experiences of marginalized peoples as epistemic truth, constructing and conveying liberatory possibilities across time and space to others.
2. They challenge dominant social structures through critique, giving language, discourse, and context to understand systems of oppression.
3. They build community among those at the margins by identifying others within the academic space who share similar experiences or stand in solidarity with them.
4. They illustrate new possibilities for collective healing, resistance, joy, futurism, utopia, and liberation.

Solórzano and Yosso’s four functions point to two key ideas. First, counterstory centers marginalized student experiences to unpack the ways dominant stories operate. Previous work on dominant stories have shown that they render oppressive systems invisible because they *do not need to be told*—they are the current status quo (Sochacka et al., 2021). Counterstories need to be told to resist dominant stories and highlight how the status quo marginalizes oppressed voices. Second, unlike other narrative theories that may derive from rhetoric or policy analysis and focus on unpacking dominant stories, counterstory leverages its grounding in marginalized experiences and unique histories in marginalized communities to chart a path toward healing (hooks, 1994). I discuss counterstory’s healing power in the third subsection of the Background section.

Counterstory, as a critical methodology, often runs counter to “mainstream” engineering education research in its guiding paradigms. Higher education scholars have identified several paradigms upon which (engineering) education and social science theories are constructed (Burrell & Morgan, 1979; Milam, 1991). Functionalism, the most prevalent paradigm in engineering education research, promotes a singular, objective reality and an incremental view of change, where theoretical frameworks largely seek to make progress by “small tweaks” which ultimately do not disturb the static status quo. This approach is the dominant paradigm in engineering education because it is compatible with engineering itself: as a discipline rooted in beliefs of a singular, objective, static reality and knowable truth (Slaton, 2010), engineering can more readily adopt the work of engineering education when they share similar epistemic bases.

In contrast, counterstory derives from a rich history of critical perspectives centered around political activism aimed at uplifting marginalized communities. Critical perspectives embrace a sociology of radical change centered on destabilizing the societal status quo, rejects an objective reality or singular truth, and centers marginalized communities and people’s lived experiences as epistemic truth. For example, critical perspectives assert that invisible, intangible, immaterial institution structures and systems can cause direct, material, tangible harm to marginalized communities through policies that target them (Delgado & Stefancic, 2001). This approach is antithetical to engineering, as it challenges the dominant belief that engineering is an apolitical, meritocratic institution unmarred by societal problems (Cech, 2014; Slaton, 2010). Critical methods like counterstory present different paradigms through which engineering, and engineering education, can both recognize the sociopolitical systems of oppression that are embedded within engineering and envision new institutions that utilize engineering to create a more equitable and just world.

Equity-centered engineering education research scholars have identified methodology as a key locale for challenging power structures when working with marginalized students. In particular, scholars have described several critiques of extant equity-centered research (Martin et al., 2022; Pawley, 2019).

First, some scholars have identified the researcher-participant hierarchy as a power structure endemic to equity-centered research and appears in different forms (Martin et al., 2022). Researchers exercise power over marginalized students throughout the entire research process, from their interactions to interpretation and representation of student experiences in academic literature (Holly Jr., 2021; Martin & Garza, 2020). Reckoning with systems of institutional oppression often requires participants to relive traumas associated with their marginalization, particularly when it is done at the behest of a researcher for professional gain (Martin & Garza, 2020). Furthermore, researchers have the power to craft marginalized student voices into succinct narratives that fit particular themes, creating an additional barrier between students and researchers and perpetuating the marginalization of minoritized voices in the academy (Kellam & Jennings, 2021; Secules et al., 2021).

Second, previous equity-centered engineering education research has primarily focused on identifying identity categories labeled as “marginalized” and constructing methods around those identities—for example, examining Black women engineering students or queer disabled women of color. Two problems arise from this approach. First, it reifies identities themselves as stable, tangible, and material rather than socially constructed and assumes every person fits neatly into labeled categories. Second, it leads to a slippery-slope paradigm in which researchers continue to elicit ever-smaller intersections of identities upon which to focus without considering the macrosociopolitical structures that fuel their marginalization (Delgado, 2011; Gillborn, 2015).

Third, equity-centered scholars have begun to argue for “small-n research” as a means for unpacking the oppressive power relations that impact marginalized students. With engineering education’s preference for generalizability and large sample sizes, marginalized groups by definition are pushed out of the dominant academic discourse since their populations are considered too small to be statistically significant (Riley, 2017; Slaton & Pawley, 2018). Slaton and Pawley argue that “small-n” research is needed to recenter marginalized student needs in policymaking and redress the persistent inequities that are ignored by default (2018).

These critiques have guided the call for methodological activism (Martin et al., 2022, p. 81). Based on Solórzano and Yosso’s (2002) functions of counterstory, counterstory can be used to situate research methods in empowering epistemologies. In this work, I operationalize empowerment as a reclamation of power from oppressive institutions by marginalized people. Counterstory methodology empowers marginalized students to *define their own counternarratives*—laying out their own frameworks, perspectives, and politics emergent from their lived experiences, histories, and wisdom without filters of researcher-participant power dynamics or dominant norms of academia. By constructing their own counterstories of engineering, marginalized students can “theorize from the flesh”: theorize about how “the physical realities of our lives—our skin color, the land or concrete we grew up on, our sexual longings—all fuse to create a politic of necessity” (Moraga & Anzaldúa, 1981, p. 23). This radical conscious reflexivity and subsequent theory generation creates avenues for marginalized students in engineering to speak truth to power structures within engineering and (re)claim their voice, agency, humanity, and politics within a White, cisheteropatriarchal institution (Martin & Garza, 2020; Secules et al., 2018). Through the counterstory process, they can marshal their lived experiences to theorize for healing, creating new modes of personal and collective meaning-making that allow them to reckon with the traumas they have faced at the hands of oppressive power structures (hooks, 1994; Solórzano & Yosso, 2002).

Within education literature, counterstories have appeared in a variety of forms such as allegorical short stories (Harper, 2009; Martinez, 2013), vignettes (Delgado, 1989; Jones et al., 2021), qualitative interviews (Gildersleeve et al., 2011), (auto)ethnography (Cross et al., 2022), and

testimonio (Mejia et al., 2022). In engineering education, studies have used counterstory with other critical frameworks to present minoritization, theorization, and resistance experiences of marginalized students and teachers (Cross et al., 2022; Martin & Garza, 2020; Mejia et al., 2022; Nazar et al., 2019; Secules et al., 2018; Shin et al., 2016; Verdín, 2020). These works function as counterstories because they explicitly center marginalized people's lived experiences, identify dominant narratives and how they cause material harm to marginalized people, reveal the invisible ways institutional structures work to maintain systems of oppression for the benefit of people in power, and take an activist stance toward enacting social change (Mayotte & Kiefer, 2018). While counterstories can appear in a variety of formats, not all qualitative or narrative studies with marginalized people are counterstories, as they may focus only on individual or interactional processes rather than connecting them to broader systems. Delineating counterstory's boundaries in terms of its activist roots opens the possibility for counterstory work to support social justice work, particularly within academic institutions.

COUNTERSTORY AND INTERSECTIONALITY

Given its focus on holistic lived experiences, counterstory draws additional power from intersectionality. *Intersectionality*, broadly defined, is a framework that asserts that people with multiply marginalized identities experience oppression not just as the sum of all their marginalized identities, but as a unique product of the interlocking oppressions associated with those identities, therefore giving each individual a unique experience of marginalization (Crenshaw, 1989). While Crenshaw was the first academic to coin the term, intersectional critiques of oppression existed long before Crenshaw in activist forms such as the Combahee River Collective (1977). In the past thirty years, intersectionality has become mainstream in education research and, to a lesser extent, engineering education research in discussions of multiply marginalized students (Moore et al., 2021).

For this paper, I use intersectionality as a call to action to acknowledge multiply marginalized individuals on their own terms, recognizing and validating them as whole people with complex relationships to privilege and oppression rather than the product of identity categories or positions of privilege/marginality (Collins & Bilge, 2016; Delgado, 2011; Erevelles & Minear, 2010; Harris & Patton, 2019; Yang, 2023). This unique definition combines previous scholarly work on intersectionality with its roots in Black feminist activism and serves two purposes. First, it calls for the destabilization of identity categories, thereby enabling holistic approaches to understanding how both privilege and oppression shape lived experience. It is impossible (nor productive) to list every privileged or oppressed identity that an individual has. By instead focusing on the salient privileges/oppressions that certain identities afford an individual, intersectionality retains its focus on the nuanced ways systems of oppressions interlock rather than hypervisibilizing multiply marginalized individuals. Second, it positions multiply marginalized students not as defined by their identities, but as embedded within broader systems of oppression that marshal identity categories to divide and obscure the ways in which such systems work.

Intersectionality gives counterstory an analytical heuristic through which the nuanced intersections of identity, privilege, and marginalization are illuminated through lived experience. Intersectionality highlights and validates the uniqueness of holistic experiences at the intersection of one's identities. Queer Black feminist scholar Audre Lorde writes,

As a Black lesbian feminist comfortable with the many different ingredients of my identity, and a woman committed to racial and sexual freedom from oppression, I find I am constantly being encouraged to pluck out some one aspect of myself and present this as the meaningful whole, eclipsing or denying the other parts of self. But this is a destructive and fragmenting way to live. My fullest concentration of energy is available to me only when I integrate all the parts of who I am, openly, allowing power from particular sources of my living to flow back and forth freely through all my different selves, without the restrictions of externally imposed definition. Only then can I bring myself and my energies as a whole to the service of those struggles which I embrace as part of my living (Lorde, 1984, pp. 120–121).

Combined with intersectionality, counterstory embraces the holistic messiness of identity and empowers individuals to exercise their freedom to express all their full, authentic, multiplicative selves and speak to all the intersectional systems of oppression they may face (Lorde, 1984). Intersectionality uplifts all the parts of an individual, allowing them to express themselves “without the restrictions of externally imposed definition” (Lorde, 1984, pp. 120–121). This additional heuristic embedded in counterstory methodology further develops counterstory’s roles in centering marginalized subjectivities and developing powerful language to speak to traumas from unique experiences at the intersection of multiple interlocking oppressions (Solórzano & Yosso, 2002). This language is crucial for theorizing for *intersectional healing*—the unique storytelling and healing that multiply marginalized students must undertake due to traumas from their intersectional oppressions.

CURRENT STUDY: MULTIPLE DIMENSIONS OF ENGINEERING, RACE, AND QUEERNESS

To demonstrate counterstory in action, I ask the research question, “How do multiple engineering, queer, racial, and gender identities intersect to create unique lived experiences?” I use a study of my own experiences as a gay Asian-American engineering doctoral student.

Previous work has found that LGBTQIA+ engineering students and professionals experience a cis-heteronormative, chilly climate in engineering (Cech & Rothwell, 2018; Cech & Waidzun, 2011, 2022; B. Hughes, 2017; Yang, Sherard, et al., 2021a, 2021b). *Cis-heteronormativity* is defined as the dominant cultural assumptions that normalize heterosexuality and the male-female gender binary and stabilize traditional conceptions of sex, gender, and sexuality. Cis-heteronormativity contributes to a culture of silence, where engineering culture demands queer students suppress their authentic selves in interactions (B. Hughes, 2017). Cis-heteronormativity and the culture of silence build a dominant narrative that tell both non-queer and queer engineering students that minoritized students of sexual and gender identity do not belong in engineering.

Asians and Asian-Americans also occupy a unique position in engineering. While they are classified as a racial minority in the United States at large, Asian and Asian-American students are significantly overrepresented in STEM fields compared to the general populace (National Science Board, 2022). Overrepresentation affords some privilege to Asian-American students; however, Asian-American racialization in engineering takes unique forms through the model minority and overachiever stereotypes, which prove harmful for Asian-American engineering students (McGee, 2018; Trytten et al., 2012; Yang et al., 2023). These stereotypes embody some of the dominant racial narratives surrounding Asian achievement in engineering disciplines.

With this study, I seek to complexify cis-heteronormativity and racial narratives through my narrated lived experiences in engineering and queer spaces and how marginalization existed in both. Attending to the ways my multiply marginalized identities give rise to intersectional erasure in both engineering and non-engineering spaces, we can unpack the dominant narratives surrounding engineering identity, queerness, race, and privilege in engineering and how I have begun the process of intersectional healing.

METHODS

As a critical methodology, counterstory differs from traditional engineering education research methods and approaches. Solórzano and Yosso describe three main forms of counterstory work: personal narrative, other people’s narrative, and composite narrative. In particular, personal narrative juxtaposes personal experiences with academic literature, centering personal lived experiences as “data” to be narrated and explored (Solórzano & Yosso, 2002, p. 32). I selected personal narrative for this paper due to my unique positionality in the engineering academy at the intersection of several privileged and marginalized identities. In this section, I discuss how I developed my counterstory, some research quality considerations in crafting and evaluating counterstories, and some limitations of this work.

COUNTERSTORY DEVELOPMENT

This project originated from a set of conversations between me and two graduate student colleagues for a narrative inquiry project. For that project, we held three two-hour-long audio and video-recorded unstructured conversations to elicit our experiences as queer graduate students in engineering and engineering education. While rewatching the recordings, I took notes documenting my own personal reactions to the dialogue that occurred on-screen. These notes served as the basis from which I determined key “epiphanies” that led me to being a gay engineer (Ellis et al., 2011; Martin & Garza, 2020). I then wrote an autobiographical life-story documenting my experiences, focusing primarily on a chronological retelling (Titon, 1980). Based on dialogues with various colleagues and advisors, I crafted an autobiography from the life-story comparing my experiences in engineering versus queer spaces, extracting the portions of the life-story I thought were most relevant to the comparison.

While my autobiography was rich, it was long, and condensing it meant losing much of the intimate, affective nuances and subtleties of my lived experiences. As a result, I reformulated my experiences into an immersive yet readable short story. The fictional short story format enabled me to leverage structural, stylistic, discursive, and narrative literary elements such as metaphor to provide a compact, rich description of my experiences at textual and subtextual levels (R. Hughes & Giles, 2010; Polkinghorne, 1995). This presentation format has been used in previous counterstory work to provide rich, multilayered, affective descriptions of the material impacts of racism in the academy (Harper, 2009; R. Hughes & Giles, 2010; Martinez, 2013).

COUNTERSTORY ANALYSIS: CRIT WALKING

I apply the analytical method of CRIT walking to analyze my counterstory. Developed by Hughes and Giles in 2010 to give method to Critical Race Theory, CRIT walking acknowledges how social justice scholars often must “consciously gaze across academic disciplines for scholars that inform their work” and “chart new theoretical journeys” from the painful lived experiences of marginalization (2010, pp. 41–42). Cann & McCloskey argue that CRIT walking seeks to “cull what is relevant and useful [from other academic disciplines], liberating researchers from traditional positivist research that often maintains the hegemony of privileges and white supremacy that abound in academia” (2017, p. 74). In practice, CRIT walking draws upon multiple bodies of academic scholarship to strategically deconstruct institutional norms, policies, and practices to reveal the intersections of power, privilege, and praxis with systems of oppression.

CRIT walking is uniquely positioned as an analytical method of counterstory. As Hughes and Giles (2010) describe, while counterstory provides “thick” description of experiences and interpretation of human actions through allegory and metaphor, CRIT walking bares the bones behind counterstory’s literary craft to showcase its material relevance to academic and activist settings. Especially in creative works, such as this short story, structure, content, and discursive choices may indirectly communicate information about the systems and institutions being explored (Harper, 2009; Hart, 2021; Martinez, 2013). In this piece, I use CRIT walking to deconstruct the literary elements embedded in my counterstory. I draw upon engineering education, queer studies, and critical race studies simultaneously to unpack how microinteractions connect to macrosociopolitical systems of oppression. With CRIT walking, I synthesize both theory and reflexivity to forefront the materiality of counterstory methodology.

RESEARCH QUALITY

Because counterstory can be constructed in many formats, identifying clear tenets of research quality for counterstory is difficult. Since my short story draws on autoethnographic work, I employ the research quality considerations of autoethnography as described in Martin & Garza (2020). I summarize how I ensured research quality in Table 1.

QUALITY CRITERION	APPLICATION IN THIS WORK
Reflexivity	Inclusion of first-person positionality statement that highlights my privileges and oppressions due to my position and roles in academia (Secules et al., 2021; Walther et al., 2013)
Substantial Contribution	Drawing upon relevant academic literature across multiple disciplines and tying personal experiences to literature Exemplifying how counterstory can be utilized in engineering education through methodological activism (Martin et al., 2022)
Aesthetic Merit	Drawing on literary and story craft to create an immersive experience for the reader (Ellis et al., 2011; Polkinghorne, 1995) Employing intentional subtextual stylistic and literary choices to stimulate certain affects within the audience (Polkinghorne, 1995)
Impact	Incorporated feedback from many friends, advisors, and colleagues from variety of (queer and non-queer, academic and non-academic, engineering and non-engineering) backgrounds Discussed relevant implications for engineering education research and praxis
Expression of Reality	Ensured that narrative was consistently grounded in realm of believability and free of plot holes
Relational Ethics	Ensured that real-life people who became characters gave explicit permission to be included in the story where possible Ensured that real settings contained only necessary details to protect real people

Table 1 Short Story Quality Criteria.

LIMITATIONS

Due to the personal nature of this work, I do not purport to speak to the experiences of all marginalized people or represent anyone else besides myself. However, I hope that the stories presented here give pathways for other marginalized people in engineering to connect, build community, theorize, and envision futures together.

In addition, because I am situated in the United States and largely inhabit a Western, Anglocentric cultural context, cultural meanings and subtextual references may be lost in translation to other cultures. Oppressions related to race, gender identity, and sexuality may significantly differ outside the United States, and how to communicate across cultural boundaries, particularly transnational and transcultural boundaries, must be explored further. This may have significant implications for understanding the impact of engineering on oppressions of colonized peoples across the world through counterstory.

I note two other limitations of counterstory as a methodology. Counterstory is primarily a discursive method. While it can present rich descriptions of experiences that can motivate action, it by itself cannot transform institutions. It calls upon researchers and participants to actively work against systems of oppression embedded within their local institutions. I discuss how to do this in the Recommendations section.

As a critical methodology, counterstory can be misinterpreted and co-opted by those who tell dominant narratives to reinforce systemic oppressions. Processes of co-optation and misinterpretation have been observed for intersectionality (Collins & Bilge, 2016; Delgado, 2011; Harris & Patton, 2019). While there have not been instances of counterstory's use outside of critical contexts, it is important to guard counterstory against such co-optation. The co-optation of counterstory may look like upper-class Asian-Americans, a minoritized group with political power, creating publicity campaigns seeking to restrict affirmative action for all racial groups despite its primary use as racial redress in higher education institutions (Kim, 2018; Poon et al., 2019). In this case, upper-class Asian-Americans present a counterstory to the dominant story that affirmative action benefits marginalized communities, arguing that they are targeted in an affirmative action system, whereas equity scholars argue maintain that affirmative action is necessary to redress the effects of a White-centered education system. It is important for those engaging in equity work to defend counterstory from being used to reify systems of oppression.

POSITIONALITY

I identify as an able-bodied, cisgender, straight-passing gay Asian American engineering graduate student strongly interested in pursuing engineering academia as my future career. At the time of this writing, I am a second-year PhD student in electrical engineering and first-year master's student in education at Stanford University. This counterstory focuses on the identities most salient to my lived experiences (i.e., my profession, race, gender identity, and sexuality), leaving many other identities, privileged and non-privileged, out of the story. This includes my privilege as a domestic US citizen and 1.5-generation status, which impacts the resources I can access and the social and institutional venues I can inhabit. In addition, I grew up well-assimilated into American culture, with English my only language. I have never had any overtly hostile experiences due to my personal (read: race, gender, sexual, etc.) identities. The identities I leave out in this story reflect how privilege allows me to exist within the engineering status quo, without the friction or tensions that I experience through my race, gender identity, and sexuality.

I come to this work identifying as a critical scholar and marginalized student “me-searcher” whose research and epistemology is driven by structural critique of engineering education and the desire to make radical change. In my work, I seek to center the voices of students from marginalized backgrounds as epistemic truth as they forge pathways through engineering, which has guided the critical orientation of this paper. In applying intersectionality, a Black feminist theory, to engineering education, I acknowledge that I am not Black; I utilize these theories because they have resonated with me epistemically, and I seek to find points of coalition and solidarity with Black communities stemming from collective experiences of marginality.

A NOTE ON LANGUAGE

I use “gay” specifically to refer to my personal sexual identity, whereas I use “queer” as an umbrella term to refer to the general community of people who share minoritized identities of sexuality and gender (e.g., queer people) or as a general LGBTQIA+-centric descriptor (e.g., queer social events). This choice is in part due to convenience and in part due to how I see queerness as a political construct. First, there is no one term that can truly capture the sheer diversity of gender and sexual identities, and queer languages are constantly evolving as queer people create new ways to describe their experiences. Second, queerness, as I understand it, is more than just an identity label: it is a personal and political way of embodiment and life that seeks to actively disrupt structures, institutions, and politics to liberate queer people (Lorde, 1984; Somerville, 2020). While there are many valid critiques against the term as a slur, many now see “queer” as a reclaimed term (Somerville, 2020). As such, to respect queerness and give it its due importance in my narrative, I do not use “queer” to refer to myself.

I purposefully use colloquial language and occasional slang throughout my counterstory and in some locations in the Discussion section. Formal academic language differs significantly from that of informal communication, and I deliberately employ a colloquial tone in my counterstory to create a more realistic, authentic experience for the reader. The informal language I use, including slang, more accurately represents how I think internally and communicate interpersonally in my daily life and thus forms one component of my lived experiences. I refer the reader to the Notes section for definitions of slang terms. I also note that linguistic norms differ between academic fields: compared to engineering education, queer and critical studies, particularly narrative work, tend to adopt a more casual, person-oriented tone (Becher, 1994; Hyland, 2004, 2008). This difference is reflected in the Discussion section as I CRiT walk through different academic disciplines and engage with each discipline's respective norms of communication.

COUNTERSTORY: JUST ONE OF THE GAYS?

CENTERING THE SPACE: HOW TO READ THIS COUNTERSTORY

Due to its unique form of knowledge presentation, counterstory requires a different set of reading practices from traditional academic articles. Unlike traditional academic findings, which often distill experiences into discrete ideas, counterstories as “data” are imbued with multiple layers

of meaning-making and information (R. Hughes & Giles, 2010). While it is not necessary to have expertise in literary theory to interpret counterstory work, it is important for the reader to be attuned to the implicit stylistic, structural, and discursive details embedded in counterstories—these elements may provide additional context, setting, or even internal affects that color the corpus of data presented (Shklovsky, 2015). Thus, I ask readers to come on this narrative journey with me: part of the counterstory’s findings reside in the implicit affective modes of discontent and lack of belonging that I will narrate.

I also remind the reader that this counterstory is intended to present findings from my autoethnographic study about how intersections of my engineering, gay, Asian-American, and doctoral student identities manifest in my lived experiences. The story does contain some sexually explicit content, which is necessary to fully characterize the queer spaces I inhabit. As will be discussed in the Discussion, queer social spaces, particularly nightclubs, are often sites of hypersexualization, sexual stereotypes, and highly sexual(ized) performances as forms of queer sociality and identity affirmation (Green, 2011, 2013; Lin, 2021; Quick, 2023). Italics in the story denote my non-verbal internal thoughts.

FRIDAY, 4:00 PM

As I placed my samples in the passthrough and entered the cleanroom gowning area, the distinctive scent of the 10,000-square-foot laboratory wafted over me. Not quite hospital-sterile yet not quite biological petri dish, the scent of latex, gown detergent, and heavily recycled humidity-controlled air was inexplicably soothing to me. The motions of stepping into my full-body bunnysuit and collecting my samples took less than a minute, optimized by habit.

I walked through the sliding door to enter the cleanroom proper. Whiteness surrounded me, as people in the same white full-body suits shuffled around carrying various sample boxes. The hums and whirs and beeps of machines, gas lines, and timers filled the space with a natural sound wall.

I shuffled in my blue shoe covers through a door to my right and was bathed in orange light. I set my toolbox and phone on the table next to the chemical bench. The rhythm of the process focused me, my muscles recalling the steps etched into their memory: turn on the hotplates, attach the samples to wafers, spin-coat, bake. Twiddle thumbs for ten minutes.

I glanced at my phone. A weak blue light next to the backward-facing camera blinked impassively—a text message. Removing my outer sheath of gloves, I typed in my password and swiped down to read the message without my phone betraying a read receipt. *Fuck*. Jake. A tingle went down my spine, and butterflies took off in my stomach. “Do you want me to pick drinks up before we head over to the pregame?” it read. He and his pretty little head could wait. I put my phone down. The bench timer beeped, calling me back to the comfort of the impersonal lab process.

Attach, spin, bake again. Another minute. I forced myself to ignore the now-yellow blinking light on my phone as I cleaned up the bench and moved my things to the patterning tool. I loaded my sample into the tool and sat down, resisting the urge to check my notifications again. Alas, curiosity killed the cat. I opened my phone, this time navigating to a different messaging app. The message opined, “Look, just try to enjoy yourself. It’s your first time. Don’t think; just let go and absorb everything like a sponge. God forbid, maybe you’ll even have fun.” I retorted with an unflattering selfie¹ of my current situation, drawing in bunny ears and whiskers on my face to complement the bunnysuit. Jennifer knew me better than that. I locked my phone. The patterning tool had finished, and I was off to develop my samples and see how they turned out.

5:30 PM

Degowning was always a sweaty affair. Bunnysuits were hot, and not in the slang-for-attractive sense. After freeing my sweaty, sopping hands from the latex gloves that embalmed them, I waved them around to drive off the slick moisture. There was no better feeling in the world than

1 Picture of oneself.

cool, dry air on sweaty palms, save perhaps for a successful cleanroom fabrication session—no sample casualties today. Standing in the degowning room with toolbox in one hand and the exit door handle in the other, I closed my eyes and took a deep breath, pausing for just a moment to thank the experimental gods. Despite the trials and tribulations that inevitably came with my engineering research, I enjoyed it a great deal. The idea of working at the frontiers of scientific and technical human knowledge, pushing the boundaries of technological innovation, and generating my own individual contributions to practical, hands-on engineering problems always excited me. Enduring the biological effects of the cleanroom and the seemingly incessant hiccups in the process were unpleasant but necessary evils of my electrical engineering PhD lab work.

Oh, and Jake and Jennifer. My eyes popped open again. How rude for them to break my cleanroom reverie. They would need replies soon, but they could wait until I got home.

I pushed through the double doors in a whoosh of clean air and walked across the long hallway of labs into the office. The door was open, and I spied boxed grocery store cookies accompanied with voices by an invisible coffee machine. I debated my options: either walk past the open door cookieless or grab a cookie at the cost of getting embroiled into the cleanroom processing dilemma of the day. Unfortunately, the desire for cookies overcame my mental fortitude for maintaining a healthy diet, so I quickly stored my cleanroom items and tried my best to scurry in and out undetected. It was not to be.

“The deposition tool is down again. This is the third batch of samples I’ve tried to make, and nothing works,” complained Nick. “We’ve been cursed again by the fab [cleanroom fabrication] gods. It’s what we get for going hard at the conference...anyway, what are you up to now?” Nick asked, walking to his desk.

I popped the cookie box open and served myself. “I finally pushed out my first paper to my engineering education advisors. I had writers’ block for two weeks. I’d write something down, get halfway through, get stuck, tear it all up and start over. But it’s done now. Not my problem anymore,” I imitated brushing my shoulders off. “The other paper’s been better, but I’m never in the mood to write it since it’s so...personal,” I admitted.

“Ayyyy nice. Glad one of them is done—that’s still progress. A good paper is a done paper. My simulations haven’t been working, and I don’t think this is useful enough to go into the paper.” Nick clicked a few buttons on the open window on his desktop monitor before swinging it over to me.

The last thing I wanted was to get embroiled in an hour-long conversation about debugging, as these cookie stop-ins so often led to. We went back and forth on the boundary conditions he had set in his model for a good ten minutes before I finally threw up my cookie-crumbed hands and asked, “Is this really contributing that much to the final paper? You have SO MUCH experimental data already, and it would likely invite more questions than answers.” Nick assented, and we switched conversation topics. Crisis averted. Other grad students entered the office, lured by the smell of fresh coffee, and I made a quick exit, taking another cookie as conversation tax.

Gee, writing that paper sounds rough. What’s it about? I rolled my eyes. I doubted any of them would ever think to ask what I did in engineering education. I didn’t expect them to, since they practically lived and breathed their technical research. They were never particularly dismissive or rude about my engineering education work, but it never seemed to stick on their radar, going in one ear and out the other. Preferring to stay within the bubble of their intellectual comfort zone, they seemed to turn off rather than engaging in the non-engineering intellectual work that I was also very passionate about. Oh well, that was the kind of engineering they knew and loved, so I let it slide.

6:30 PM

I stared into my closet, running through various combinations of outfits while trying to quash my unease about the coming night. Even in summer, nights tended to get chilly, but the weather widget had said it would be comparatively balmy tonight. Plus, alcohol tended to warm me up

quick. I grabbed a slimming dark blue button-down with a pink floral pattern and khaki shorts with an inviting in-seam length. I put them on and sent my selection to Jennifer for approval.

I stripped down for a quick shower. Succumbing to the relaxation of the steam, I let my mind wander. *I wonder what the queer nightclub's going to be like. Jake said it would be fun and I'd love it, but I don't know....* Images of Google searches of queer nightclubs flashed before my eyes. *It seems like literally the polar opposite of how I like to spend my free time, but I should try it at least once...all of my queer friends have been to one.*

Jake did promise that he'd take care of me and show me the ropes. I don't trust him, though. He's too bohemian to not let himself get whisked away by some rando hottie² who wants to pound a cisgay White twink³ tonight. I rolled my eyes. *I should at least let someone know where I'm going in case Jake dumps me and I'm too drunk off my ass to call a rideshare.* Insurance policy, that sounded like a good plan.

And what about the other people in GradPride?⁴ Would they be fun to talk to at the pregame? Intellectually engaging, accepting? They are all grad students here [at the university], so maybe they haven't lost their passion for research—and talking about it—yet. I turned introspective.

Or would it be like QUEEN⁵—just a sea of toxic nothingness that you had to yeet⁶ yourself out of as quickly as possible? QUEEN was supposed to be a positive experience: it was all about being queer in engineering. A whole weekend of being surrounded by people like you, of interacting with people like you, of finally being in a non-cis-heteronormative, supportive engineering-oriented safe space for you and your gayness and everyone else and their queerness to coexist with engineering.

And yet.

And yet.

Somehow you'd reacted so viscerally to them. Like an allergic reaction. It was the second night. You couldn't take it anymore, so you left. At 10:30 at night. To explore the city. By yourself. You never went back. You pretended you were sick.

I lost myself, visions of opulent ballrooms and pride-themed hors d'oeuvres rapidly resurfacing. *You felt so out of place. You couldn't even talk to anyone who went. For a whole week afterward, even your friends. Some, you never talked to again. But you didn't know why.*

I sighed. I was a different person back then, but the memories of those inexplicable feelings remained. *Maybe today will be different. Maybe today's the day I find that queer community. Maybe today's the day I finally connect with other queers whom I vibe with, who love their work as much as I do and love to talk about it.* I then felt bad for assuming that I would immediately hate everyone at the pregame.

I hopped out of the shower, toweled myself off, and checked my phone again. *Fuck.* In the mist of the shower, time had escaped me. Not only had I forgotten to reply to Jake, but I was also now going to be fifteen minutes late to our pre-pregame rendezvous. I fired off a quick apology to him, trying to suppress the tingly feelings in my body. He replied, "I got some boozy fruit ciders. I'll just head over." My stomach sank. "Alright, I'll see you there." I sighed. I was really hoping to use the rendezvous to warm up my conversational muscles.

Never mind him, I was late. Finally stepping out of the bathroom, I found Jennifer's stamp of approval for my outfit: "Cuteeeee. Are you nervous at all?" I relented, "I don't trust Jake." I could feel the cogs turning in her head even though she was thousands of miles away. As I waited for her reply, I threw on the chosen outfit and sent one last selfie with my full look, tight shirt and all.

2 Slang for "random attractive person".

3 Slang for a gay man who generally looks young, fit/skinny/slim, and has relatively little body hair, often seen as highly physically or sexually desirable in the gay/queer community.

4 Pseudonym for the graduate queer student organization on campus.

5 Pseudonym for a queer engineering conference.

6 Slang for "remove".

Her typing bubble eventually stopped, and her message delivered: “Look, just try to be social and have fun, and don’t think too much. You’re also going in a group; you can just get a ride back if you tap out early. He’s an introvert. He’ll understand. You’ll be fine.” Her reassurances did little to appease my nerves, but there was no time to let them fester; I’d have to run to make the pregame on time, and I wanted to make a good first impression at the first (and only) on-campus queer graduate student group I’d attend in grad school.

8:30 PM

As I approached the clearing, I slowed to a walk, gathering my breath and my thoughts. Thick redwood trees cast long shadows in the summer twilight, hiding my presence. I didn’t want to reveal myself yet. A few picnic tables had been pushed together to form a long contiguous spread, and various items for light consumption, including alcohol, were strewn across it. Several people sat at one end. I recognized Jake’s wiry frame at the edge of one bench. He must have just arrived. His short, brunette hair shone almost reddish, and his pale nape glistened in the waning rays of the sun, sending shivers down my spine. It certainly was golden hour.

I walked around the grove and stepped out of the shadows, purposefully entering on the side of the clearing facing Jake. He saw me and waved me over, scooting to make space next to him. A round of introductions was done.

We made small talk as the last vestiges of daylight faded from the sky. Many seemed to know each other already, and as more people arrived at the pregame, conversational alliances shifted. Jake discovered that a fellow classmate in his cohort had come and promptly turned his attention to her. How serendipitous that one could find a member of their cohort at a queer event. Given my niche subfield, I doubted that would ever happen to me. I shrugged internally. I had accepted my fate long ago; it didn’t faze me now. Jake had meandered down to the far end of the table, leaving me alone with Chris.

I cracked open a spiked apple cider that Jake had brought. It was the only drink that looked remotely appealing to me, and I needed something to nurse. My social interaction tolerance was already pushed to its limits. My head hurt.

“Are you two...” Chris waved his hands between me and Jake.

“Oh, no. We’re just friends,” I responded with a nervous chuckle. “We’ve only hung out like four times, nothing serious.” An awkward silence followed. “We met through...an apartment matching thing. We live in the same apartment complex,” I finished lamely.

Chris scooted over so he was now directly across from me. “I see,” he said. We let the warm air soak in the silence.

“Sooooooooo...” I started. “What got you into the master’s program in education?”

Chris laughed, an easy, disarming laugh. “I should ask the same for you. How did an engineer get stuck in education?”

As we talked about our origin stories and education praxis, I began to relax into my perch at the end of the picnic table. Comfortably in a conversation that I sensed neither of us were in a hurry to depart from, my attention roamed across the tables, eavesdropping on the other conversations. Jake was showing his newfound friend some of his pointillism art. Others whom I hadn’t been introduced to were gossiping about the latest Dua Lipa album and Lady Gaga’s new show.⁷ It was almost idyllic, as if we were all one big happy family coming together under the banner of sexuality and queerness.

Yet that visceral feeling of unease occupied the back of my mind, the same unease I’d felt at QUEEN. It all felt so...meaningless, as if I had entered some social void where I was alone in a sea of people. Across this backdrop of conversation was an air of nothingness, an inexplicable lack of substance. None of the conversations seemed to matter. I began drifting into my own

⁷ Dua Lipa and Lady Gaga are two popular singers who have been heralded as queer icons by many in the queer community.

internal world, mindlessly responding to Chris's questions while processing the disconnect I saw. My conversation with Chris seemed to be my only tether to reality, our conversation about social justice in education the only thing grounding me in the moment.

Daylight finally lost its grip on the horizon, and shadows merged into contiguous darkness. Rustles of people getting up from the park benches signaled that transportation arrangements were being made to the queer nightclub. Unfortunately, Chris wasn't going, so we bid our goodbyes, and I unseated myself from my people-watching nest. I couldn't help but long to go back to my conversation with Chris. We had talked the entire time, without regard to the others and with an ease I hadn't felt in queer spaces in a while. For some reason, I doubted that Jake and the others could ever give me that. *Too bad he's not my type.*

11:00 PM

The four of us approached the queer nightclub, marked by the multiple pride flags and tinnitus-inducing electronic dance music oozing from a dark, nondescript doorway.

I was two gin and tonics into the night. The headache I always got with my first few sips of alcohol had subsided, and I could feel the buzz injecting heat into my veins. Jake clearly wanted to dance—he was also feeling the alcohol. He had told me once that libation emboldened him from a reserved, unassuming social introvert into a nightclub frequenter, underground raver, and stereotypical circuit gay;⁸ he certainly was not kidding. Giddy with excitement, he stood on the tips of his toes and looked over the remaining heads in the line before turning to me with a wink and a sly smile. I mustered the best game-face I could. I was already farther out of my comfort zone than I'd ever been, and I was a hair's width from texting my escape plan. But the alcohol had gotten me this far, so I let it continue to propel me forward.

We reached the front of the line. The bouncers cursorily glanced at our driver's licenses and gave us a curt nod. We entered the doorway. Disco strobe lights flashed, and what looked like smoke blanketed the entire room, creating a mystical, ephemeral atmosphere. The thunderous, deafening music and barely illuminated space precluded any sort of normal human communication. A heavily populated bar flanked one wall, with bartenders taking orders and making drinks in a well-oiled frenzy. In the center of the space was the dance floor, indicated by the wall of sweaty, sticky human flesh that seemed to move with the beat.

I closed my eyes, took a deep breath, and soldiered on. Jake grabbed my shoulder, leaned into my ear, and shouted something unintelligible. His touch was electric, and I jumped. My ears had not adjusted yet, and, I shrugged, mouthing, "I can't hear you." He pointed to the bar. I got the message and followed the group, squeezing past countless throngs of people loitering on the edge of the floor, perhaps also trying to build up the courage to participate.

We shared a round of cranberry vodkas, double-shot of course. The dangerously sweet drink hit me almost instantly, reminding me that I had had two gin and tonics for dinner. *Welp.* We moved back to the dance floor. Jake plunged into the mass of bodies with gusto, carving out a small portion of the floor for our group. I stood on the dance floor with the group, suddenly feeling self-conscious and sharply aware. How did I dance? Hell if I knew. I glanced at the others; the people who looked just as uncomfortable were trying to hide it with some form of awkward body movements. I imitated their motions, trying to blend into the queerscape.

Jake signaled to the bar and disappeared into the crowd, returning with another double-shot cranberry vodka. He gave me the straw and held the glass while I sucked long and hard. The sweet burn slid down my throat and settled into my stomach. The alcohol was working its magic, but not fast enough. I watched him navigate the crowd, offering his drink in peace. With liquid courage in him, he was in his element.

⁸ Gay man who enjoys going to large, well-organized parties that usually require expensive tickets and advance travel planning.

Jake made drink rounds yet again. The music, a compilation of queer anthems throughout the ages, was starting to get to me. The amplified beat distorted the songs to meet the energy of the crowd, raising and lowering it like an expert marionette. All of us were the actors on this queer performative dance stage, strung along by the hidden DJ. I began to slip into a surreal mental state. My body seemed to adopt a life of its own, becoming more fluid, more coordinated, more responsive to the beat of the anthems and the heartbeat of the collective crowd. Nothing mattered now. Nothing mattered in this space. It was just me and the music. I surrendered myself to the bodily pleasures that drink and dance finally animated within me.

LATER IN THE NIGHT

In the dim lighting, bodies parted, and Jake emerged in front of me. He let his eyes travel down my body and gave me a knowing smile. He drew his finger lightly down my chest and stomach, revealed by my somehow now-fully unbuttoned shirt. My body shivered involuntarily, shocked by his sensuality, and I let out a gasp.

He grabbed my shoulder and turned it so his mouth was up against my ear. "ARE YOU ENJOYING YOURSELF?" I turned to him, and at the top of my lungs, hollered, "HELL YEAH!" I was having a blast.

He patted my exposed chest, raw skin-on-skin contact, and melted back into the dark, jam-packed wasteland of pounding music, sweaty bodies, and empty minds. Once again, I submerged myself into the waves of sensual pleasure and drunken serendipity.

I moved from dance partner to dance partner, seemingly without thinking. Strangers became friends, wordlessly bonded by the physical connection of existence and proximity. As I moved to the beat, I felt hands in my shirt, feeling my chest, traveling down the sides of my abdomen and waist, testing the waters of sexual desire. I raised my arms, inviting them further. I was now alone in this queer sexual marketplace of desire, fully indulging in my sexuality and enthusiastically proffering my bodily goods for others to enjoy.

Yet a small part of me dissociated into an almost out-of-body persona, looking down at the sheer absurdity of the milieu. On the one hand, I was experiencing something that felt so quintessential to the gay experience that it felt inexplicably *right*. Was this what sexual liberation was supposed to be? On the other hand, I was hyperaware of the vapid escapism that this all seemed to veil, an escapism from the heteronormative, oppressive reality that led us to the doorstep of this club. Past the dark, nondescript entrance was an alternate, collectively constructed reality of true freedom where nothing mattered, and everyone could let go and be their full selves.

And yet...I couldn't fully let go. I couldn't fully subscribe to this queer metaphysical universe with its ephemerality and performativity and raw sexuality that seemed to summon queerness to the forefront of one's self while ignoring my other identities. There was no critique, no awareness, no thought that this space, these people, this place of safety and joy could be one of marginality as well. For those like me who normally sought a quieter life outside the normal arteries of queer sociality and community at the bars and clubs, this was physically, mentally, and energetically exhausting. It was a space that my body loved but my soul did not enjoy, and it did not fully embody who I was or what I wanted from my queer social experiences. I missed the comforting aloneness of the cleanroom, the rote mechanical and tactile motions of pouring chemicals and moving samples, the sounds of machinery creating natural chambers for contemplative silence.

SATURDAY, 3:00 PM

I woke up. My body felt the weight of a thousand pounds of granite. Sound seemed to be dampened around me, blissfully abating the memories of disco lights and music and hands. Millions of thoughts swarmed the gates of acknowledgement. I wanted quiet serenity, for just a bit longer.

I pulled up the window shades next to my bed, letting the soft afternoon light flow into my apartment. From my high-rise vantage point, I gazed down at the well-manicured lawn. Bright red picnic tables ringed the green. I laid down again, starfished in bed, now staring at the ceiling

and basking in the warm light. How far away everything seemed. The cleanroom, the engineering labs, GradPride, the nightclub, the queer people I'd met seemed light-years away from my current peace.

With a groan, I rolled over and opened my phone. Various unsaved numbers I had collected the previous night littered my messages. None of them seemed appealing now. The rose-tinted glasses had come off.

Jake.

Chris and the GradPride members.

The people who'd grabbed me, shared numbers, and disappeared on the dance floor.

The cute Asian boy I had wanted to get with towards the end of the night.

Thinking about all the people gave me a headache. I rubbed my temples. I never wanted to talk to another human again. *Fuck people*, I thought to myself. I plopped the cat plushies that always slept next to my pillow onto my chest and began to work my fingers between their stuffed cat ears. *If only I had a real cat right now.*

Consoled by the plushies, I finally allowed the swirling thoughts to enter my consciousness. The events of the previous day flashed before my closed eyelids. The whiteness of the cleanroom and simulation computer screen. The golden grove of trees overlooking the picnic tables. The multicolored, flashing lights contrasted with the smoky blue darkness of the stage. What did this all mean? How could I find such joy yet such visceral marginality in all these spaces?

Why could I not be my full self in a space that welcomed full selves? Jennifer was right: I did let go, and I did enjoy myself, far more than I had expected. But for some reason, I had a hunch that it wasn't the same surrender that Jake and all the other nameless, faceless, dancing bodies seemed to subscribe to on the dance floor.

And where did engineering fit into this mosaic? Why did I long to be in the cleanroom at the club? Why did I find solace in the cleanroom in the first place, particularly when the people in it also promoted a culture of silence around non-engineering things?

I rose from my bed and turned on my laptop. Something subliminal had triggered the impetus. I opened my favorite citation manager and scrolled through the folder I had for "LGBTQ+ Engineering Education," reading through titles of the entries as if they were lines in a book marking my temporal and intellectual journey through engineering education.

And then I found my own work: my previous academic papers on LGBTQ+ and queer engineering students. Two years of a labor of love. I remembered how it felt writing these pieces. Trying to write truth to the queer people I talked to and the stories they told with the knowledge and experiences I brought, despite somehow feeling like it was always incomplete. Something was always missing.

I opened the most recent paper I was working on, the one I had alluded to in conversation with Nick. My latest attempt to express myself as a straight-presenting gay Asian-American man in engineering. Academic writing hadn't quite been able to do justice to the viscosity of experience, so I had turned to short story. I always fancied myself a writer, but never had time for it. I read through the draft.

The paper in front of me expanded, its words enveloping me. Despite the trials and tribulations of research, the vicissitudes of collecting and exploring data, and the doldrums of reading and writing, I had never felt more fulfilled in doing the academic and intellectual work I did. Without it, I would still be lost, without voice, without a means to theorize and reckon with my experiences in meaningful, liberatory ways. When I did that work, it felt as if I could let loose and be critical and think holistically without the confines of dominant ideologies of cis-heteronormativity or queerness or homonormativity that the cleanroom offices or the queer nightclub respectively summoned. Through the paper, I could talk to the world.

It was a feeling of freedom.

It was a feeling of home.

In this section, I focus on how my counterstory expands extant equity-based research in engineering education, answering the question, “How do multiple engineering, queer, racial, and gender identities intersect to create unique lived experiences?” I apply CRIT walking to scaffold my discussion, drawing on multiple literature bases to construct my interpretation of my narrative and how it embodies broader oppressive macrosociopolitical systems. At the end, I summarize how the short story and its discussion exemplify counterstory’s power in furthering the goals of methodological activism in engineering education research. I recommend reading this section in two-column format with the counterstory, as it allows the counterstory to remain intact while providing analysis of each setting I inhabit.

As embodied in my interaction with Nick, cis-heteronormativity and the culture of silence manifested in my engineering experiences primarily through specific discursive cues from engineering peers and faculty. Nick’s redirection from my “personal paper” (which we eventually learn is about my identities) represented a discursive power move to redirect conversation toward more common-ground “engineering” topics. Subtle changes in topic, long silences, and lack of engagement whenever I talked about my life as a gay man outside of engineering were indicators of the cultural values many of my peers subscribed to—microaggressions in how I embodied my sexuality in engineering (Solórzano et al., 2000). Cis-heteronormativity worked on me through the culture of discursive silence, exemplifying how dominant ideologies become embodied discursive practice. For me, this created a hostile landscape that often limited my interpersonal relationships in engineering to technical work. Narrating these experiences as counterstory calls out the ways in which engineering constructed and centered my engineering identity to the exclusion of my other intersecting identities in engineering spaces.

That said, I purposefully began my short story in the cleanroom, a space where I did find fulfillment and joy from engineering, to highlight how marginalized students (including me) may find that engineering is an “overall positive” experience (Yang, Sherard, et al., 2021a, 2021b). While academic literature often perceives LGBTQ+ engineering students as having overly marginalizing, negative experiences in engineering, this dominant narrative may obscure resistance and joy (Yang, Sherard, et al., 2021b). In the short story, I cite several ways engineering fulfilled me: despite experiencing marginalization, I can look through the “necessary evils” toward my broader personal goals.

No doubt my ability to find joy in scientific innovation was in part due to the privilege of being a straight-presenting Asian man in engineering. The notions of scientific innovation, human progress, and technical meritocracy have historically been imbued with oppressive racialized, gendered, and cis-heteronormative power structures (Cech, 2014; Faulkner, 2007; Harper, 2010; Jennings, 2021; Leyva et al., 2022; Pawley, 2019; True-Funk et al., 2021). Because of the intersectional privilege that I have, especially as a cisgender male Asian-American researcher in an engineering field, I can laud the triumphs of scientific innovation while invisibilizing the oppressive ramifications of such discourse (McGee, 2018). I have access to the same tools of silence as my engineering peers do when they unintentionally marginalize my voice, and it is likely that I have employed these tools to reify scientific achievement. As Solórzano and Yosso (2002) note, marginalized people often subscribe to and tell dominant stories, contributing to an epistemic and ideological hegemony enforced by those in power. For example, anti-Blackness still exists in Asian communities (Kim, 2018), and Black men may hypersexualize Black women, which both contribute to dominant narratives of racism and sexism (Crenshaw, 1989). In this case, I use my story to highlight how students can adopt hegemonic discourses even if they encounter intersecting oppressions, depending on their lived experiences, values, subjectivities, and multiplicative identities. Furthermore, I exemplify how counterstories complexify lived experiences, holding both intersectional privileges and oppressions as they play out in my lived experiences.

Despite prevailing notions that queer spaces would give solace for my erasure in engineering (Yang, Boklage, et al., 2021; Yang, Sherard, et al., 2021b), all was not well in the land of the queers either. Instead, I encountered discourses of erasure under the dominant ideology of homonormativity. *Homonormativity* is defined as the privileging of a “certain kind of gay” predicated on visibility,

whiteness, maleness, (hyper)sexuality, and body politics within queer spaces (Alimahomed, 2010; Duggan, 2002). Queer scholars have explored how homonormative ideals exist in queer spaces, reifying privileged identities along race, gender, and class axes as well. For example, Alimahomed described how queer women of color felt a double bind of marginalization in which they were excluded from spaces for women, people of color, and queer people because of their multiply marginalized identities (Alimahomed, 2010). Particularly in the queer space, Alimahomed's participants found a white cismale-dominated environment in which they were invisibilized based on their identities, as the spaces often focused on political issues unique to the dominant group as opposed to more intersectional issues that they faced (Alimahomed, 2010). In engineering education, homonormativity has shaped dominant social norms in nominally inclusive spaces such as identity-based student organizations, reifying particular ways of knowing and engaging with queer community and queer culture while erasing intersectional modes of queerness (Marine & Nicolazzo, 2014; Yang, Boklage, et al., 2021).

In my story, I described three queer spaces. In all of them, I experienced uniquely indescribable, visceral sensations of discomfort. The first two queer spaces, the queer conference flashback and the on-campus pregame, are presumably spaces of refuge where queer student organizations create specifically queer spaces for queer people. For many marginalized students, identity-based student organizations provide a lifeline to connect with others like them and resist hegemonic structures (Harper & Quayle, 2007; Park & Kim, 2013). However, for students with multiply marginalized identities, these spaces can also be fraught with decisions and marginality—forcing students to prioritize and compartmentalize their identities while highlighting ingroup differences (Yang, Boklage, et al., 2021). Embodied through my discomfort and disengagement from both spaces in the story, the queer organized spaces I encountered heightened my perceived lack of belonging and internal dissonance despite sharing a common identity with the group. My visceral discursive experiences of marginality in queer student organizations counter the generally positive dominant narrative of service that these organizations provide, revealing an additional mode of homonormative erasure.

Going to a gay club for the first time was...an extraordinary experience of queerness. Historically, gay bars and nightclubs have been refuges for queer people to convene, find community, and enact resistance to oppression, and it has become a quintessential bastion of queer social life (Lin, 2021; Quick, 2023). Even though the idea of nightlife did not appeal to me as an introvert, I wanted to know what it was like. I certainly found something—not community, but an understanding of what the nightclub space was supposed to embody in the broader queer consciousness. As a site for queer existence, the nightclub was a space for escape from the constant, prying eyes of a cis-heteronormative society intent on scrutinizing and visibilizing queer lives (Quick, 2023). Nightlife celebrated queer existence as resistance to the histories of brutal violence and marginalization that our queer ancestors experienced in this country (Feinberg, 1993; Lin, 2021). In this space, I was free to indulge in an alternate reality of (hyper)sexual liberation and share my body with others for combined pleasure (Green, 2011; Lin, 2021; Quick, 2023). Yet even here, that visceral emotion bubbled to the surface. The me-as-observer found the scene an unrelenting assault on my personal interiority, as the privileging of queerness seemed to suggest that I left engineering, intellectual, and personal identities at the coat check. I was in a queer space, yet I did not—could not—embrace my full self.

What exactly is this visceral feeling that follows me in queer spaces? After wrestling with it for almost the entirety of my out life, I still do not know. However, the commonality across all three very distinct spaces was the fact that they were labeled “queer” and therefore summoned queer identities (Tavory, 2016). In a queer space, one is psychologically and socially pressured to focus on their queer identity and therefore minimize other identities (Yang, Boklage, et al., 2021). Thus, carving out queer-specific spaces, while paramount to queer survival and resistance, can cause intersectional erasure due to homonormative norms and narratives established simply by applying the “queer” discursive label (Alimahomed, 2010; Yang, Boklage, et al., 2021). As such, these spaces fundamentally *privilege* the identity category that the space serves. As my deep discomfort attests to, this dominant discursive centering of queerness is not celebratory;

in fact, it is a form of *intersectional erasure* of the multitude of other identities and oppressions that comprise my full self, including my engineering and gay identities. In reifying queer as an identity category, homonormativity creates a contradiction of an “inclusive space” in which queer people with multiply marginalized identities and desires are written out of queer social worlds (Alimahomed, 2010; Yang, Boklage, et al., 2021).

At the end of my short story, I found myself returning to my work in engineering education. As a young engineering researcher with marginalized identities, engineering education research has become the space where I can freely do my best work without the intersectional erasure of modulating myself to meet some dominant mold of “idealized engineering student” or “gay man” (Duggan, 2002; Rohde et al., 2020). Through my critical equity-centered work, engineering education research has given me a language to theorize about my narrative of erasure—and find healing through critical theorizing in engineering education (hooks, 1994). I now choose engineering education academia as my “activist tool of choice,” viewing my academic work as my contribution to the dismantling of oppressive power structures in society (Wong, 2022, p. xv). In engineering education, I can draw on both my queer lived experiences and my experiences in engineering spaces to theorize about queerness and marginality in engineering (Lorde, 1984).

Counterstorytelling gave me the critical creative space and language to reflect on and share the multifaceted erasures I encountered in both engineering and queer spaces, illustrating how Solórzano and Yosso’s functions of counterstory are enacted in my practice (Carter Andrews et al., 2019; Solórzano & Yosso, 2002). Engaging in counterstory methodology allowed me to showcase the marginalizations that intersected in my holistic lived experiences—not as separate research problems or even self-contained equity issues, but as multidimensional interlocking systems of oppressions—and privileges—that I continue to hold as I move through engineering and non-engineering spaces. Moreover, in line with methodological activism and counterstory’s roots in activism, counterstory empowered me to center my own voice as a scholar-activist and challenge dominant narratives in my own way through my own medium on my own terms, complexifying my experiences with moments of joy, resistance, and healing (Martin et al., 2022). Thus, this application of counterstorytelling exemplifies the richness and power of counterstory as an activist methodology for uplifting marginalized voices and intersectional healing.

IMPLI-GAY-TIONS AND RE-QUEER-MENDATIONS

Counterstory opens the door to a critical activist paradigm toward methodological activism in equity research in engineering. In Critical Race Theories, counterstory plays a multitude of roles beyond methodological orientation, including epistemic and ontological paradigms, analytical approaches and heuristics, and theoretical groundings (Delgado, 1989; Delgado & Stefancic, 2001). Future work on counterstory should explore and apply these additional dimensions to unlock its full radical liberatory power in engineering education.

While this paper uses autoethnographic methods, more common methods such as surveys, interviews, and ethnographic observations can also be employed with counterstory. For example, researchers may consider framing research questions within critical frameworks and give ample space to explore the complexities of lived experience through narrative analysis (Mejia et al., 2018; Polkinghorne, 1995; Sochacka et al., 2021). Quantitative researchers may draw from critical quantitative methods and/or oversample marginalized populations to center their experiences within quantitative data (Gillborn et al., 2018). Qualitative researchers may incorporate “non-traditional” methods of self-expression in data collection instruments (Schiebinger, 2021) and consider alternative modes of analysis compared to traditional qualitative coding, which has been critiqued as reinscribing the researcher-participant power structure (Viruru & Rios, 2021). In addition, critical theorists have employed participatory action research, co-researching, community-based approaches, performance pedagogies, and oral histories to both elicit counterstories and directly make change for marginalized communities (Mayotte & Kiefer, 2018; Smolarek et al., 2021; Tintiangco-Cubales et al., 2016).

Counterstory, and critical perspectives more broadly, challenge us to think beyond engineering as a self-contained discipline. They illuminate the ways that immaterial, intangible, macrosociopolitical institutions and systems cause real, material harm to marginalized people in engineering. Unlike traditional incremental perspectives of progress that ignore systemic issues to maintain the oppressive status quo, critical perspectives ask us to examine the status quo writ large and envision how we can (re)build systems that uplift everyone simultaneously. More widespread usage of critical perspectives is crucial for equity and social justice-based initiatives to make substantial impact in engineering at scale, and more work is needed to bring critical perspectives into the purview of those who participate in educating future engineers (Patrick et al., 2022).

More importantly, counterstory calls for engineering education stakeholders broadly to leverage their power to fight *alongside* marginalized students, not just fight *for* students in making social change. While counterstory focuses on marginalized student voices, marginalized students and communities cannot push for change alone. Counterstory highlights developing *critical conversation spaces* as a first step—spaces that marginalized students co-construct counternarratives and build community around shared experiences, which can be achieved with a range of methods and sites (Carter Andrews et al., 2019). In my counterstory development process, talking with like-minded doctoral student peers was crucial for me to begin interrogating my own experiences. Generating spaces for critical and reflexive conversations about intersectionality, identity, privilege, and oppression enables community-centered theorizing and advocacy, particularly grounding institutional advocacy within marginalized student experiences. I also note that counterstory itself is not necessarily restricted to marginalized students: it can be used with any marginalized stakeholders in engineering education, such as faculty, staff, and practicing engineers, to further strengthen communal bonds across lived experiences and power structures.

Furthermore, while counterstory methodology focuses on marginalized discourses, it invites solidarity from multiple stakeholders across power hierarchies to fight for social justice. As methodological activism highlights, we must actively critique, disrupt, and (where possible) take action to change the exclusionary policies and structures that inequitably grant dominant stories power within each of our contexts and recenter counterstories from marginalized students as the basis from which transformative, socially just policies may emerge. Counterstory challenges engineering education stakeholders in power, particularly faculty and administrators, to uplift marginalized student voices within the institution and advocate for their causes. While confronting institutions may be daunting, becoming strong, vocal, critical, and reflexive institutional advocates for social justice in policymaking is necessary to fight alongside marginalized engineering students in creating equitable and socially just futures.

Finally, I offer recommendations for marginalized engineers interested in using counterstory as part of their healing journey. First, while everyone's healing journey is different, talking and reflecting with others on shared experiences—collective meaning-making—is central to the healing process. My journey could only happen when I found people with whom I could have critical conversations, be vulnerable, and express myself freely. Recognizing that others shared the same experiences of intersectional erasure motivated me to look for commonalities across our very different lives. Second, find creative ways to healthily and creatively unpack marginalizing experiences. The ruthless efficiency of good writing forced me to think as clearly and precisely as possible about my experiences, in ways that made me confront hard truths about my own privileges as a gay man (Wong, 2022). However, other forms of media, such as music or documentary, can also convey counterstories. Third, creative works like counterstories are products of broader ongoing processes, snapshots of points in our lives (Ellis et al., 2011; Martin & Garza, 2020). Stories will inevitably change over time, and new experiences may introduce new perspectives. It is important to know when to let go and when to invite others in.

CONCLUSION

Counterstory is an activist methodology that empowers marginalized students to reclaim their voices in equity-based engineering education research while providing discursive spaces for structural critique, community-building, and collective healing (Solórzano & Yosso, 2002). Through

intersectionality, counterstory challenges us to live—and theorize—in the inherent messiness of holistic lived experience, particularly in the nuanced experiences of privilege, marginality, oppression, resistance, joy, and healing. In contributing my own counterstory to the extant engineering education literature to study my own experiences living at the intersections of multiply marginalized identities, I demonstrate its affective power as a concrete, actionable, and transformative practice of methodological activism (Martin et al., 2022). I call on researchers and practitioners to create spaces for counterstories to flourish in engineering, embrace the power of creativity from lived experience, and fight alongside students in advocating for equity and social justice within engineering education institutions.

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