

Sheltering: Care Tactics for Ethnography Attentive to Intersectionality and Underrepresentation in Technoscience

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Abstract

Designing ethnographic research on the technoscience workforce according to intersectionality theory presents both opportunities and constraints. On the one hand, the pursuit of justice in technoscience requires attending to differences between scientists who have been disenfranchised from knowledge production due to racism and sexism. On the other hand, sharing the lived experiences of severely underrepresented members of technoscience heightens the risk of harm. I introduce a practice called Sheltering, inspired by the computer science technique of “black boxing” and feminist methodology of “strong objectivity.” The opacity of the shelter in which some data resides is balanced with the transparency of the researcher’s positionality. Combining reflexivity, refusal, and performative design, Sheltering contests dominant norms in science, while minimizing risks of retaliation to collaborators. It also balances communal responsibilities with research integrity. It not only requires consideration for the researcher’s relationship with collaborators, but also attention to power in the worlds they navigate and solidarity in their struggles. Sheltering, a repertoire of care tactics to protest epistemic and social injustice in US knowledge production, can help transform who gets to produce science and reimagine other ways of knowing.

Keywords

ethnography, care, feminism, decolonialization, refusal, reflexivity, protest

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Introduction: Disaggregate to Desegregate

In graduate school, I co-authored a paper on gendered role allocation in STEM faculty positions that drew upon an analysis of a large national dataset (Carrigan, Quinn, and Riskin 2011). Because men's overrepresentation in high status fields such as computer engineering was so extreme, we had to remove these fields from our feminist analysis because women faculty were statistically insignificant. In other words, using quantitative methods, there was not enough representation of women to say anything meaningful about them. I felt wrong about cutting out people whose welfare I care about deeply.

This experience of quantitatively studying institutional sexism in academic technoscience demonstrates that a search for generalizability can inadvertently leave out the voices of highly underrepresented group members and cannot interpret the nuances of lived experiences (Slaton and Pawley 2018). With ethnographic tools, we can hear the voices of people who are persisting in highly segregated fields and who may offer the most efficacious solutions to representational injustice (Slaton and Pawley 2018). In a 2022 report on women of color in technology fields, the National Academies of Sciences, Engineering and Medicine (2022) called to dispense with universalizing women in tech and desegregate data on women in tech by race and ethnicity. Research "related to groups underrepresented in STEM and in tech should clearly indicate that such data be disaggregated by race/ethnicity and gender (*to the extent possible* given the need to protect anonymity of individuals)" (National Academies 2022, 180, emphasis added).

"To the extent possible"—therein lies the crux with which I engage in this paper. When reporting data using an intersectional lens, *how* do we measure the extent to which one or more parties involved in the research collaboration may be harmed, and *how* do we mitigate the harm? To disaggregate means risking identification, and efforts to transform racism and heterosexism in technoscience require critiquing powerful people and structures, some of whom may be our colleagues, perhaps even current and future evaluators of our work and occupational competency. As is too often the case, reporting such harassment, discrimination and assault can have injurious physical, emotional, reputational, social, and financial consequences. Yet, without this disaggregated ethnographic data, we are missing critical knowledge on the intersecting systems that advantage some and pain others in technoscience, as well as missing out on opportunities to enact egalitarian solutions (National Academies 2022).

Further, methodologically, ethnographers are concerned with the particular, the richness of context and place and the breadth of human diversity. Sharing detailed descriptions of people, places, and communities is paramount to good ethnography (Geertz 1973). We seek meaning rather than generalizability, guided

by the principles of feminist decolonial STS (Pollack and Subramaniam 2016). Our method, ethnography—burnished under the piercing gaze of decolonizing scholars who have sought to divorce anthropology from its legacies of imperialism and subvert and repurpose its tools—is well-suited for the study of the small N (small sample size) (Slaton and Pawley 2018). A decolonizing approach to ethnographic research means that the work and its outcomes are resistant to systems of subjugation and scholars’ opposition is collective, made in concert with others (Harrison 1991). For STS scholars, this methodology may mean taking “a more critical stance toward politics of care in technoscience...[with an] engaged vision” that is both intersectional and interdisciplinary (Murphy 2015, 719).

Feminist ethnography that depends on intersectionality as a means of community practice troubles the dangerous context of multiple structures of power that can reproduce inequality in science. In my work as a feminist anthropologist studying how patriarchy, white supremacy, and positivism intertwine in the production of technology, I grapple with the contradictory crux of making sure that the most disadvantaged in the science community have an active presence, one that repudiates dominance (Grande 2008; Vizenor 1998), without putting them at greater risk. The risk often comes from the very forces a feminist ethnographer wishes to dethrone. Therefore, on one hand, staying silent about the harms caused by the powerful only reproduces this power and, on the other hand, making public incidents of bias and patterns of injustice can trigger retribution and potentially harm valiant collective efforts for justice and institutional transformation.

This combination of method (ethnography) and methodology (feminism) in studying the cultures of science heightens threats to disenfranchised research participants because, first, they are highly visible small N’s and, second, they already face interpersonal and structural prejudice within their small elite communities. In such context, how will I protect the anonymity of my participants while contributing to and caring for the intellectual tradition of critical methodologists who seek to unearth and contest power relations in efforts to change them?

Sheltering

In this article, I introduce a data-sharing practice called Sheltering, inspired, in part, by the computer science technique of “black boxing” and the feminist standpoint methodology of “strong objectivity.” Feminist standpoint argues that “the lives of marginalized communities of women provide the most inclusive paradigm” for naming and resisting racialized gender violence (Mohanty 2003, 231). Standpoint theorists challenge empirical approaches to producing knowledge by recognizing the socially situated character of our knowledge claims; demonstrating how our thinking is permeated with knowledge from

others' standpoints; and critically examining our own social locations (Harding 2004). Sandra Harding (1992) claims these practices produce more objective science because they transform the theorist's social situation into a scientific resource and offer perspectives unfettered by privilege.

Strong objectivity can establish transparency and assure the people who make our ethnography possible that we are accountable to them. It also builds rapport with one's audience, and helps us determine who our allies are (Sinding 2005). We see research participants "gazing back" and feel accountable to them as well as readers by explaining the grounds on which interpretation has been made (Harding 2004). Ruth Behar agrees: "What happens within the observer must be made known...if the nature of what has been observed is to be understood" (1996, 6). Though developed decades ago by feminist STS scholars, the uptake of strong objectivity in STS is not yet customary.

Black boxing is a term used by computer scientists when an algorithm or tool is too complicated to detail, so they draw a box around the phenomenon to signal its presence, whose only importance is its input and output (Latour and Woolgar 1986). Black boxing is a useful tool in computer science; it enables complex forms of reasoning but can also prevent certain ways of knowing (Turkle and Paper 1990). As I struggled with the tension of protecting my participants and producing "trustworthy" scientific knowledge, black boxing in computing inspired me to seek out practices of ethnographic refusal.

A shelter occludes exposure and secures its contents. In this way, Sheltering thereby shifts the spotlight from historically disenfranchised members of science to the structural relations that reproduce prejudice, exclusion, and homogeneity in scientific production. For example, in one instance of Sheltering that I describe in detail below—Articulating a Succinct Description, a collaborative, performative care tactic—I made unexpected discoveries about the nature and extent of epistemic injustice against qualitative knowledge in technoscientific cultures. Qualitative research is maligned in some esteemed halls of science, which has social and material outcomes on those who practice it. From campus culture (Carrigan and Bardini 2021), to professional societies and journal editorial criteria (Slaton and Pawley 2018), interdisciplinary collaborative groups (Smith-Doer et al. 2017), and evaluative practices in funding sources, epistemic bias against qualitative research results in the disenfranchisement of modes of inquiry that help advance equity in science (National Academies 2022). Thus, regimes of value that deny prestige, respect, and financial support for qualitative science not only harm individual faculty and entire fields of study in the liberal arts, they also contribute to philosophies, policies, and practices in science that privilege a particular kind of science—technocratic, positivist—that has long excluded people of color and women (Carrigan and Bardini 2021).

By mobilizing Sheltering with tactical care, I realized the ideological, cultural, and material dimensions of epistemic injustice in the academy and their implications across multiple axes of identity. The breakthrough enhanced my theoretical sensitivities to apply intersectionality theory ethnographically with care. Sheltering thus interrogates entanglements of power structures and the social relations within them. To make claims on dominant groups in science, Sheltering is a repertoire of care tactics used by ethnographers to weigh disclosure, naming, risk, solidarities, stakes, and stakeholders in a research project. Sheltering, rooted in feminist, decolonial STS traditions, is two-pronged. First, it aims to disclose institutional secrets rather than fetishizing the pain narratives of the subjugated (Tuck and Yang 2014). Second, it considers the socially situated nature of knowledge and “transforms it into a systematically available scientific resource” (Harding 1992, 446).

I invoke Sheltering in my ethnographic collaborations to manifest the dual nature of care: “that which we, as STS scholars, teachers and feminists enact *in our relations with* the worlds we study and that which *circulates among* the actors in the technoscientific worlds” we encounter (Martin, Myers, and Viseu 2015, 626). Care is attentive to power in both these dimensions. For example, I care about sexual harassment in technoscience and I take care with my research into this violence as an act of feminist consciousness-raising and a strategic performance of opposition to dominant scientific norms. Caring also requires a commitment to listening to and documenting the silenced and neglected experiences of marginalized actors in technoscience in order to influence their antagonists.

Importantly, Sheltering is also bidirectional. The researcher’s gaze includes seeing research participants as “gazing back” and the researcher is accountable to them (Harding 2004). Sheltering also involves “studying up” and subjecting those with power in a culture to scrutiny (Gusterson 1997; Nader 1972). I also use Sheltering to guide me when faced with the predicament of making interpretations as an individual researcher while also part of scientific communities with internal conflicts (Tuck and Yang 2014).

In this paper, I offer feminist principles rather than formal rules on taking care with the relations **not only** between researcher and the research participants but also **with** the rationale we have for collaborating in a project and what impact we want to have on world (Davis and Craven 2016). First, I review the critical scholarship that I have inherited as a feminist anthropologist that has inspired me to weave together subjectivity, power, and intersecting truths across social identity and sites of power. Next, I introduce three care tactics I have used to Shelter in the context of my ethnographic collaborations investigating race and gender in technoscientific culture: reflexivity, refusal, and performance.

In its inaugural design, I used Sheltering to develop Articulating a Succinct Description, a unique combination of case study method and ethnography that collectivizes interpretation, thereby increasing the protective capacity of anonymity. Later, when studying how women of color and white women collaborate to trouble the status quo in engineering and broaden participation in these fields, I faced further challenges that encouraged me to keep innovating. Disaggregating women by race and ethnicity produced an “N” too small for me to write about anonymously. The risk of identifying my underrepresented participants caused me to take up refusal as a means of collective resistance to intersecting forms of power in technoscience.

Like most political projects, Sheltering is complex and fraught with tension, especially when power relations involved have a variety of asymmetries. My aim in this paper is to practice a politics of care to excavate and investigate hidden labors (Forsythe 2001; Martin, Myers, and Viseu 2015; Murphy 2015; Puig de la Bellacasa 2011; Star 1991), especially those involved in intersectional STS (Grzanka 2019). If we are to disaggregate ethnographic data to accumulate knowledge on how best to decolonize science, then we must first determine the costs and the stakes of creating and sharing such knowledge, as well as who is to benefit.

Culture and Power

Feminist anthropologists conceive culture as ways of life shaped by power (Jolly 2002). Social institutions telegraph the norms, values, and behaviors that individual groups members are expected to comport with, and non-conformity can be a liability. The risks of violating norms and acting according to alternative values can be more acutely apparent to people who exist outside the centers of power in their culture rather than those favored by power arrangements (Collins 2000; Du Bois 1989). Bringing this understanding to anthropological inquiries is the basis of critical methodologies, a body of scholarship that cares about justice and draws inspiration from civil rights, feminist, and queer liberation movements in the United States.

Critical methodology emerged from the “interpretative turn” in anthropology, which initiated a reckoning, one that continues today, with the field’s history of surveillance and collusion with imperial states. By questioning and, at times, resisting, how anthropology has been employed, and continues to be employed, in service of the powerful, anthropologists craft tools with which to understand power, positionality, politics, authority, and agency.

The crisis of methods in anthropology catalyzed reflexivity as a means of destabilizing authority and questioning objectivity. Zora Neale Hurston actively engaged the problem of ethnographic authority in her work, decades before the “interpretative turn” for which white men with tenure—Clifford Geertz, James

Clifford, George Marcus, and Michael Fischer—are credited (Harrison 1991; McClaurin 2001). Bucking scientific objectivism, Hurston took an insider’s approach to the study of Black culture in the African diaspora (McClaurin 2001). Hurston forged her own unique reflexive anthropological style, which implicates the reader in the creation of meaning (Hernández 1996). To mitigate asymmetry between her and her research participants, she dares her readers to question her interpretative power and enchants readers to value her participants’ perception of reality.

Ethnographers use a variety of strategies to carefully mitigate the potential harm caused by representing actors who participate in our research. Some ethnographers use direct quotes via lengthy passages of transcription (Behar 1993; Bourgois 1995; Johnson 2008) or embedded in a prose narrative (Hurston 1998; Stack 1996). Laurie Thorp believes that the best data is gathered not through interviews but rather in “heartfelt conversations” that are later transcribed in a process she calls “retrospective fieldwork” (2006, 120). The voices of the research participants’ in Thorp’s text are frequently written by the participants themselves. Children’s poems, co-workers’ recipes, and her graduate students’ field notes are all part of her ethnography. In this way, Thorp tries to mitigate the violence of objectification, while also highlighting the collective nature of the text. Diann Jordan (2006), Kath Weston (1997; Weston and Helmreich 2002), and Zora Neale Hurston (1998) are all examples of women anthropologists who studied their own cultures in a dual effort to valorize those with whom they identify and to make visible the violence of the stereotypes regarding this shared identity. Thus, symbiotically plaiting multiple subjectivities that are always in flux—including the readers’, research participants,’ and the authors’—feminists call into question the social and historical power relations depicted in our ethnography, as well as our representations of the world.

Situating Power

By making sense of the world through subjectification and contextualization, feminist ethnography calls both power and the positivist assumption of impartiality into question. As I experienced firsthand in my quantitative study of STEM faculty, there is a violence in quests for statistical significance, an erasure and disinterest that contradicts the care that drives my scholarly pursuits. My feminism was misaligned not only with a search for generalizability but also with the belief that science is objective, value-free, apolitical, and asocial. Only dominant group members in science could assume that their knowledge claims should be applicable to all creatures past, present, and future (Harding 2004).

Theorizing on care and harm in ethnography must also be politically situated. For example, my ethnographic investigations into gender and race in computer-based technoscience (both academic and industrial) require that I consider three threats. The first is the prevalence of harassment in technoscience, whose rates

exceed non-technical industries (Scott et al. 2017). The second is the high likelihood that reporting harassment will precipitate retaliation (Clancy et al. 2014; Sekreta 2006). Finally, key dimensions fashioning the power Big Tech companies wield in this world include secrecy, deregulation, and the black boxing of their algorithmic products that operate within and upon society. This license for secrets and privacy granted to Big Tech (but not its users, nor the citizens in states where these companies operate) enables predators in the field and silences survivors of harassment and assault (Carrigan et al. 2021).

Understanding the complexities of research with whom I call the “Small N’s in Big Data” becomes critical given what is at stake—namely, the safety and well-being of members of the scientific communities who are targeted because of social identity. Furthermore, when the subjects of study are making and unmaking traditional institutional practices of science, my ethnography must account for the embodiment of social identity in the context of multiple structures of power that reproduce inequality in science.

When long subjugated voices are centered and celebrated in scholarship, and established “truths” are troubled by the social location of the researcher’s claims, disinterest, erasure, and worse can result. In the context of technoscience, these threats are heightened. Challenging assumptions about what counts as technoscience and who can competently produce it takes courage and care. Care is especially important when gender violence is involved. Due to the shame involved with these crimes and the history of slander and retaliation against survivors, anonymity cares for survivors’ well-being and encourages reporting (Birdsell 2014). But it is also important for survivors to have a chance to tell their stories and not only confront perpetrators but hold institutions that enable this violence accountable too (McBride 2018). Since feminist anthropology pivots on the measure of power and its enforcement, when engaged in research with subjugated members of a scientific community, I struggle to report on power and violence in high tech in ways that simultaneously protect research participants and hold powerful institutions accountable to just labor relations.

Traditionally, ethnographers rely on anonymization to mitigate the threats of exposure and, consequently, retaliation to participants. For years, I failed to question the assumption that anonymization techniques, blurring names, places, and backgrounds, was best. The process of withholding data from dissemination to protect participants may be a way of keeping secrets and, thus, further enabling technical institutions and some of their members to harm groups I care most about protecting (Baez 2002). Moreover, anonymizing research participants can contradict the tenets of feminist ethnography and actually reify the interpretive authority of the ethnographer and prevent the accumulation of rich, place-based scientific data over time (Jerolmack and Murphy 2017; Nespor 2000). For these reasons, some qualitative researchers today are following in the

footsteps of Hurston and questioning the default practices of ethnography. Specifically, we are rethinking anonymizing as a given in ethnographic research (Baez 2002; Reyes 2017; Jerolmack and Murphy 2017; Nespor 2000; Damianakis and Woodford 2012). “Decisions regarding transparency should be made on a case-by-case basis” (Reyes 2017, 204). Even within a single project, combining disclosure with masking can work to balance ethical commitments to one’s participants with scholarly rigor that does not favor the ethnographer’s power. For example, in a recent paper on race and gender in engineering, I received permission from my research collaborators to de-anonymize the data, save for a few instances in the data when the participant requested masking (Carrigan et al. 2023). If a choice between the two must be made, however, “the preservation of confidentiality—preventing participant harm—takes precedence” (Damianakis and Woodford 2012, 714).

Findings: How to Practice Sheltering

Care Tactic 1: Reflexivity

Disclosure of the subject of knowledge and her positionality is essential in Sheltering. The opacity of the shelter in which some data resides is created with the transparency of the researcher’s positionality. In personal disclosure, I invert the logic of positivism to explain the particular grounds on which I stake my assertions about the social order in technoscience. I invite my readers to assess my claims within the context of my social situation (Haraway 1988; Harding 2004). For example, I refuse to internalize epistemic bias against qualitative science, and my methodological pride shapes how I work to establish trustworthiness in the knowledge I produce and with whom. I have no interest in trying to sway scholars who are extremely resistant to post-positivist approaches and instead direct my message at the majority of technoscientists who occupy a liminal position in the struggle to broaden participation in technoscience—neither change agents nor antagonists (see Carrigan et al. 2021).

Traditional norms of research and evaluation fail to acknowledge the maldistributions of risks and harms in science, and Sheltering appropriately means refusing to make this cognitive error. For example, I have always been financially independent and plan to remain so. Therefore, I have had no choice but to grapple with both interpersonal and structural gender violence in the workplace in order to support myself—to subsist. I turn the struggle of weighing a yearning for justice with the need to feed, clothe, and shelter myself into an intellectual resource that hones my ability to illuminate perversions and injustice in dominant groups’ accounts of science, power, community, and meaning (Harding 2004).

Reporting on and protesting hegemonic values and powerful actors in technoscience is also critical to Sheltering. This critique is also risky sometimes,

which affords me the opportunity to understand the risks my research participants are taking to talk with me. Therefore, sharing the social situation from which I make my knowledge claims not only allows me to offer a more complete picture of cultures of technoscience, it puts me in the same category of risk as my highly underrepresented participants who navigate incivility to persist in these fields. I also personally know the fear of retaliation that often results from reporting harassment (Sekreta 2006; Bergman et al. 2002; Cortina and Magley 2003; Fitzgerald, Swan, and Fischer 1995; Clancy et al. 2014), and this shared experience heightens my theoretical sensitivities on gender violence in technical workplaces. Like any social movement, proof that I am Sheltering appropriately can also be verified by provoking the very violence I seek to end.

My scholarship is in protest of the inequities and violence in the US technical workforce and its tolerance of the disenfranchisement of women and scholars of color. In this way, I use Sheltering to guide my tactical repertoire of care (Taylor and Van Dyke 2004). My years of experience as an executive in a hightech corporation and faculty at a polytechnic school are scientific resources I take up to maximize the veracity of my claims. For example, in my book on harassment and resistance to it in computing, I practice Sheltering using #MeToo tactics. I share autoethnographic accounts throughout to verify and augment my participants' experiences or *in place of* a participant's account that would put them at risk of facing the bread line (Carrigan, forthcoming).

Care Tactic 2: Refusal

Representing the voice of each actor within the context of the struggle for control within technoscience requires understanding the participant's standpoint within a complex web of intersecting structures. Balancing curiosity about marginalized groups' experiences while also caring for individuals' safety and privacy, Sheltering, like many labor struggles, can depend on acts of refusal. Ruha Benjamin (2016) coined the term "informed refusal," which not only refers to sovereign acts by research participants but also to ones enacted by the researcher herself.

For example, Audra Simpson (2007) and Kim TallBear (2013) "both refuse to represent indigenous communities in particular ways for ethnographic consumption," acts that affirm Indigenous communities' agency and spotlight a certain amount of distrust of science born from relationships determined by an inequitable distribution of resources and power (Benjamin 2016, 969). Benjamin invokes "strategic discretion" to refuse to share types of resistance in communities of color to algorithmic injustice, because "not all manner of gettin' free should be exposed" (2019, 161). Exposing tools of resistance—say, for example, workers' informal resistance to managerial and technocratic control—can work to the advantage of the owners of means of production to the

detriment of workers in class struggles (Peña 2020). Martina Svyantek refuses typical methods of qualitative research such as interviews and observation that require money and travel and privilege nondisabled fieldworkers, and instead uses document analysis to interrogate norms of access and power in institutions of higher education (Secules et al. 2020). These scholarly acts evince that power and the hegemonic ideologies that support its asymmetries can be excavated by refusing to conform to assumptions of how to best practice ethnography. Further, as a manifestation of critical methodology, “refusal challenges the individualizing discourse of institutional review board consent and ‘good science’ by highlighting the problems of collective harm, of representational harm” (Tuck and Yang 2014, 242).

For example, I learned important lessons related to white women’s behavior in cross-race collaborations that hurt women of color and coalition-building in technoscience. In a small community oppositional to the mainstream politics of science in the US academy, I collected ethnographic data—including interviews and participant observations at team meetings and symposia—and performed “care-full” data analysis, including member-checking and collective interpretations. I found evidence of how white women signal hostility to women of color by demanding they justify who they are, what they’ve gone through, or the nature of their lived experience. This signal runs counter to the commitments of a care and justice most feminists in STEM espouse. Here, I highlight some white women’s behavior but shelter the ways I know the impacts of these harms because it could cause strife within a community that is already at risk from discriminatory treatment in the US academy. Further, I do not have permission to share the empirical data that supports these findings related to white women’s behaviors in communal efforts to desegregate technoscience. Finally, the refusal to center the pain of marginalized groups allows me instead to spotlight dominant group members’ behaviors in my effort to contribute to institutional change in US technoscience. I refuse to subscribe to a “theory of change in which harm must be recorded or proven” in order to be valid and taken seriously (Tuck and Yang 2014, 227).

There are four patterns of behavior that white women enact to derail partnerships with women of color in collective efforts to desegregate technoscience. The first pattern of behavior that some white women in academia demonstrate is a form of Oppression Olympics (Dace 2012). In a conversation that centers on a woman of color’s lived experience, the white listener may respond not with empathy but rather a *need* to receive empathy. For example, I sometimes heard responses to disclosures of racism framed as “I’ve suffered too.” The problem here is not the attempt at a shared vulnerability but rather the missed opportunity to listen and learn about the specifics of experiences of gendered racism and how these experiences differ from the sexism experienced by white women. White feminists can seek unity in suffering,

which Audrey Lorde argues is misnomer for a “need for homogeneity” (1984, 79). Homogeneity erases differences between women, privileging white women and upholding white supremacy in technoscience.

A second common response is when white women react to women of color’s personal stories with expressions of guilt and apologies. This behavior is another form of not listening and failing to empathize that also works to wrestle attention back to the white woman’s experience and feelings. Guilt thereby silences the experiences of women of color in a similar way to how women of color’s experiences are silenced by white supremacy on multiple scales, such as in positivist research wherein their underrepresentation renders their stories as statistically insignificant.

A third way white women impede the creation and sustainment of cross-race alliances in STEM is a refusal to analyze systemic problems of oppression in the academy from an intersectional framework, **which** relates to the example given above and is commonly expressed as “but we are all women!” This attitude stems from a fear that adding the intersection of race to the fight against sexism in STEM will splinter women and dilute a critical mass of resistance. However, this fear is irrational because any liberation won for women of color in an institution will benefit all members of that institution (Combahee River Collective 1981). Finally, outrage and tears are sometimes used by white women to avoid listening to how they themselves might be contributing to the reproduction of white supremacy in US higher education.

I used member-checking techniques to verify these findings, a form of care in the analysis phase of the research process. However, caring in the dissemination phase of research can sometimes require Sheltering—weighing one’s stewardship and responsibility to multiple constituents and ethical considerations (Tuck and Yang 2014). Sheltering, an experimental enactment of care in interventionist STS research, may not be rigorous enough, or recognizable even to STS experts who use the case study method drawn from intellectual traditions rooted in positivism (Feenberg 2017). However, I invoke Sheltering within this broader account of how knowledge was collectively produced in a cross-racial, interdisciplinary alliance in the hopes of not only making institutional change in technoscience, but also in the hopes of sparking dialogue in STS that could help mediate the tensions between positivism and post-positivism in our field.

Care Tactic 3: Articulating a Succinct Description

Inspired by queer anthropology (Newton 2000; Johnson 2008), Sheltering can also take a performative approach to ethnography. For example, my novel method, Articulating a Succinct Description, uses the case study method to

disseminate findings rather than rather Geertz's (1973) "thick description" approach to ethnography. In making my findings legible and relevant to the technoscientific worlds I study, I found Geertz's approach limited. Translating social science writing to engineers requires further ethnographic innovation. I break with Geertz's commitment to thickness, trading quantities of details for a performative design of my ethnography, one that uses script form to evoke for the reader the setting and interpersonal dynamics within it. Performative ethnography—an artistic or theatrical rendering of ethnography—has advantages over text in that it is designed to be engaged by multiple people and elicit a range of senses and emotions to invoke a complex portrait of a culture (Johnson 2008; Madison 2019).

There are four stages in this iterative model I call Articulating a Succinct Description. The first (Stage 1) is ethnography, collecting data using participant observation, interviews, and content analysis. The second (Stage 2) involves the analysis of this data, the third (Stage 3) involves using significant themes and moments that emerged to create a case study designed to evoke verisimilitude of cultural phenomena that can be unpacked and analyzed during the fourth stage of this method (Stage 4)—Case Study Facilitation as a Cultural Probe. Data collection occurs in Articulating a Succinct Description at two distinct moments, during ethnography and the cultural probe. Cultural probes are interventions designed to excavate people's knowledge about their own culture by asking them to document their experiences of participating in the intervention and sharing this documentation with researchers for analysis (Gaver, Dunne, and Pacenti 1999). The data from probes is applied to modify the cases to enhance verisimilitude and, in analysis, more effectively disaggregate participants' group membership in order to communicate, verify, and fortify an intersectional theory on harms and harassment in technoscience. This kind of theory of change in technoscience "can be applied to innovating policy and practice" (Bowleg 2019, 418). A cultural probe approach pairs well with performative ethnography because it too centers around dialogue between the participants and the researchers (Graham et al. 2007). Further, the goal of cultural probes in Articulating a Succinct Description is to generate awareness of not only participants' individual lives and beliefs but also their experience of collectively analyzing and discussing the case with others in their small groups during the case facilitation.

Articulating a Succinct Description yields new knowledge about multiple subjectivities in a culture. Its success in doing so lies in the way the case study serves as an instrument to amplify the voices of disenfranchised group members without putting them at greater risk of being targeted. It also helps facilitate a collective process of cultural curiosity and exploration between people with varying standpoints without burdening underrepresented folks with the work of educating majority group members about privilege and structural power

relations or exposing them to retributive responses. In other words, it extends the lens of inquiry beyond already spotlighted vulnerable groups in a culture to include a range of group memberships, thereby scaling up the study's sample and increasing the protective capacity of anonymity.

For example, I co-created a case called "Greg and Sara," which centers on a conversation between an African American male engineering undergraduate and a white female engineering undergraduate comparing and contrasting their experiences of bias and discrimination while working in teams for class projects. The scenario is based on significant themes that emerged from data gathered by students in my introductory undergraduate cultural anthropology classes between 2015 and 2018. I assigned mini-ethnographic projects to my students, engaging 500 undergraduate students in the first stage of data collection. I then facilitated the case with over 250 students and dozens of faculty across my university and used the cultural probe data to refine the case, enhancing the veracity of both Greg's and Sara's experiences and the racist and sexist behaviors they encountered. Thus, I enacted Sheltering through the performative design of this case study and the Large N of scholars who participated in Stage 1 (ethnography) and Stage 2 (cultural probe) of this instance of Articulating a Succinct Description.

In this kind of performative design, the case's verisimilitude to the engineering community was my lodestar for validity. In effect, I use post-positivistic methods to verify findings in fields that are constituted by positivistic methods. This approach opened me to seeing that more traditional forms of knowledge sharing also involve performing trustworthiness. Trusting one performance more than another is a socially situated decision. Sheltering requires asking whose trust do we value most: empiricists' evaluations or the community members in the worlds we study? In Articulating a Succinct Description, by conflating the two, I dissolved the binary between researched and researcher, thus mitigating the epistemic hierarchy of technical and social knowledge that so stymies the social movement to desegregate technoscience (Carrigan et al. 2021).

Discussion

Sheltering represents my growing repertoire of care tactics to protest epistemic and social injustice in US knowledge production. Like all protest repertoires, it borrows tactics from other social movements that contest power in science (Taylor and Van Dyke 2004). I use it to honor the interests of the communities that make my research possible and collectively organize with those who are also made to feel unwelcome in the technoscientific labor force.

Sheltering involves reciprocity, stewardship, and solidarity while theorizing on power in technoscience. Sheltering could fail and reproduce existing power relations, much like Sherry Ortner (1995) feared that too little description of the

marginalized group could dehumanized and malign them. The success of Sheltering as a methodological tool in STS depends on theorizing power in such a way that inverts dominant modes of exposure and occlusion, visibility and invisibility. Building trust with a vulnerable community in a powerful field and honoring their perspective in our research can sometimes mean losing trust with empiricists. The costs of the latter are part of the calculus of Sheltering, as is the social capital engendered in worldmaking with others to end racism and heterosexism in science. Sheltering can magically morph from umbrella, to tree boughs, to circus tent, depending on the level of threat and collaborators' needs. Within the shelter, collective resistance to dominant norms in science can foment without being surveilled.

Sheltering applies theoretical sensitivities and care tactics I have developed as a queer scholar in a heteronormative academy and white, cisgender woman collaborating with marginalized communities of women and non-binary scholars in technoscience. Sheltering was partly inspired by the computing practice of black boxing. Masking data sets is standard practice in this quantitative field and does not discredit practitioners' claims of rigor. I lay claim to this logic in my research, blending two STS traditions—strong objectivity and ethnographic refusal—to offer guiding principles for other ethnographers. Both bodies of work stress the primacy of the perspectives of those systematically disenfranchised in scholarship. Studying the social dynamics of gender, race, and sexuality in the powerful spaces like technoscience in collaboration with marginalized communities is fraught with turbulence. Collaborations such as these become even more bumpy when they involve other asymmetries, like career stage, opportunities, resources, and epistemological privileges. Sheltering attends to the tensions that arise in producing knowledge about nerve centers of power like technoscience from the viewpoint of its marginalized workers and pertinaciously disseminating it with care for both the researched and the researcher.

Conclusion

I combine reflexivity, refusal, and performative design in a research methodology I call Sheltering. Sheltering is a response to the challenges posed by disseminating ethnographic research on certain scientists, such as women of color, who, by way of their underrepresentation, are often highly visible (Settles et al. 2018). I direct the focus of my research findings on the abuses of power and the mechanisms that form and reproduce neocolonial patriarchy in high tech. I am continually experimenting with ways to combine the politics of care with the tenets of critical methodologies and the efficacy of ethnography to best amplify voices of technoscientists too long marginalized, within terms of engagement that can offer majority group members opportunities to become change agents.

In introducing Sheltering as a feminist methodological strategy, I have excavated the strengths and weaknesses of both masking and disclosure, especially in the

context of gender and racial relations in current US-based scientific production. The opportunities and constraints of using ethnographic methods to study technoscience become even more complex when the research is designed according to intersectionality theory. On the one hand, the pursuit of justice in technoscience requires attending to critical differences between scientists who have been disenfranchised from knowledge production due to racism and sexism. On the other hand, sharing the lived experiences of severely underrepresented members of technoscience heightens the risk of retaliation and harm to them. Further, as a feminist methodology, Sheltering is in coalition with political projects to desegregate powerful, lucrative fields and in solidarity with the disenfranchised members of these fields whose very persistence is a form of resistance. Care thus must apply not only to the researcher's relationship with collaborators and community members but also to the worlds they navigate and the struggles in which they are engaged.

Sheltering is also grounded in refusal, refusal to share evidence that could cause harm to either individuals or social groups. It borrows black boxing as a useful methodological tool from computer science to resolve what Liz Tilley and Kate Woodthorpe (2011) call a "rock and a hard place" between balancing concerns for the safety and privacy of research participants while maintaining the integrity of the research process and preserving and communicating the veracity of these ethnographic claims. "When engaging small connected communities, qualitative researchers might face significant tensions while carrying out the dual mandate to advance knowledge and uphold research ethics, especially participant confidentiality" (Damianakis and Woodford 2012, 714). Sheltering also spotlights how institutional powers operate, rather than continuing to spotlight those on the margins of the institutions (Ahmed 2012). The opacity of the shelter in which some data resides is designed as a protective measure and is balanced with the transparency of the researcher's subjectivity and personal relationships in "the field," strategically inverting the power imbalances in traditional empiricist practices. To fulfill the National Academies' 2022 call to action to desegregate data on women in technoscience and learn from the lived experiences of women of color scientists, we must innovate current research practices and cultivate care, communal resistance, and mutual support not only to transform who gets to produce science but also to reimagine other ways of knowing.

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