

Integrating Theories of Intersectional Power, Learning, and Change to

Explore Faculty Experiences on Equity-Centered Change Projects

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Abstract

Efforts to lead diversity, equity, inclusivity, and justice (DEIJ) change in higher education, and in STEM departments in particular, are prone to failure. We argue that these complex efforts entail orchestration of learning, change, and power, and therefore, understanding how organizational change teams function necessitates a combination of theories. We examine how faculty experience change projects in postsecondary engineering education, including the ways in which their experiences—and the change efforts they're engaged in—are shaped by identity and intersectional power. Using a narrative approach, we report on the experiences of three composite cases of faculty members on change projects across multiple institutions, drawing on theories of learning, change, and power to glean understanding of these experiences. Our findings suggest that bringing these three theoretical lenses together through what we call the TRIPLE (Theories and Research on Intersectional Power, Learning, and Evolutionary) Change Framework helps develop a more critical and nuanced understanding of faculty experiences on organizational change leadership teams.

Keywords: organizational change; composite case study; faculty; engineering education; intersectional power

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Institutions of higher education have employed many change strategies aimed at rectifying inequities in access, experiences, and outcomes for students and faculty from historically marginalized communities (Dowd & Bensimon, 2015; Kezar, 2013; Office of Planning Evaluation and Policy Development et al., 2016; Posselt, 2020; Singleton et al., 2021). These inequities are particularly pronounced in STEM departments, where analyses of climate reveal long standing issues of bias (Blackwell et al., 2009; Secules, 2019; Slaton, 2010; Williams et al., 2005), shaped by ways inequity has been baked into the development of postsecondary institutions in the United States and beyond (Gusa, 2010; Stewart, 2020). This qualitative study examines the experiences of faculty working to advance equity on organizational change teams in postsecondary engineering education, drawing on theories of learning, change, and power to understand how identity, power, and privilege shape both individual experiences of change agents and institutional change processes.

The Need for Equity-Centered Change in Higher Education

Despite diversity, equity, inclusion, and justice (DEIJ) often permeating the stated mission and vision of institutions of higher education, faculty, staff, and students do not always experience those values in action. For example, Elliott et al. (2013), who surveyed faculty, staff, and students at a health sciences institution, found that participants experienced disparaging comments and insensitive behaviors related to a variety of social identities, despite messages of diversity and inclusion. Other research has shown that women and faculty of color experience bias, discrimination, microaggressions, tokenism, and epistemic exclusion within the workplace (Haynes-Baratz et al., 2022; Parsons et al., 2018; Rideau, 2021; Segura, 2003; Settles et al., 2021; Walters et al., 2019). Despite attempts to diversify university faculty, there are fewer women and faculty of color, and they experience inequities in promotion (Blackburn, 2017;

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Kachchaf et al., 2015; Liera, 2020; Sensoy & DiAngelo, 2017; Turner et al., 2008; White-Lewis, 2020). Ongoing and cumulative tensions between ideal worker norms and social and domestic expectations and realities of women also create unique challenges for women's experiences in academia and their career trajectories.

Inequitable access, experiences, and outcomes for faculty, staff, and students are particularly pronounced and entrenched in STEM higher education, including engineering programs. Everyday norms, assumptions, and social interactions that structure higher education, known as ruling relations (Smith, 1999), have historically been created by and for white men—characterized as the “ideal worker” as a way to show how organizations are gendered (Acker, 1990)—and create and perpetuate systemic oppression and privilege (O'Meara et al., 2018). This centering of white, male, heterosexual, and able-bodied men is amplified within postsecondary STEM education (Pawley, 2019; Rincón & George-Jackson, 2016; Secules, 2019; Slaton, 2010). Despite efforts to broaden participation for women and people of color for over 40 years, women and racially minoritized students and faculty are still underrepresented in STEM higher education (ASEE, 2023; Chubin et al., 2005; National Center for Science and Engineering Statistics (NCSES), 2023). The persistent underrepresentation of people from historically marginalized groups is perpetuated by difficulty developing a sense of belonging and disciplinary identification (Brockman, 2021; Davis, Nolen, Cheon, et al., 2023; McGee et al., 2021; Rodriguez et al., 2018; Seymour & Hunter, 2019) related to unwelcome institutional climates in STEM departments (Hart, 2016; Leath & Chavous, 2018; Palmer et al., 2011), stereotyping (Beasley & Fischer, 2012; McGee, 2016; O'Brien et al., 2015), and structural racism (McGee, 2020; Tachine, 2022).

Approaches to Equity-Centered Change in Higher Education

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In higher education, efforts to bring about change aimed at DEIJ goals vary, with many approaches unguided by research-based models of organizational change or attention to power differentials (Smith et al., 2018; Turner et al., 2008). A common approach to reaching DEIJ aims in higher education is inclusive excellence, which doesn't adequately address power or intersectionality and gives short shrift to learning (Bauman et al., 2005; Milem et al., 2005; Williams et al., 2005; Worthington et al., 2014). The inclusive excellence approach has brought attention to inequitable outcomes, like graduation rates, and it has supported structural changes, like creating diversity offices and hiring faculty of color. However, this framework is limited in its capacity to bring about justice, in part because it defines power in outdated dualistic oppressor/oppressed terms as "the ability to determine the behavior of others" (Williams et al., 2005, p. 16), and in part due to its reliance on faculty of color to make change happen (as opposed to changing beliefs and practices of white faculty) (Harris et al., 2015).

While change in higher education settings is notoriously difficult, especially in STEM disciplines (Henderson et al., 2011; Kezar et al., 2015), efforts that aim at DEIJ goals must also contend with the complexity and resilience of power relations. Navigating both change processes and power dynamics also involves learning on the part of faculty, administrators, students, and other stakeholders (Davis, Nolen, & Koretsky, 2023; Davis et al., 2024). Thus, we argue for integrating theories that account for learning, change, and power, and describe our TRIPLE (Theories and Research on Intersectional Power, Learning, and Evolutionary) Change Framework (see Figure 1) below, an approach we pioneered in prior work (Svihla et al., 2023).

[Insert Figure 1 here]

The purpose of this study was to understand faculty learning, participation, and experiences in multiyear, DEIJ-oriented change projects. Using the TRIPLE Change Framework

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to analyze composite narratives, we illustrate engineering faculty's experiences on organizational change teams, considering different vantage points (e.g., related to faculty rank, gender). We were guided by the following research question: How does the TRIPLE Change Framework's integration of power, learning, and change theories help us understand the narratives and perceived experiences of faculty on DEIJ change projects?

TRIPLE Change Framework

In developing the TRIPLE Change Framework, we brought together theory on intersectional power, organizational change, and learning (Svihla et al., 2023). While various theories could be brought into the TRIPLE Change Framework, we deliberately chose intersectional power (Collins & Bilge, 2020), communities of practice (Wenger et al., 2002), and situated learning (Lave & Wenger, 1991). Integrating these theories of power, change, and learning better equips us to interrogate change and learning processes. We describe each theory and its salience to DEIJ change efforts, then draw the theories together.

Intersectional Power

Classical accounts of power commonly treat it as the difference between oppressor and oppressed; the oppressor has and exerts power over those who lack it (Weber, 1946). This simple binary also suggests power is rather material—a tool to be wielded, a commodity to be protected, or a gift to be shared, depending on the benevolence of the oppressor. In contrast, we take a distributed and situated view of power (Foucault, 1978) and one that is intersectional, acknowledging that social identities such as race, class, and gender do not act as discrete entities, but instead shape individual and collective experiences through complex, intersecting sociohistorical power relations (Collins & Bilge, 2020). To conceptualize power in this way, we use a set of four intersectional lenses that make the distribution of power explicit and available for analysis (Collins & Bilge, 2020). The structural lens focuses on policies that have inequitable

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impacts; the cultural lens focuses on ways culture sustains or masks inequities; the disciplinary lens focuses on ways people coerce themselves and others to sustain norms; and the interpersonal lens focuses on how individual's identities shape their experiences of bias. These lenses help us think more critically about how change efforts are impacted by complex power dynamics.

Terosky et al. (2014) examined ways structural power slows women's advancement across faculty tiers, situating this as an intersectional issue. The authors highlight ways in which the exercise of faculty agency is shaped by individual, institutional, and societal factors that disproportionately inhibit the advancement of women, people of color, and other historically marginalized groups. Barriers to advancement included unfair workload distribution and work-life balance issues, with women experiencing tensions between personal values and promotion requirements. They also identified norms that supported women to advance, including participation in workshops intended to help them overcome barriers and membership in professional networks. Kachchaf et al. (2015) examined career-life balance issues for women of color in STEM academia, also finding that structural and cultural factors, such as the construction of the ideal worker norm, create cumulative disadvantages for women of color. Rideau (2021) drew on critical race theory and critical race feminism to identify ways that non-tenure-track women of color faculty experience identity taxation, including unfair service burdens, and examine these experiences in relation to structural racism and sexism, as well as how these intersectional systems of oppression interact with policies, practices, and working conditions for contingent faculty in higher education. In this way, studies that take up intersectional lenses beyond the interpersonal highlight their relevance for change efforts.

Much of the research using an intersectional approach has focused on the interpersonal level, accounting for inequities, but not making, and seldom naming, changes to structures and

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discipline that might alter these experiences (Cho et al., 2013; Harris & Patton, 2019). Yet, to bring about just change, we need to alter structural and disciplinary power relations (Collins & Bilge, 2020). For instance, in a study of how minoritized faculty's views were shaped by structural and disciplinary norms, analysis of interviews with tenured faculty highlighted tensions between the pressure to publish and their desire to use their expertise to benefit society; although tenure increased their sense of being able to pursue the latter, many remained cautious (Wright-Mair & Museus, 2023). Similarly, Gonzales and Terosky (2020) used an intersectional approach focused on the interpersonal level to produce counter-narratives of tenured women, and especially women of color in academia, highlighting their nonlinear pathways, complex interdisciplinary research agendas, and preferences for collective ways of working.

Change

Among various change theories, we sought a model capable of explaining and guiding organizational—rather than individual—change. We chose the community of practice (CoP) approach for its emphasis on relationships, its accessibility for those who are planning change projects, (Wenger et al., 2002), and because it includes a theory of learning (situated learning, discussed in the next section, Lave & Wenger, 1991; Wenger, 1998). The theory of change outlined in Wenger et al. (2002) focuses on how CoPs connect professional development and the development of organizational capabilities in order to “create a potential for organized change far beyond the individual capacity to change” (p. 157).

CoPs are defined by their focus and collective attention to a problem (referred to as “joint enterprise”), which members address in sustained ways (referred to as “mutual engagement”), building and implementing new tools and strategies (known as their “shared repertoire”) (Wenger, 1998; Wenger et al., 2002). Wenger et al. (2002) emphasized that CoPs should evolve over time, offer varied levels of membership, build on familiar aspects but offer innovation, and

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establish regular activities. Because of the expectation that CoPs change, Wenger et al. (2002) developed a set of stages for understanding their progress: Initially, CoPs scope their focus broadly enough to invite participation while remaining focused and create initial ways of working together. As they coalesce, CoPs strengthen connections between members, gain legitimacy, and explore practices that are promising. As they mature, CoPs are deliberate about (re)defining their role with attention to sustainability, filling knowledge gaps, and sharing their learning with others, including by recruiting new members.

Research in higher education highlights the insufficiency of change approaches focused on formal organizational structures without addressing the role of social relationships (Kezar, 2014). CoPs provide a mechanism for organizational learning and development that, through regular interaction and knowledge development over time, can create organizational change (Brown & Duguid, 1991; Cordery et al., 2015; Gehrke & Kezar, 2017; Kezar et al., 2017; Ma et al., 2019). As a change theory, CoPs have commonly been used to promote improved teaching practice and have been found to help shift instructors' beliefs, knowledge, and practices about teaching and learning (Borrego & Henderson, 2014; Gehrke & Kezar, 2017; Kezar et al., 2017; Ma et al., 2019). In other organizational contexts, CoPs have also been shown to impact human, social, and organizational capital in organizations as well as support the development of more effective operational routines (Brown & Duguid, 1991; Cordery et al., 2015).

Complex organizational change requires multiple, coordinated strategies (Borrego & Henderson, 2014; Henderson et al., 2011); we argue that DEIJ-centered change that aims to shift longstanding policies, structures, norms, and values that have privileged particular groups over others throughout history requires attention to power in this process. For instance, to better understand how Hispanic-Serving Institutions (HSIs) can actually serve, not just enroll, Latinx

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students, Petrov and Garcia (2021) brought together intersectionality and CoP to identify strategic and comprehensive supports for change.

Although most change efforts focus on the individual rather than the structural level (Armstrong & Jovanovic, 2017), several studies bring clear attention to structural, cultural, or disciplinary change from a DEIJ lens. For instance, Newsome et al. (2022) brought together a focus on equity and change to design a model for departments to critically examine the impact of policies and practices on minoritized students. Armstrong and Jovanovic's (2017) analysis of DEIJ change efforts that address intersectionally-marginalized faculty identified five cultural and disciplinary norms for successful change: 1) proactive leaders feel a sense of responsibility and hold others accountable; 2) change agents recognize there are multiple contexts faculty work across and that the same strategies may not work across each context; 3) change agents promote understanding, especially through allyship, about the impacts of service burden that members of multiple marginalized groups bear; 4) change agents take responsibility for learning about research on change across disciplines; 5) these efforts empower marginalized faculty and allow them to define their own needs, rather than treating them as tokens. Dowd and Bensimon (2015) also considered accountability and transformation in higher education by grounding an understanding of equity issues in theories of justice and critical perspectives on structural racism in higher education. They proposed a set of inquiry-oriented norms for equity-minded change they call the Equity Scorecard.

Other projects have used specific models of organizational change, integrated with a focus on DEIJ. For example, Stanley et al. (2019) described successes and challenges related to institutionalizing a diversity plan using an eight-step model for organizational change (Kotter, 1995). They noted that using specific conceptual frameworks for organizational change “enables

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diversity plans to be positioned and implemented strategically to foster an institutional culture of accountability, which will better enable universities to deliver on their espoused diversity rhetoric, values, and mission” (p. 264). Likewise, Carrigan et al. (2011) combined feminist organizational theory and critical mass theory to account for STEM faculty satisfaction and its relation to how much time faculty allocated to teaching, scholarship, and service. They found that the gendered division of labor in STEM fields—such as women reporting more time on teaching and men reporting less time on teaching—was mitigated when women accounted for at least 15% of the faculty. Women faculty in STEM disciplines with a critical mass of faculty also reported increased career satisfaction. The authors conclude that achieving a critical mass (at least 15%) in a community has important implications for equity and advancement for minoritized groups. Studies like this help us understand how bringing theories of power and change together can identify strategic opportunities for DEIJ change.

Learning

In order to bring about sustained DEIJ change, members of higher education change teams need to learn about the ways power is distributed and reproduced in context and about change theory and strategies that can address structural and disciplinary power. From the process of framing change aims to implementing strategies, members of change teams have many opportunities to learn and may also find themselves in the position of supporting peers’ learning. To understand and promote DEIJ change, we therefore need a theory of learning that can account for learning as a process that is social and contextual. As is common with CoPs, we use situated learning theory (Lave & Wenger, 1991). From this stance, learning is a co-constructed, embedded process through which more central members mentor peripheral members, who gradually take up more central roles. Sociocultural theories like situated learning focus attention on interactions in context as a mechanism for learning and development.

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Several studies have brought attention to learning within change efforts. For instance, in a community organizing situation, Pham and Philip (2021) characterized how members' experiences, such as prior participation in a union, positioned them in central roles. At the same time, these central members also adapted their actions in an agile manner. Being responsive to changing needs supported peripheral members to commit to the cause. Examples like this provide insight into situated learning as a process of drawing from past experiences and adapting them, in this case, to a DEIJ effort.

The situatedness of practice is both a driver and barrier in change efforts. To ignore the importance of situatedness within a local context would make it challenging for faculty to envision the fit of new practices. Yet simply embracing practiced routines does not disrupt them, meaning the learning experiences should connect to local, embedded knowledge, yet offer new ways to interpret situations and new information about ways to respond in specific situations (Fraser & Hunt, 2011). Thus, in the context of a DEIJ change team, members need to critically reflect on ways faculty members benefit from privilege; they may also repeatedly be in situations in which they can prompt others to do likewise. But this is a nuanced and fraught process. Research repeatedly demonstrates that trainings that invite learners to place themselves into scenarios in roles of victim and aggressor can promote feelings of shame, or worse, can lead to retaliation—and this is why many suggest adding a bystander role (Dobbin & Kalev, 2016, 2019; Haynes-Baratz et al., 2022). We argue that positioning even peripheral members as not just bystanders, but as change agents, places responsibility on them to both learn and act.

Bringing Theories Together in the TRIPLE Change Framework

The TRIPLE Change Framework provides a tool for examining DEIJ change efforts in terms of learning, power, and change. Within the framework, understanding intersectional power allows us to examine how individuals' social and professional identities impact the work they

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engage in and how they are recognized and rewarded. For example, their work and related recognition (or lack thereof) may be shaped by available resources or policies that advantage some and disadvantage others based on aspects of their social and cultural identities. This framework also brings attention to how learning functions as both mechanism and outcome of DEIJ change efforts. Members may learn about the ways power is distributed within a particular context, and in guiding change, they may need to support peers to learn about these issues as well. In this way, change is accomplished as a CoP expands and draws peripheral members into more central roles, as explained by situated learning. The TRIPLE Change Framework prompts us to not only inquire from a mono-lens stance, (e.g., “What structural and disciplinary relations inequitably support and promote majority faculty?”), but also from a di-lens stance (“What structural and disciplinary changes support and promote minoritized faculty?”), and a tri-lens stance (“What supports faculty to learn about and change structural and disciplinary relations that inequitably support and promote majority faculty?”). In this study, we used the TRIPLE Change Framework analytically to examine how the experiences of faculty members on change teams—and the change process itself—were shaped by interrelated power, learning, and change processes.

Methodology

We used narrative approaches to investigate the experiences of faculty and how they accounted for their roles and efforts in DEIJ change projects (Polkinghorne, 1995; Riessman, 2008). The reasons we used a narrative approach were twofold: first, we wanted to capture our participants’ stories to uncover manifestations of power, and second, we wanted to share the results of our work narratively, which both helps communicate participants’ perspective and makes scholarly results more broadly accessible (Barone, 2007). Narratives help us make sense of our own and of others’ lives (Kim, 2015). Telling stories from one’s own perspective can also

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be a way to exercise power and a form of resistance (Chambers, 1984). In this project, we wanted to provide space for our participants to exercise this type of resistance. Such stories are a form of counternarrative—stories told from the margins that stand in contrast to dominant narratives (Bamberg & Andrews, 2004; Giroux et al., 2013; Solórzano & Yosso, 2002). We were interested in how participants’ stories of their experiences on change teams differed when they were told from different perspectives (e.g., role on the team, gender, race, disciplinary background, etc.) and how power manifested in these stories.

In this project, we developed three theoretical cases (Ragin & Becker, 1992), composited from interviews with multiple faculty (Wertz et al., 2011; Willis, 2019). This composited approach provided a sense of confidentiality that allowed faculty to share their negative experiences and failures more openly and was detailed in IRB and recruitment materials (Piper & Sikes, 2010; Willis, 2019). In addition, composite narrative approaches improve credibility and transferability of research findings by enhancing accessibility for readers and enabling researchers to share context alongside participants’ experiences (Johnston et al., 2023; Wertz et al., 2011).

Data Collection and Analysis

As members of change teams supported by NSF Revolutionizing Engineering Departments (RED) grants ourselves, we recruited members of RED change teams across the United States engaged in multi-year, grant-funded projects aimed at revolutionary changes in engineering departments. The RED projects aim “to catalyze revolutionary, not incrementally reformist, changes to the education of the next generation of engineers. Revolutionary means radically, suddenly, or completely new; producing fundamental, structural change; or going outside of or beyond existing norms and principles” (National Science Foundation, 2019, p. 4). We offered a gift card for their participation in interviews that lasted from 30 to 82 minutes with an average duration of 54 minutes. We conducted 15 interviews with members of nine teams,

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including PIs, co-PIs, postdoctoral scholars, disciplinary faculty, social scientists, and engineering education researchers. In some cases, these categories overlapped, with postdoctoral scholars serving in the role of social scientist, or disciplinary faculty serving in an engineering education researcher role. Eight interviews were with men and six with people of color¹. We conducted interviews with no more than two participants from each team so that we had a diversity of experiences across different teams.

We used a semi-structured interview protocol, first discussing consent, explaining that we would composite cases to protect confidentiality (Porter & Byrd, 2023; Wertz et al., 2011; Willis, 2019), and indicating that we would provide an opportunity for member checking. We asked participants about their role and the structure of their change team, successes, disagreements (e.g., “Can you describe a time you disagreed with something or someone on the team? Did you speak up? Why or why not?”), and challenges faced. We then asked about social (e.g., gender and cultural identities, first-generation college graduate) and role (e.g., disciplinary affiliation, institutional position) identities and their influence on their participation and experiences. We asked for a detailed account of a recent team meeting, including who set the agenda and facilitated, who spoke, and in what ways the meeting was or was not typical. We audio recorded interviews and transcribed them, including filler and pauses.

For this study, we selected and organized multiple interviews into three cases, composited by vantage point: Yvette is based on interviews with four participants—two postdoctoral researchers, two assistant professors—and is an assistant professor focused on engineering education research. Yvette is composited from one person who is not a member of groups minoritized in engineering, and three who are members of multiple such groups. Because these

¹ We do not provide more specific information about participants’ racial and ethnic identities to protect their confidentiality, as some racial and ethnic groups are sparsely represented across the RED teams.

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groups are sparsely represented across the RED teams, and because some specifically mentioned not disclosing some of these identities, we do not provide specific demographics. Charles, based on interviews with four participants, is a senior faculty member who has commonly occupied leadership positions and is respected for his research accomplishments. Charles is composited from four men, two white and two people of color who are immigrants; these individuals include three full professors and one associate professor who has been a faculty for over 20 years. Maria, based on interviews with three participants, is also senior, and though she completed her doctorate in mechanical engineering, her focus has shifted over time to engineering education research. Maria is composited from three white women. Participants whose stories we composited as Yvette and Maria share other aspects of their identities that influenced their experiences: being from a rural area or low-income household, a first-generation college attendee, LGBTQIA+, a person with a disability, and the youngest person on their team.

We read transcripts multiple times, sometimes reading start to finish, other times reading responses across transcripts, pulling together similar experiences and making note of divergences. In the composition process, we treated differences across transcripts as developmental. Given the five-year timespan interviewees reported on, we arrayed similarities together and differences over time and structured the stories with a beginning, middle, and end (Riessman, 2008). When participants offered similar stories, we typically selected one example; for instance, one shared that she stopped speaking up at meetings and another described withdrawing from parts of the project, in both cases, in response to oppression. We chose one, and used member checking to affirm that even when the specific example was different, it was still resonant. After compositing an initial case, we reviewed the case multiple times, posing

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questions and revisiting the transcripts. We use direct quotes to retain the voices of the interviewees each case represents (Wertz et al., 2011; Willis, 2019).

We then used the TRIPLE Change Framework analytically. We began with the learning, change, or intersectional power lens that seemed most likely to be used in each case. We then added other lenses, following the interviewees' accounts of their experiences. Specifically, Maria's account included forthright stories implicating power relations, including in her efforts to make change for herself and others, and when prompted, she shared what she had learned across these efforts. For Charles, we began with change theory because he was a self-described instigator of the change effort. Charles described how much he learned in the process of the change effort, and later, in contending with power relations, making these our second and third lenses. Yvette, perhaps because of her junior position, shared much about her learning in the process, which led to her account of contending with power relations. And, perhaps also because of her position, we considered change theory last in her account. While many analyses of intersectionality focus on the interpersonal level, in our analysis of intersectional power, we foregrounded attention to structures, disciplines, and cultures as sites of action (Collins & Bilge, 2020).

Positionality

Three of the four authors were involved with NSF RED teams, which led to an NSF project investigating the role of power and privilege across these teams, leveraging our insider experiences on RED teams. The fourth author was brought on towards the end of this project to support peer scrutiny and provide a semi-external audit of interpretations. The four of us bring different expertise and experiences to our work and we have found that, through working together, we have learned from one another and developed additional expertise. As an example, we had all engaged in DEIJ work, but until this collaboration had not developed expertise around

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domains of power (Collins & Bilge, 2020), which has influenced much of our work on this and other projects.

We believe that it is also important to share more about our identities and how they influence our study design and interpretations. We are all white women and understand that the lack of racial or ethnic diversity on our team may limit our interpretations of experiences, especially of people with marginalized racial and ethnic identities. To help address this limitation, we conducted member checking with participants with various marginalized identities, seeking participants' perspectives on our interpretations of data (Merriam, 2014). Our team includes two tenured faculty, a research professor, and a postdoctoral researcher with varying years of experience. The participants in our research project also ranged from full professors to postdoctoral researchers, and thus our professional experiences helped us develop deeper understandings of these narratives. Three of us individually led the construction of one composite narrative for this paper, and we aligned these choices with our experiences (e.g., the research professor arranged the composite narrative of Yvette who was based on postdoctoral researchers and junior faculty members). In addition, three of us conducted interviews and we tried to align our professional experiences with the participants (e.g., the engineering faculty typically interviewed disciplinary faculty). Our team includes LGBTQIA+ team members, neurodivergent team members, and a member with a recently-acquired disability. These identities are often marginalized in engineering education and they certainly influenced the way that we interpreted and understood the stories that were shared with us in our interviews. These identities also likely informed the composite narratives that we created.

Results and Discussion

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In this section, we share the three cases and offer interpretations through the theoretical lenses of intersectional power, situated learning, and CoP. These narratives demonstrate the complexity of experiences using the TRIPLE Change Framework.

Maria

Maria is a white woman and a self-described “outspoken and confrontational” full professor who is an active engineering education researcher, well respected in her field, and who has a mechanical engineering background. She has worked at her university for 30 years and is in her early 60s, but is referred to as “young lady” by a faculty member who was the previous department chair.

Analyzing Maria Through a Power Lens

Maria brought the call for the departmental change grant proposals to the attention of her colleagues and was involved in an initial unsuccessful attempt for funding. The team decided to resubmit, and Maria was again involved in the grant planning. She integrated her research interests and expertise in engineering identity into the proposal. A couple weeks before the grant deadline, the PI (who was also the department chair) decided to become more engaged in writing the project description. He made unilateral decisions in order to finish it in time. With only two weeks to the deadline, Maria was surprised to find her contributions to the project description had been “cut out” and her previously agreed-upon role on the project, as an engineering education researcher focused on identity research, was fundamentally changed. The department chair decided instead that her role should be that of a social scientist researcher focused on diversity and inclusion and wanted her to write a paragraph focused on this topic. Maria explained: “I thought [I] was doing one thing and I ended up doing another... At that point, it was too late... I was like ‘I just have to write this.’ And, so I kind of halfheartedly wrote it, thinking, ‘Oh, this is never going to get funded.’ And it did.” While she considered her

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identity-focused work to be related to diversity and inclusion, she did not position herself as an expert on diversity and inclusion. She was disappointed in this change and in her department chair for erasing her contributions. She explained: “The bottom line is that my voice was, was very much changed.”

This experience highlights a few power differentials, particularly related to her gender and discipline. Despite Maria’s position of relative privilege as a white full professor with a disciplinary engineering background, she expressed in an interview that she did not feel valued as a co-PI on the team, and thus felt powerless. By changing her role and contributions on the project, the PI, who was in a position of comparative power, demonstrated that he did not understand and perhaps, as Maria suspected, did not value Maria’s contributions. Maria’s relatively less privileged identities—her gender and disciplinary identification as an engineering education researcher, as well as another marginalized identity she kept hidden from her change team—shaped this and other experiences where team members failed to respect and value her expertise and contributions to the project.

Power differentials played out in other ways during the project as well. For example, during the first year of the grant, Maria asked the PI if she could have \$500 to purchase transcription software so that she could better work with data related to the change project. She was surprised when the PI denied her request. Years later, when the budget was finally made transparent for a different reason, she learned that another co-PI had been given a disproportionately large share of the project’s funding—funding that was 20 times the amount Maria had requested. Maria mentioned that this same co-PI received preferential treatment in other ways, such as a larger office and more personnel support. It became increasingly clear to Maria that the PI and co-PI (both white, male full professors) experienced preferential treatment

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that was masked by “their privilege and institutional position.” One way power differentials based on social and role identities such as race, class, academic rank, and discipline manifested was with change team members receiving different allocations of grant and program resources.

Adding Analytic Attention to Learning

Learning theory helps us better understand the process through which Maria’s team came to understand and value her expertise over time. Other members of her change team initially did not understand how she could contribute to the team’s diversity and inclusion goals through her research on engineering identity. She explained, “I know you want me to do diversity. I’m going to do it [by studying engineering identity].” Over time and with additional conversations, team members began to learn how engineering identity and diversity are interdependent and how she could meaningfully contribute to the team. For instance, in one team meeting, she shared stories of students they had interviewed, which included stories of a first-generation student and a Black student. The team responded in surprise: “These are *our* students saying these things? This is, this is really eye-opening.” Maria explained that had she not stood her ground, this collaboration and her role on the project would have been very different. She paraphrased her approach as: “This is my area of research, you know, take it or leave it.” Maria drew on her privilege (e.g., as a white full professor) to insist on doing identity research despite objections of those in more powerful positions, which created opportunities for more central participation on the team. At the same time, she also created opportunities for her teammates to learn about the connections between her research focus, their students’ experiences, and their project’s diversity and inclusion goals. Combining power and learning lenses helps us understand how Maria’s experiences on this team related to her intersectional identities and how, despite being relegated

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to a more peripheral role by the PI during the grant writing process, she became a valued member as the team learned about her research.

Adding Analytic Attention to Organizational Change

Adding consideration of change to power and learning lenses helps us understand how faculty's experiences are impacted by leadership and also how they affect change processes and outcomes. In year two of the project, the team decided to bring in diversity and inclusion experts to run a department workshop. From an organizational change perspective, the choice to bring in experts for a workshop could contribute to intended changes in the program. However, considering learning and intersectional power alongside change helps us better understand how this workshop affected the intended change in this specific program.

During the workshop, Maria decided to share her experiences with sexism as a graduate student from her relatively protected position as a white full professor. She explained: "I was hoping perhaps by sharing some of [those experiences with sexism], it might [help] some people." Maria hoped sharing her own experiences with bias might lead to increased appreciation for what people from a variety of marginalized communities in engineering education experience, in turn leading to change. Despite some increased respect over time, as described in the section above, she continued experiencing bias and microaggressions that seemed related to her marginalized identities. For example, the team rejected a course she proposed that aligned with the vision of the change project. They questioned her expertise by claiming that she was not qualified to teach a mechanical engineering course that aligned with her doctorate: "'How dare you offer something related to [mechanical] engineering when you're not in [mechanical] engineering?' I mean, I do have a PhD in [mechanical] engineering." Maria expected that sharing past negative experiences and being vulnerable would result in more support for her ideas for the

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change project. Instead, “no one has tried. ... I feel like, you know, my little bleeding self was out there, and now, when people don’t want to engage with the project, it’s like they don’t want to engage with me, right?”

Using an intersectional conception of power (Collins & Bilge, 2020), we can attend to ways power dynamics within and beyond the team may hinder organizational change. The DEIJ-focused workshop aimed to help them achieve their shared goal (“joint enterprise”) to develop a more just and inclusive departmental culture, including by supporting the development of more equitable norms, routines, and practices (“shared repertoire,” Wenger et al., 2002). However, considering power alongside learning and change highlights this workshop’s unintended effect of accentuating power differentials on the team and further marginalizing a team member. These power dynamics prevented the community from realizing more equitable practices and a more just departmental climate despite their continued mutual engagement.

Following that experience, Maria grappled with how to balance helping others learn about privilege and protecting herself. She pointed out how awkward and risky it was to share these vulnerable personal experiences with the person who does her annual evaluation (the team’s PI). Maria felt that others on the team outwardly acted as if they cared about equity, but when it came down to it, they were not willing to put in the hard work and recognize their own role in systemic sexism, racism, and other forms of oppression in engineering. Prior to these experiences, Maria was “constantly trying to educate the [PI and co-PIs] about experiences of people of color in their programs and how they are experiencing microaggressions all the time.” Integrating learning and power lenses helps us attend to the ways in which Maria’s attempts to help fellow change team members and the department at large learn more about diversity and inclusion (a role that the PI, after all, explicitly tasked her with) were stymied by power relations

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within and beyond the team. After this turning point, Maria rarely spoke in meetings, and when she did, she was “not really heard or understood.” When power dynamics led Maria to withdraw from team interactions (the CoP’s mutual engagement), it meant the community no longer benefited from opportunities to learn from Maria’s experiences and research. Maria’s voice became less influential in the CoP, negatively impacting the team’s ability to create a collectively-constructed joint enterprise and a repertoire of practices that would help them reach their DEIJ goals. If the team had considered intersectional power alongside learning theories, would they have been more likely to achieve their equity-focused goals?

Overall, Maria described feeling disempowered: “I feel disempowered... and I’m just exhausted by the RED project... I have spent the last five, six years doing institutional change work and I’m real tired. I’m real angry. But then leading with anger and not compassion, I know that I can’t, I can’t be an effective change agent leading with my sword out in anger... So it’s like, that’s not okay.” Even as the change team became more inclusive and functional under new leadership several years into the project, without the buy-in of the new department chair and others with more institutional power, they were not able to effectively implement the change strategies their research and experiences suggested would improve learning and DEIJ in the department.

Analyzing Maria Using the TRIPLE Change Framework

Power was central to Maria’s experience on the RED team, particularly the ways in which her efforts and expertise were not always valued. Even as someone with various privileged identities (e.g., white, full professor), Maria still experienced bias and microaggressions related to her positionality as a woman in engineering education. This first manifested when her contributions to the team’s grant proposal were removed and her role was changed, and then

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reappeared as issues with the allocation of resources—experiences that align with past research on ways women experience bias in academia (Kachchaf et al., 2015). A learning lens highlights how the team learned about and began to value her expertise and contributions on the project, and how she moved from a peripheral role on the change team (as relegated by the PI during the grant writing process) to a more central role, contributing to the team’s understanding of the students’ marginalizing experiences in the engineering department. When we also attend to organizational change in our analysis, we notice how events intended to support the equity-focused change efforts (such as the faculty development workshop) may not lead to desired changes because of entrenched power dynamics and their effect on community members’ receptivity to learning opportunities. Considering these three lenses together helps paint a more complex and nuanced picture of the team’s change efforts as well as the challenges individuals and the team as a whole experienced in trying to create revolutionary change.

Charles

Charles, an Asian man and senior faculty member in civil engineering, has previously held several leadership positions, such as PI on grants, department chair, and undergraduate advisor. His guidance has been sought by the dean on various projects, and his record of grant-funded research has placed him in a respected position. His opinion about and engagement in a department-wide change effort, therefore, stands to influence his colleagues.

Analyzing Charles Through an Organizational Change Lens

Charles’s previous use of active learning and learning technologies developed by others in his field made him a natural fit as part of the change team, which was working to improve students’ curricular experiences in the department. He cited his pedagogical experiences as positioning him in a central role on the change team: “it’s very fortunate for me in terms of, you know, the credibility I have to try and do some of this stuff that I like to do to help students.” For

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Charles, the departmental culture change called for by NSF was a curricular issue: “when we look at cultural change, the first thing we should attack is we should avoid packed curriculum.” While we would argue that this is a limited scope for these *revolutions*, Charles recognized it would be difficult to change a majority of faculty members’ beliefs even about course coverage.

Charles’s team initially met frequently to make major changes to core courses, which he contended covered too much, too shallowly. He changed his own course and stayed available to colleagues, engaging with their “tough questions” about what to remove from a course, how to assess learning, and how to maintain “rigor” in this process. Charles described regular interactions and norms that valued critique, explaining the team had “no hesitation to bring tough questions to the table. None of us have. And we have an understanding that if I bring a tough question, I don’t mean you’re doing bad. I mean I’ve not looked at it.” Over time, these collaborations formed a CoP (Wenger, 1998) focused on improving teaching and learning that included the change team but extended beyond it into the larger department.

Charles’ experiences leading research projects and serving in administrative positions provided him with some understanding of the challenges of getting faculty to buy into change. While it was straightforward to get “25% to 30% of the department [that] is very interested” to engage, the team encountered challenges as they sought to engage less interested faculty. In a matter of fact manner, Charles explained “there are certain faculty that—they don’t wanna change” and further, these faculty considered the new approaches incompatible with their beliefs about teaching: “They think we are weakening the program.” He maintained a pessimistic view, “for some faculty—I would say we need to wait for them to retire.” This suggests the CoP was a subset of the department.

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Adding Analytic Attention to Learning

We can deepen our analysis through the lens of situated learning (Lave & Wenger, 1991), considering the role of learning in the change process. Those central to the change work had opportunities to learn together through their change efforts. Charles valued his co-PIs from other fields: “In their own fields, they’re excelling in the research they’re doing.” He recognized that developing pedagogical innovations and evaluating their impact required expertise different from his own, “people who are deeply embedded in different, uh, traditions of scholarship which I—am needed to make this project work.” The interdisciplinary team offered new ways for Charles to make sense of the impacts of his teaching: “we teach a class, we analyze it, then we look at it, and then spend some time thinking about it and revise it over the summer and go back next year.” This collaborative inquiry into teaching became a regular topic at both change team and departmental faculty meetings, creating opportunities for more hesitant faculty to engage from the edges and learn about the process of improving teaching. In this way, participating in the CoP, whether in a central or peripheral role, created learning opportunities. Situated learning, therefore, offers a mechanistic explanation for the change. The situated nature of teaching means that faculty, even when faced with a meta-analysis showing that active learning produces better gains than traditional lecture (Freeman et al., 2014), may still struggle to envision it in their own classrooms. When opportunities for pedagogical experimentation were guided by research on learning, the faculty who participated in the CoP were prepared for further change.

Adding Analytic Attention to Power

We further deepen our analysis by considering intersectional power dynamics (Collins & Bilge, 2020) and Charles’ development over the project. When asked how his identities influenced his experiences on the team, Charles was unsure what he was being asked, and after prompting, he mentioned his ethnicity and explained “I don’t think people—I mean, some of the

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disciplines, it might make a difference, but not in engineering. People don't seem to, uh, really care." When his experiences of being different from those around him did not challenge his sense of belonging in engineering, these experiences did not serve as useful tools for change, and in some cases, may have fostered a unidimensional understanding of power. For instance, he described a faculty workshop where the provost asked him to join a group of five men and explain microaggressions to them. One professor from India shared that he commonly heard, "For somebody who grew up in India, you speak in very good English." The men at his table—all foreign-born faculty—connected this to their experiences of their students complaining about their accents, but Charles disagreed that these were examples of microaggressions because, as faculty, they occupied more powerful positions. At the time, Charles didn't reconcile the complexity of power relations, that someone with a more powerful aspect to their identity (e.g., faculty versus students) could also experience bias related to another aspect of their identity (e.g., being foreign-born).

Charles acknowledged his structural power when asked about his role on the project, "I think, uh, you... you know, if you look at... I am in a position both in terms of where I am professionally, what my status is at the institution, but also what my role is on the team. I have a lot of power and opportunity." From this vantage point, Charles expected to and encountered pushback from colleagues who struggled to accept the teaching innovations as compatible with their views of "rigorous" teaching. But his account of the pushback he encountered made it clear that he did not personally experience strife in the process; instead, he explained "I create lots of tension and friction because of the way I approach them. [...] They're tolerating me."

Charles also perceived team disagreements as more minor than others who held less social and institutional power. For instance, he recalled financial disagreements, similar to

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Maria's denied request for resources, describing these not as inequitable, but rather, using passive voice to distribute any sense of blame: "there is, uh, um, skepticism of the way others are using resources." His description suggests he was not much affected by such concerns. As is a common observation about the way privilege functions, those who benefit from it are often unaware of the ways in which they benefit (Collins & Bilge, 2020).

Charles recognized that women and faculty of color had a history that continued to shape their engagement, "that personal history of injustice is, you know, uh, uh, sometimes bubbles through a conversation." He observed structural and interpersonal power dynamics at play in his department, including gender differences in salary and in student evaluations of teaching. Yet he attributed these issues to the culture, "you absorb [bias] because of the environment." He observed colleagues' reactions to inequitable situations, recalling "you could physically see people withdrawing... as these things played out," but at least early in the project, he did not recognize a role for himself in changing this, though he offered acceptance.

Charles began the project rather unaware of the impacts of his power, which is an inherent aspect of privilege. Structural and disciplinary power are difficult to recognize for those enacting and benefiting from the power (Collins & Bilge, 2020; McIntosh, 1990). For change to happen, it's critical to recognize these privileges and how inaction perpetuates inequities, which Charles later began to recognize and respond to differently. He described the negative impact some of the more powerful resisters were having: "It is very hard to change the foundations that we wanted across the department... While there are people that are transforming—the loudest voices of the department in my opinion are not inclusive." Charles displayed some sense of responsibility for addressing this, explaining, "we just have to make sure we narrow their reach."

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The interdisciplinary collaboration created opportunities for Charles to observe intersectional power dynamics, such as when departmental faculty “were really behaving badly toward [women from social sciences and engineering education], just not respecting the fact that somebody from education would have—have anything to contribute to the conversation.” After witnessing this, he realized he could take a more active role, explaining “I try to be good about sorta watching the room and—and letting people—giving people a chance to speak.” This shift contrasts with early in the project when he simply observed “people withdrawing” during such meetings.

Analyzing Charles Using the TRIPLE Change Framework

By participating in the change project, Charles developed a clearer commitment to making changes aligned with inclusivity. Yet, his understanding was sometimes superficial. Advice for those who occupy powerful positions and seek to make inclusive change contends that they will make mistakes along the way and should be ready to reflect on those mistakes (Daftary, 2017). Beyond this, we recognize that a shift to action needs to be paired with opportunities for learning. Through the change project, Charles had multiple chances to deepen his understanding of power and privilege. These opportunities came from internal collisions, as he observed tensions around the change efforts, and from external collisions, as he engaged with social scientists and engineering education researchers. These insights suggest that the change project offered Charles a path for turning his beliefs into actions aimed at further change.

Yvette

Yvette was a first-year assistant professor in her general engineering department during the RED grant writing process. She is a white woman who identifies as a member of the LGBTQIA+ community, who was expected to be a co-PI on the RED team based on her engineering education research focus.

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Analyzing Yvette's Case Through a Learning Lens

A learning lens such as situated learning (Lave & Wenger, 1991) illuminates ways Yvette's participation shifted from more peripheral involvement on her RED team to a more central role over time as she gained experience enacting academic norms. This increased involvement helped her learn the formal and informal policies and norms related to her position as an assistant professor in an engineering department. She spoke about the RED project being “where I've learned to be a faculty member and have a voice as a faculty.” The PI regularly encouraged her to speak up during meetings in her first year. Her involvement on the team benefited her professionally as she “[learned] some of the administrative things that do go into a project like this in terms of—even just the relationship with NSF.” She also had opportunities to work with other members of the department in RED contexts and valued “being able to develop those relationships and then spin out your own things with [colleagues. That] has been helpful to me.” Her PI (the department chair), helped her identify project activities that would lead to the recognition and accomplishments necessary to support her tenure case in the future.

Adding Analytic Attention to Power

If we only took a situated learning perspective (Lave & Wenger, 1991), we might conclude that the RED project provided Yvette with valuable opportunities to learn about her role as an assistant professor and develop her career. Adding attention to power helps illuminate complex ways her experiences were influenced by her social and role identities, including her gender, race, sexuality, low income background, academic rank, and disciplinary identity—as well as how those identities interacted with the policies and norms of the contexts in which she participated (Collins & Bilge, 2020).

Yvette initially described the team as having a “flat structure” in which co-PIs had “a lot of autonomy” in terms of what they work on. However, she also described multiple situations

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that suggest a more complex and hierarchical power structure. She noted a “hierarchy” wherein the PI had the most power—both on the team and in the department, then co-PIs, then senior personnel, then postdoctoral scholars. She also described several ways her position as an untenured assistant professor impacted her participation in the project and her sense of agency. For example, in the first year of the change effort, a more senior co-PI told her to collect data for a sub-project he was leading rather than starting her own research. While the PI intervened and said Yvette should feel free to create her own research agenda, Yvette felt pressure to support multiple sub-projects led by others, with the stated rationale that it would help her tenure case. Based on these pressures to gain normative legitimacy, or acceptance based on adhering to community norms to be a selfless ideal worker (Gonzales & Terosky, 2016), she ended up with a larger workload than other team members and was on more sub-projects than anyone else.

Cultural and disciplinary power dynamics also impacted the project and her experience. She described “a lot of disregard for anybody with an engineering education background... even when they’re bringing in these huge grants—like these huge NSF grants—they still devalue engineering education.” This was exacerbated by her office location in a separate building from the “regular” one where her co-PIs were. As a result, she felt “completely separated from... most of them... I just felt lost and adrift.”

The power lenses (Collins & Bilge, 2020) help us notice how she might have ended up simultaneously feeling isolated and having the heaviest workload, while others could “take a backseat” after “the fun part’s over.” As an untenured assistant professor, she was in a more vulnerable, less powerful position than her tenured colleagues—as reified in university policies. Women are not only marginalized, particularly in STEM, but also experience inequality in retention and promotion (e.g., Blackburn, 2017). As a white person, she experienced privilege

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within academic institutions, but as a woman and as a member of the LGBTQIA+ community, she faced structural biases. Yvette discussed choosing not to reveal her sexual orientation to her colleagues to minimize potential discrimination and bias. She is not alone; research has shown that many LGBTQIA+ employees choose not to reveal their sexual orientation in an attempt to avoid discrimination (Driscoll et al., 1996). This includes LGBTQIA+ academics in STEM, particularly in the early stages of their careers (Bilimoria & Stewart, 2009).

The structural power dynamics that shape Yvette and others' experiences overlap with cultural and disciplinary power dynamics. For example, cultural norms in academia dictate that assistant professors should take on a lot of research-related work and be very "productive" in order to work towards tenure. The PI and others on the team assigned her specific roles and responsibilities that she felt she could not say no to. While others on the team were limiting their roles on the project, she "felt a lot of responsibility to do work" and could not "pull back" because she "[needed] some of this work to pan out so that it does help me with tenure... I need to turn some of these things into things that I can talk about and say, 'I took ownership of this.'" This was reflected in her account of a project she was assigned ownership over by another team member, but when she "realized that there wasn't a lot of substance there," she still felt pressure to complete the project and disseminate results in papers. Her account of these pressures highlights the lack of agency typical in her talk about her participation in the project: "I don't think [it was] a good use of my time, but yet there's an expectation that I'm doing that."

From an interpersonal power perspective, Yvette described a particular decision-making process where "some people's... voices were loudest. But that doesn't mean that in a team with multiple people those ideas were necessarily the ones that everyone wanted to do." Power dynamics affected everyone on the team in different ways, and sometimes resulted in "frosty"

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team interactions that made her feel “very uncomfortable.” A combination of structural, cultural, disciplinary, and interpersonal forces of power led her to hide aspects of her identity from her colleagues and “just keep [her] head down and do the work.”

Adding Analytic Attention to Organizational Change

Adding attention to organizational change highlights the ways in which Yvette’s learning and experiences with structural, cultural, disciplinary, and interpersonal power relations impacted the change process itself. Co-PIs on the project were given a fair amount of autonomy in terms of what they worked on within the project (though, as previously mentioned, Yvette felt pressure to lead or support certain efforts in ways related to her identities and power dynamics). In some cases, this autonomy helped with team members’ motivation and sense of ownership. The team’s culture of autonomy became more extreme over time as team members began collaborating less and the team stopped meeting regularly. It became common for the team to go months without meeting. From a CoP perspective, the siloing of team members’ work meant they were not engaging in the kind of regular, substantive interaction (mutual engagement) that would help foster a shared, collectively-negotiated vision (joint enterprise) and a shared repertoire of practices aimed at meeting their goals (Wenger, 1998; Wenger et al., 2002). Together, the autonomy given to individual team members, decreased collaborative structures, and a focus on optics led to a situation where “a lot of the sustainability isn’t really there because there hasn’t been too much investment [in] how to scale it or sustain it or how to do the quote unquote ‘hard work’ of making actual change happen.” Leaders celebrated superficial change or early indicators of change without committing to lasting change. Some faculty involved in the RED work also “feel that their leadership is taking credit for the work that they’re doing” by representing successful change as top-down efforts, thus erasing the hard-earned bottom-up work

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that less senior participants who “are doing the majority of the work” had led. When individuals were allowed to focus primarily on their own agendas, it negatively impacted the coherence, joint ownership, and sustainability of the whole project (Davis, 2023).

The culture of autonomy that allowed faculty to work relatively independently within the structure of the project also impeded the project’s goals when team members didn’t have the institutional power to create incentives or structural and cultural changes within the system. Team members’ power (or lack thereof) within the department shaped the impact of their efforts, particularly when the PI/department chair did not back individual team members’ efforts with policies and norms that would support the desired change. This suggests that a CoP benefits from the backing of an institutional leader with the power to make structural and policy changes. This phenomenon was compounded by multiple leadership changes. Yvette explained, “I think as individual faculty members, our purview, or our scope of responsibility and what we’re able to do is—is not as much as, say, a department chair could do. And so I feel like we are somewhat constrained in our ability to actually impact change, um, by what our PI is willing to do.” At another point in the interview, she reiterated this: “There’s only so much we can do without having more power in our—to our positions in terms of reflecting broad change.” The “hierarchy” she described within the team and department impeded the ability of the team to enact a joint enterprise. So, while the team ethos encouraged an attitude of “if you want to go do something, go do it... and be awesome at it and report back,” the effectiveness of those change projects was partly determined by power dynamics. It wasn’t enough to let people do their own thing; each of those initiatives needed active support from those with formal power within the system to succeed.

Analyzing Yvette Using the TRIPLE Change Framework

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When we consider the case of Yvette, who became a co-PI on her RED team as a new assistant professor, from a situated learning perspective, we notice how her participation shifted from peripheral involvement to a more central role over time as she gained opportunities to learn about and participate in academic norms. If we also attend to intersectional power in our analysis, we notice a more nuanced picture of how Yvette's various social identities (a white woman, a member of the LGBTQIA+ community) and role identities (as an assistant professor of engineering education) shaped her participation. Without employing these power lenses, we would miss ways in which these identities intersect with structural policies and with cultural ideas and disciplinary norms that dictate how she *should* participate on the team and in her department. Pairing situated learning with an intersectional lens on power provides a contextualized perspective not only on Yvette's learning and development, but also on the interpersonal, cultural, and organizational contexts in which she acts. Merging learning and power with organizational change allows us to examine how Yvette's learning and the power dynamics that shaped her participation also influence how change efforts are designed and implemented, and the extent to which they are effective at making change.

Using the TRIPLE Change Framework to Understand Organizational Change in Higher Education

Entrenched inequities and power imbalances in higher education (Gusa, 2010; Stewart, 2020), including in STEM (Secules, 2019; Slaton, 2010; Williams et al., 2005), have resulted in women, faculty of color, and people from other marginalized communities facing discrimination, tokenism, epistemic exclusion, microaggressions, and other biased experiences (Haynes-Baratz et al., 2022; Parsons et al., 2018; Rideau, 2021; Segura, 2003; Settles et al., 2021; Walters et al., 2019). Though there have been many change efforts aimed at improving DEIJ within institutions

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of higher education (Dowd & Bensimon, 2015; Kezar, 2013; Posselt, 2020; Singleton et al., 2021), these efforts are rarely guided by empirically grounded theories of change theories or attention to power or learning (Smith et al., 2018; Turner et al., 2008).

The TRIPLE Change Framework, which integrates theories of power, learning, and change, offers a tool to illuminate how organizational change projects, and the change agents and other community stakeholders within them, affect and are affected by power dynamics and learn about power, DEIJ, and how to create and sustain change. In this paper, we specifically used an intersectional theory of power (Collins & Bilge, 2020), situated learning (Lave & Wenger, 1991), and an approach to organizational change known as communities of practice (Wenger et al., 2002) to understand faculty experiences on DEIJ change projects.

Across the three cases, a situated perspective on learning (Lave & Wenger, 1991) helped us see how change team members had opportunities to learn from their colleagues' expertise, including across disciplines, and learn more about their faculty roles, departmental dynamics, student learning, and organizational change processes. Participants also learned more how power and privilege affected themselves, their colleagues, and students. An intersectional perspective on power (Collins & Bilge, 2020) illuminated the ways that participants' efforts and expertise were or were not valued (thus shaping whether and how others had opportunities to learn from their expertise), and how that was impacted by larger cultural, historical, and political forces within and beyond the institution. We also saw different ways that participants' positionality affected their participation and agency on the change team and in their departments—for example, Charles's relative privilege provided him with a very central role on his change team and in his department from the very beginning of the project, while Maria faced marginalization and bias related to her gender and disciplinary identification despite the privilege afforded by her

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whiteness and status as a full professor. Yvette's relatively less privileged social and role identities left her in a more peripheral and less agentic position. Both Maria and Yvette chose to hide aspects of their identity to avoid further bias and microaggressions from the team and the larger department, a practice previous research has described (Bilimoria & Stewart, 2009; Dolan, 2023; Driscoll et al., 1996). Finally, a CoP perspective on change (Wenger, 1998; Wenger et al., 2002) illuminated how these change teams frame community members as more peripheral or more central; the importance of leadership support, dynamics, and turnover; and the importance of widespread engagement within the focal community (Davis, 2023; Davis, Nolen, & Koretsky, 2023).

The three cases also illuminated how integrating these perspectives on learning, power, and change deepened our understanding of change team members' individual and collective experiences. For example, a TRIPLE Change approach elucidated how intersectional power dynamics negatively affected Maria's experiences on her team and resulted in epistemic exclusion and scholarly devaluation of her work (Settles et al., 2021), as well as inequitable resource allocation. When these experiences led Maria to disengage (i.e., move towards more peripheral, rather than more central, participation), the team and larger departmental community no longer benefited from her expertise to the same degree. In Charles's case, we saw how his learning over time about how power and privilege affect himself, his colleagues, and his students allowed him to engage more thoughtfully in the DEIJ change efforts that he had central access to based on his social positioning and credibility. This helped Charles become a more active and effective DEIJ change agent over time. In Yvette's case, a TRIPLE Change approach helped us understand how multiple sociocultural factors, including desire for normative legitimacy (Gonzales & Terosky, 2016) and the hierarchy within the team and the department, affected her

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participation and agency. These pressures resulted in Yvette not having as many opportunities to lead her own projects because she was engaged on so many projects that other team members were leading. In addition, the siloing we saw on Yvette's change team produced tensions between the desire for autonomy, a strong value in academia (Birnbaum & Edelson, 1989) and the desire for collective action and change (Davis, 2023).

Across the cases, integrating learning, power, and change theories elucidates ways that structural, cultural, disciplinary, and interpersonal intersectional power dynamics shape access (or lack thereof) to others' expertise and to more central participation in the CoP and larger departmental communities, as well as ways that team and organizational hierarchies (including leadership) affect organizational change processes. We also saw in all the cases ways that individuals' intersectional social and role identities influenced their experiences on the team and in their workplace, and how those experiences shaped their willingness and ability to participate in DEIJ-centered change processes.

Limitations

Our use of composited cases created a space in which participants felt safe in sharing negative experiences, challenges, and examples of change projects that stalled. While this composite approach provided access to these forthright stories, it also limits some of the nuance, especially with regard to specific intersectional experiences of bias, though this is an area already much studied in the literature (Cho et al., 2013; Harris & Patton, 2019). Composite narratives allow researchers the opportunity to provide context and analysis alongside participants' experiences and quotes while still protecting confidentiality, thus improving transferability through rich and accessible description (Johnston et al., 2023; Wertz et al., 2011; Willis, 2019). Other limitations relate to our focus on members of change teams participating as part of

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NSF-funded grants, an incentive structure not present in unfunded or underfunded change efforts, and one that, as we noticed with both Maria's and Charles's cases, was also power-laden and inequitably distributed. As members of change teams ourselves, we brought insider understandings to bear on our analysis of interviews, which supplemented and deepened interpretations, but may also have biased us to foreground aspects. Despite these limitations, the cases provide a robust illustration of the possibilities for merged theoretical frameworks, particularly for equity-centered organizational learning and change.

Concluding Thoughts and Implications

We presented three composited cases to illustrate how a single or even paired theoretical lens may fail to account for the complexity of DEIJ change efforts. In each case, we began with a different theoretical lens to find our way into the data, adding additional lenses to deepen interpretation. A single theory (power, change, or learning) can account for Maria's experiences of oppression, Charles' own changes, or Yvette's learning. When these theories are brought together, we notice how the failures and successes of DEIJ change efforts necessitate attention to learning and change as intersectional, power-laden efforts. For example, a learning lens illuminated how participating in the change project helped Yvette develop as an assistant professor, and a change lens highlighted how the siloing of work within the change team hampered change efforts. When we also considered how power dynamics coerce, reward, and punish different forms of engagement for Yvette and other change team members, we noticed how structural, cultural, disciplinary, and interpersonal power relations worked to reduce her agency within the team and the department, thus limiting her potential contributions to the change project.

[Insert Figure 2 here]

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Using only one of these theoretical lenses would have limited our resulting understanding of individuals' experiences and the ways they contributed to institutional change efforts. Each lens deepened understanding of how change was enacted on the teams, prompting us to pose questions at the intersections of theories; we summarize these inquiries in Figure 2, informed by analysis of the three composite cases. This figure could be used by institutional change teams to think deeply about how theories of power, learning, and change affect the experiences of change team members, organizational change processes, and outcomes related to the change project. For instance, in contrast to the approach taken in inclusive excellence in which faculty of color are often responsible for teaching others (Harris et al., 2015), the figure intersects learning and power to question this practice. The figure clarifies what is missing when, for instance, a change team is guided by a theory of change and theory of learning, but not by a theory of power, revealing the kinds of questions likely to go unasked and offering insight into why a change project fails to alter inequitable structures and norms, despite engaging in significant change efforts tied to curricula. These questions can be considered, not only by change teams, but by anyone who is interested in increasing DEIJ in their culture. This could include instructors in the classroom, academic administrators, and even those outside of academia.

The TRIPLE Change Framework's attention to intersectional power, learning, and change can also support future research examining equity-centered leadership and organizational change, including investigations into the challenging work of changing policies, norms, and cultures that perpetuate inequities. Our study also points to the need for additional research on equity-centered leadership, including how leaders facilitate agency and distributed expertise within teams, as well as how agency-affirming practices interact with power dynamics.

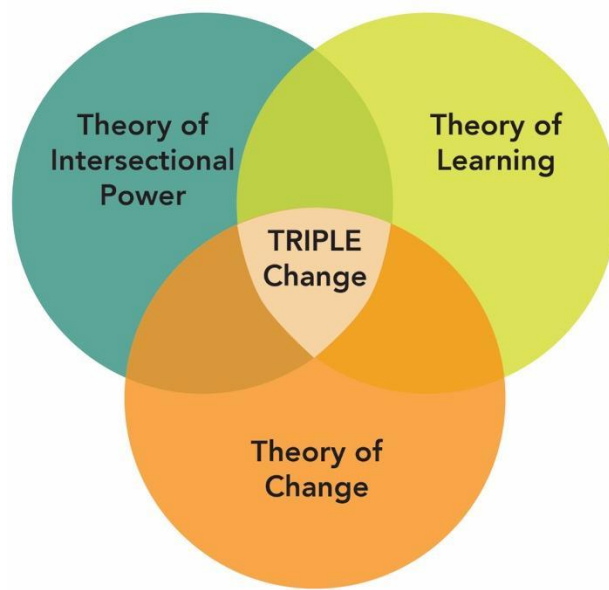


Figure 1. The TRIPLE Change Framework.

Theory of power

Theory of learning

Who decides what work should be done? Who does the work? Who can say no? Who has access to resources?	Who (social, role) is worth learning from? Who is called upon to educate about power? Are marginalized members positioned as needing to educate privileged members?	What can members learn from one another, across and within disciplines?
Who hides parts of their identity (disability, LGBTQIA+)? How are academic rank and social identities intersectionally implicated?	How are members making time for social interactions that support inclusive, critical, (re)constructive engagement? Are members committed to the hard work of learning about and altering power relations?	How do particular instructional designs and teaching strategies impact learning? What strengths and experiences do our students have?
In what ways do unintended power relations and policies act as a barrier to change? Whose responsibility is it to raise and alter inequities? Who seems to have the credibility to be on the change team? How much strife do change-makers experience, given their intersectional roles? How is a culture of autonomy a barrier to collective change?	How does "rigor" act as a barrier to curricular change? How can department-embedded discussions about teaching promote movement from peripheral to central roles?	How can past experiences with teaching innovations serve as way into change? How does this constrain focus to curricular change? What does our department value?
What models of change guide the work? Who is the coalition of the willing? Are we waiting for those unwilling to change to retire?		

Theory of change

Figure 2. Implications from analysis of cases using the TRIPLE Change Framework highlight productive overlaps for change teams.

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