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Powerful Change Attends to Power Relations

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Dr. Vanessa Svihla is a learning scientist and associate professor at the University of New Mexico in the Organization, Information and Learning Sciences program and in the Chemical and Biological Engineering Department. She served as Co-PI on an NSF RET Grant and a USDA NIFA grant, and is currently co-PI on three NSF-funded projects in engineering and computer science education, including a Revolutionizing Engineering Departments project. She was selected as a National Academy of Education / Spencer Postdoctoral Fellow and a 2018 NSF CAREER awardee in engineering education research. Dr. Svihla studies learning in authentic, real world conditions, specifically on design learning, in which she studies engineers designing devices, scientists designing investigations, teachers designing learning experiences and students designing to learn.

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In doing so, he focuses on Engineering education policies and practices in teaching learning processes, assessments, laboratories and practical internships. Mr. Halkiyo has been teaching different Civil Engineering courses at Bule Hora University, Ethiopia, where he also served as a department head, and conducts various research and community projects.

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Introduction & Background

While changing engineering departments to become more inclusive and equitable is a common goal, research repeatedly confirms that such change is rare. Notably, change efforts commonly fail in higher education institutions [1], and this failure is typically attributed to faculty resistance, ineffective leadership, competing values, and conservative traditions [2]. Recent nationwide National Science Foundation (NSF)-funded efforts to revolutionize engineering departments provide insight into the salience of power dynamics as drivers of or barriers to equitable, lasting change. REvolutionizing engineering and computer science Departments (RED) grants specifically required the unit lead (chair or dean) to serve as the principal investigator (PI) and required inclusion of social scientists with expertise in organizational change and engineering education researchers. This interdisciplinary team composition provided a venue for examining the roles, perspectives, and relationships within RED change teams and how these experiences shaped attempts at revolutionary change. PaiRED (Partnering Across Insider-views of RED) is an exploratory research project focused on developing a critical understanding of roles, perspectives, and relationships within RED teams and the potential impact of these concepts on creating and sustaining revolutionary changes at the departmental level.

In the PaiRED project, we are interested in understanding how aspects of gender, race, disciplinary affiliation, and university role impact the experiences of team members and, in turn, impacts the change that is enacted within departments. In other words, we are interested in how intersectionality, power, and privilege are enacted within RED teams. While scholars have focused on the roles of power and privilege within educational settings [3, 4], no research has been conducted to develop an understanding of power and privilege within faculty teams who are attempting to create revolutionary change. This work is critical as research begins to focus efforts on large centers and collaborations to begin to tackle some of our world's most pressing problems. In this project, we interviewed members of RED change teams to understand the challenges they encountered and how they navigated these. In this paper, we will share preliminary analysis of these interviews using an intersectionality theoretical framework. While this project is focused specifically within the context of RED, it can serve as a model for developing an understanding of the roles of power, position, privilege, and perspective within large centers and collaborations.

Theoretical Framework: An intersectionality framework [5] frames this research and includes four lenses on power relations (See Table 1). From a structural lens, we see that policies may affect individuals differently based on their social and role identities. From a cultural lens, ideas and culture organize power, often blinding those with privilege from noticing bias. From a disciplinary lens, people train and coerce each other to behave in certain ways and to sustain norms. From an interpersonal lens, we see that an individual's social (e.g., gender, ethnicity) and role (career, position, voluntary memberships) identities can shape how they experience bias.

Table 1: Power lenses and brief descriptions [5]

Power lens	**Description**
Structural	Policies and policy-like practices that impact individuals differently
Cultural	Ideas and culture shape and organize power relations, blinding those with privilege to it
Disciplinary	Individuals are coerced & trained to maintain status quo
Interpersonal	Complex identities shape the ways we experience bias

Methods

In this study, we sought to identify the sites of action and areas to attend to for researchers interested in understanding how power and privilege play roles in change efforts. Specifically, we aimed to address the following research question: in describing their experiences on change teams, what structures, cultural elements, disciplinary norms, and interpersonal elements do members of change teams bring up to account for team dynamics and (lack of) progress?

Data Collection: We recruited members of RED teams from the first cohorts, and focused on engineering departments (excluding computer science departments) and sought a breadth of institutional contexts (region, type, size). We leveraged our own experiences on RED teams to recruit members for interviews; in many cases, members had previously spoken about issues or challenges encountered. We additionally asked for advice from others involved with RED activities for suggestions. We interviewed 15 members of eight NSF RED teams. Audio recorded sessions lasted from 30 to 82 minutes, with most lasting approximately 1 hour. We used a semi-structured interview protocol to guide the session, first asking about the strengths of the team, the participant's role and the team's structure, changes to these over time, challenges encountered, team interactions, especially across power dimensions related to social and role identity, and an account of a recent team meeting.

Data Analysis: We transcribed the recordings and analyzed the data attending to the intersectionality framework lenses [5]. In this paper, we describe preliminary analysis of these data and share examples of ways that each of these lenses were experienced by our participants.

Results & Discussion

In many cases, disciplinary norms revealed clashes between the original structures and cultures, and the sought-after changed structures, cultures, and disciplinary practices. For some, such clashes revealed a veneer of change progress; for others, clashes served as inflection points. Here, we highlight themes that arose in our analysis, with the goal of identifying areas to consider in forming and maintaining more equitable change teams and initiatives.

Structural Lens: Many participants referenced structural practices and policies when describing their experiences on RED leadership teams. These practices and policies were sometimes formal and explicit policies, but other times were informal and implicit policies. Below is a list of the types of practices and policies that were uncovered during analysis of the structural lens:

- Hiring, tenure, review of papers/grants
- Formal and informal policies/norms related to division of resources (e.g., grad student/postdoc assignments)
- Engrained policies/norms related to rank, e.g., work assignments/division of labor (administrative vs. more visible and rewarded work)
- Evidence of root structures (assumption of policy): Symbolic/symbols/classroom assignments/schedules (e.g., large paintings of deans on the wall that cannot be removed)

Cultural Lens: Within the experiences of our participants as part of a RED leadership team, there were many cultural aspects that emerged. While the participants did not speak specifically about culture, culture did emerge in their stories, especially in stories where they felt marginalized. Many of these stories were moments of realization when the participant was faced with inequalities and inequities concerning distribution of resources on the team (e.g., funding for research projects, graduate students, or travel). Below is a list of the ways that culture was described when sharing experiences on a RED leadership team:

- Faculty's commonly held beliefs that the tenure process is meritocratic - it has its foibles but is generally fair.
- Individuals' perceptions of change, that change often does not stick, may show up in reluctance to commit to put effort in, or willingness to defend an idea related to change
- Budgets and fairness - who gets funds for travel, indirect, various resources. Does "fair" mean each faculty is paid the same number of days or amount of money?
- Ideas about value of engineering versus engineering education versus social science

Disciplinary Lens: A disciplinary lens emerged in many stories of our participants. These experiences were ways that participants felt disciplined to help maintain the status quo and range from hiding an aspect of their identity or hiding emotions to not taking action when they felt like they should. In addition, there were some instances described where only people from certain roles were encouraged to speak in meetings and were given the better seats in a space to encourage their participation in team meetings.

- Individuals contrast norms in different departments/disciplines
- Individuals hide some aspect of who they are (e.g., sexuality, disability) or report consequences of disclosing
- Individuals report not pushing back or questioning something they disagree with, or report such actions as problematic
- Individuals try to hide or manage emotions rather than display them (Emotional displays or managing emotions)
- Individuals mention norms related to rank, e.g., who speaks in meetings, whose ideas are heard/taken up, authorship, who gets the good seats

Interpersonal Lens: Interpersonal aspects emerged through many of the stories shared by our participants. Experiences that were coded as being interpersonal were typically between individuals on a team. Some participants described experiencing a sense of belonging on their teams (and expecting to feel as if they belonged) while others did not feel that they belonged and sometimes became disengaged during team meetings or even stopped attending meetings altogether. This sense of belongingness related to personal identities, disciplinary identities, and positional identities helps us better understand how power, privilege, and agency play out on these RED leadership teams.

- Ideas about fit/belonging
- Team relationships
- Personal/social identity(ies)
- Disciplinary identities
- Positional (i.e. rank) identity
- Individual goals
- Prestige (e.g., an individual having prestige in a community)
- Exhaustion/burnout (related to climate and/or difficulty of making change)

By looking across these structural, cultural, disciplinary and interpersonal lenses, we found that many disciplinary norms drew attention to specific structures or made cultures visible. In some cases, this suggests a tight coupling across these lenses that can make it challenging to classify a participant's account as "belonging" to a specific lens. Rather than focusing on accurate assignment, we see the lenses as helpful in revealing various ways power dynamics play out, and especially, how they do so in intersectional ways. This approach, of looking through various lenses, can help reveal inequitable experiences of structures, cultures, and norms that otherwise might remain hidden and unquestioned.

Implications and future directions: Our preliminary analysis suggests this approach, of attending to structural, cultural, disciplinary, and interpersonal lenses on power dynamics, provides a feasible and rich means to identify sites of action and policies, norms, and traditions that scholars and change teams can attend to as they seek to uncover barriers to change as well as drivers of change in forming more socially just engineering departments. We advise reviewing the policies, practices, and norms that shape the environment in which interactions occur and the interactions themselves, redesigning these where feasible, and acknowledging and mitigating the impact of policies and power structures that are not modifiable.

Our preliminary analysis also demonstrates that power manifests itself in ways beyond the interpersonal on RED leadership teams. Recognizing that power manifests itself in and across disciplinary, structural, and cultural aspects helps us develop a more complex and nuanced understanding of power and how it can help achieve or hinder change efforts in RED teams. A diverse team is not automatically an inclusive place where all members can contribute fully. Power is always present. Our framework and analysis suggest that it's important to attend to ways team leaders, structures, policies, and norms can facilitate agency for all participants within these power structures.

Using these lenses moving forward, we will characterize ways members positioned themselves in relation to change efforts and the degree to which they held substantive power or were

endangered through their participation. Complementary to this line of analysis, we have been conducting workshops that introduce this framework as a tool for participants seeking to make change [6, 7].

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References

1. Kezar, A., *What is the best way to achieve broader reach of improved practices in higher education?* Innovative higher education, 2011. **36**(4): p. 235-247.
2. Klempin, S. and M.M. Karp, *Leadership for transformative change: Lessons from technology-mediated reform in broad-access colleges.* The Journal of Higher Education, 2018. **89**(1): p. 81-105.
3. Apple, M.W., *Power, meaning and identity: critical sociology of education in the United States.* British Journal of Sociology of Education, 1996(2): p. 125-144.
4. Freire, P., *Pedagogy of the oppressed*. 1970, New York, NY: Herder and Herder.
5. Collins, P.H. and S. Bilge, *Intersectionality*. 2016, Hoboken, NJ: John Wiley & Sons.
6. Kellam, N., V. Svihla, and S.C. Davis, *The POWER Special Session: Building Awareness of Power and Privilege on Intersectional Teams.* FIE proceedings, 2020.
7. Kellam, N., S.C. Davis, and V. Svihla, *Using power, privilege, and intersectionality as lenses to understand our experiences and begin to disrupt and dismantle oppressive structures within academia* Proceedings of CoNECD: The Collaborative Network for Engineering and Computing Diversity, 2021.