Research Problem Statement

Humanitarian Engineering (HE) educational programs are growing exponentially across the globe (Smith et al. 2020). HE programs have mission statements such as training graduate engineers to carry a "concern with the unequal and unjust distribution of access to basic services such as water, sanitation, energy, food, transportation, and shelter, and (to place) emphasis on identifying the drivers, determinants, and solutions toward increasing equitable access to reliable services" (Thomas et al. 2021). These programs are attempting to systematically train students to advocate for social justice and to be critical of the systems of social oppression causing global injustice in the engineering field. While HE programs are successfully enrolling some of the highest numbers of socially and humanitarian motivated students in engineering, there are signs that these programs may be struggling to train students to be critical of social oppression (Swan et al. 2014). For instance, scholars have documented HE-orientated students falling into "thin" global citizenship in which they carry a charitable benevolence towards others but fail to deeply analyze the historical and political processes that generate infrastructure inequality (Andreotti 2016). Studies like this paint a picture of HE students being at risk of falling into conformist resistance.

Conformist Resistance is an established construct in education research defined by a student carrying a motivation of social justice without being critical of the systems that preserve global inequality (Solorzano and Bernal 2001). Conformist Resistance is one construct within the Transformational Resistance Framework (TRF), seen in Figure 1. To aid HE programs in their mission statement, the study explores student reflections on social justice through the concept of conformist resistance. This type of activism may be common in HE spaces. For instance, scholarship has shown that increased instruction on global inequality in HE education does not guarantee HE graduates will critique and confront internal or external oppressive systems (Niles et al., 2020). Others have found HE students developing a self-image as problem solvers, hindering their ability to critique their work (Downey and Lucena 2007; Schneider et al. 2009). Within engineering education, a review of conference presentations found that engineering educators tend to attribute individual failures to technical, communication, or cultural issues and overlook the possibility of systemic injustices that could contribute to a pattern of failures across projects (Schneider et al. 2009). Indeed, the HE field has been called out for supporting band-aid approaches to development work, in which some of the symptoms of oppression are treated, but the larger systems of oppression are ignored and continue to flourish (Martlew 2010).
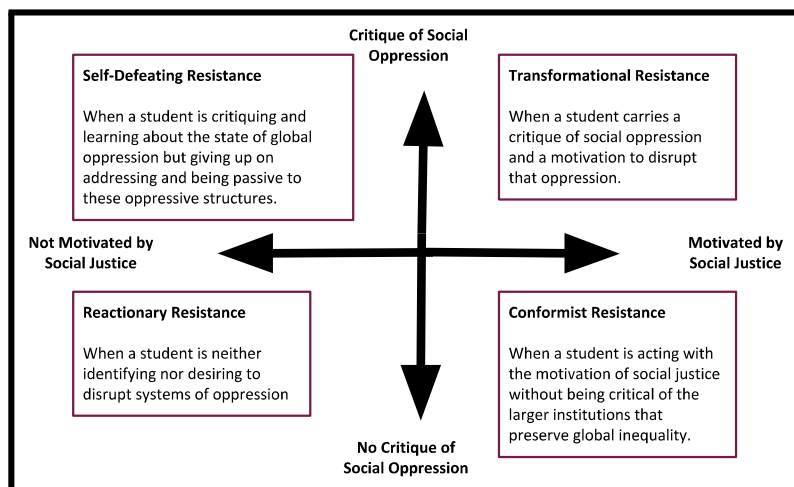

Figure 1: Transformational Resistance Framework

The TRF framework was first developed to understand students of color's survival and resistance in educational systems that promoted their attrition in school and suppressed their expression of thought (Solorzano and Bernal 2001). Thus there is a dearth of research theorizing conformist resistance for socially dominant students. As education programs, including HE, are often attempting to train white students from high-income countries to address oppressive systems that they are not harmed by, this construct needs to be expanded. White folks became a high tier of social dominance when Gomes de Zurara invented "whiteness" to justify treating individuals who carry an arbitrary set of constructs, such as last name, skin color, and accent, with entitlements, with the intent of economically benefiting colonial European powers (Ibram X. Kendi 2019). Whiteness greatly affects one's lived experience and thus is likely to greatly impact a student's experience growing as a social activist (Tanner 2018). Thus we utilize Critical Whiteness studies (CWS), a branch of scholarship that theorizes inherent privileges and common practices of white folks, to characterize the influence of being white on a student's experience in conformist resistance (Applebaum 2016). In particular, we will ask:

- How can students' activist goals and reflections be characterized by Conformist Resistance?
    - How are common privileges and practices of whiteness influencing students to perform within this form of activism?

Methodology

To answer these questions, we interviewed 28 students who were enrolled in seven graduate Humanitarian Engineering programs (1 - 5 students per program). Using processes outlined in IRB 21-0207, students were recruited through email advertisements from program directors and professors to their respective HE cohorts. Students carried varying ethnic identities, ages, nationalities, and privileges and were at different stages of their graduate education. However, all students self-identified as white and with a high-income country nationality.

We conducted semi-structured interviews centered around students providing robust and rich personal narratives that detailed aspirations of social justice activism. Students were interviewed every semester (fall, spring, and summer) a total of four times. Interview guides consisted of three groups of interview questions related to a) students' career goals, b) students' understanding of systematic oppression c) their motivation and personal goals toward social justice. For example, we asked students to describe *their current career goals* and *the story of what led them to their current career goals*, *their self-efficacy in personally advocating for equality*, and the *expectation that HE institutions can make progress toward equality*.

Audio recordings were transcribed using the software Trint and individually reviewed for accuracy (Kofman 2023). Further interviews were imported into the qualitative coding software NVivo to be coded deductively into the construct of conformist resistance defined in Figure 1 (Richards and Richards 2022) and inductively coded to uncover how common practices of white individuals, theorized through CWS, motivated student action towards various quadrants codes. This was a collaborative coding process in which all researchers discussed and theorized codes (Richards and Hemphill 2017). For example, the following passage, "*My youth group went on a mission trip (...) All we did was paint a house (...) We got a bunch of praise from our church for going, my parents (were) super excited that I went (...) I look back on it and I am like, "Who was that for? That wasn't for the community"* was coded under conformist resistance as the student went on a mission trip that was motivated to do good but was uncritical of social oppression. Further, this passage was inductively coded with one concept from CWS, white

"determination" of social justice, because her peers, family, and church convinced her of the value of this work, not individuals from the marginalized community she was working with. This concept of "determination" will be further explored in the results section below.

Key Findings

Our study found that students often partake in conformist resistance when they rely on their own observations, lived experiences, and imagination to develop an understanding of social oppression. In CWS, this reliance is understood as white "determining" social oppression. Marginalized communities utilize counter-storytelling and "naming one's own reality" to understand an objective state of social oppression (Delgado and Stefancic 2017). However, it is a theoretically impossible feat for white individuals and institutions to accurately "determine" social oppression that they have not been harmed by (Allen 2001).

This pattern of inaccurately "determining" social oppression often began with students observing fragments of the oppression faced by others and using those fragments to build an understanding of oppression. Students interviewed often built their initial motivation for social justice by being exposed to engineering disparities either through a volunteer tourism trip or a class research project. This can be illustrated by the passage below:

After (my volunteer trip), I knew I wanted to do stuff that involved groundwater, and I wanted to help people in developing countries (...) we went to this site. It's literally a garbage dump. (...) I was like "Oh my God, there are people living here?" Something that I experienced for the first time after that was a reverse culture shock. And I was like "Oh my gosh, I have it so good."

This passage illustrates how students view the hardships of marginalized groups and then, by comparing their own experiences of privilege and well-being, build an understanding of global oppression. By relying on one's fragmented observations of others' oppression, white students create a fragmented understanding of the causes of inequality. Namely, students do not observe the norms, policies, and cultures actively suppressing communities over others. Instead, students fall into a pitfall of white folks in observing the hardships faced by marginalized communities, believing the deficit narrative (Bourdieu 1977; Menchaca 1997; Yosso 2005). The deficit narrative holds that marginalized communities have less because of the inner deficits they possess due to their class, culture, or genes. While held up by racism, the deficit narrative can be manipulated to sound logical and aligned with a student's goals of fighting for social justice (Davis 2019). In the following passage, a student illustrates a motivation for social justice through their thoughtfulness towards ethically collaborating with a community and being culturally sensitive. However, this student has created guidelines for acting justly that still rely on the deficit narrative or filling the "deficits" of marginalized groups.

You can come (to a community) and say I have these resources, (...) I can teach you how to be sustainable. If they say "No thank you". I think you should respect the wishes of that community. (...) But if you say, Hey, I have these resources, is there anything that I can do to help you? They say, Oh, this is great, we need this and you work alongside them. I don't see an issue with that as long as you're able to respect their culture and manners, and it doesn't look that you're being this almighty one coming from America.

This student is acting on their motivation for social justice by desiring to provide education and resources that they believe the community lacks. Unfortunately, a white "determined" vision of social justice, born from a fractured understanding of oppression, is often a fractured vision. Acting on the deficit narrative, or trying to address disparities felt by marginalized communities by filling assumed education and resource deficits, allows the systems causing those disparities in the first place to remain intact. Further, this study found that students' white "determined" vision of social justice can become confused and contradictory. For example, the following passage shows a student reflecting on her relationship with a black co-worker from a predominately black nationality.

My counterpart, she is amazing. She had her master's degree (...) and she worked for a European nonprofit. And I think that we had a relatively equal power dynamic. We both learned a lot from each other. Except she would naturally default to me if someone asked us a question about our project (...) or she would tell me her ideas and be really shy about presenting them. (She) used me as a bridge to get projects because the head of our school, idolized (international volunteers) (...) (she) didn't get directly paid, but (...) They got money to go to trainings.

This passage illustrated critique around some power structures, such as the increased prestige she had as an international volunteer, the dominance she carried in one-on-one conversations with her co-worker, and the unequal pay structures of the development practice. However, a white "determined" definition of equality can cherry-pick one aspect of a relationship, in this instance, mutual respect towards each other, to demonstrate an equal power dynamic in the relationship (Bonilla-Silva and Embrick 2006). This example of "determining" social justice falls in the predictable practice of white narratives in amplifying one's relationships with people of color to ultimately self-prove one's career and interactions as a non-racist (Tatum 1997).

Expected Contributions and Implications
This work aims to characterize when students are motivated by social justice but lack a critique of social oppression. Further, we contribute by not only applying a conformist resistance to study HE students but by extending the construct to study dominant students who are white and with nationalities from high-income countries. The study found that white students often have a fragmented understanding of social oppression, relying on their observations of others' oppression to build their understanding. This leads to a pattern of inaccurately "determining" social oppression, falling into the deficit narrative and creating a confused and contradictory vision of social justice. This work can inform HE graduate programs on how common practices of whiteness may influence their students' educational pathways.

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