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Death by 1000 cuts: Workshopping from Black engineering narratives from interview to stage

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Deaths by 1000 cuts: Workshopping Black engineering narratives from interview to stage

Introduction

The climate in science, technology, engineering, and mathematics is often referred as a chilly climate (Browman & Destin, 2016; Flynn, 2016; Parson & Ozaki, 2017). Elements of a chilly climate include managing stereotypes (McGee, 2018), juggling competing responsibilities (Bowman, 2006), feelings of isolation (Ong et al., 2018), as well as feelings of hypervisibility (Smith et al., 2016) for Black students. While many Black students can successfully navigate this climate, enduring the chilly environment in Engineering can perturb their journeys through STEM (McGee & Martin, 2011). ASEE (2021) reported that only 8669 Black females and 21,000 Black males were enrolled in undergraduate engineering programs. Also, ASEE (2021) highlighted that Black students represent just 3.6% of all doctoral degrees in engineering. While there is a growing body of literature aimed at unpacking the experiences of Black students in STEM (Ong et al., 2018; McGee, 2018), understanding how Black PhD students navigate their engineering studies could be particularly insightful in boosting the enrollment rate and retention. However, all the information related to engineering experiences are only disseminated traditionally in the form of peer-reviewed scholarly manuscripts, which has limited impact to those who choose to read such literature. Given the current socio-political climate in the aftermath of two pandemics (i.e., racism-20 and COVID -19), greater awareness of the ways students from traditionally marginalized groups in higher education interact and make sense of their environments is of paramount importance. Black students have shared stories of microaggressions experienced, hostility from professors and peers, feelings of hypervisibility and invisibility, and constant battles with isolation and lacking support during conversations with us.

The purpose of this work is to present the lived experiences of Black students in engineering higher education, through the development of an ethnodrama. Ethnodrama joins the words *ethnography* and *drama* to describe a written play script derived from significant selections of narrative collected from interview transcripts (Saldana, 2005). Though peer reviewed academic articles remain to be the most

common and widely accepted form of scholarly dissemination, it is often limited to the norms of the field. Often, this does not create space for detailed elaboration of participant experiences and tends to inhibit the audience's (i.e., reader's) ability to engage emotionally and communally (Salvatore, 2019; Saldana, 2016). With dialogues and live performances, researchers can interact with readers in ways that the printed material cannot engage readers and reading the conversation often invoke emotions among the audience. Most often, ethnodrama provides a platform to conduct workshops with audiences and entering into dialogues with them unlike traditional forms of dissemination. The vignettes from study participants usually trigger their stories and therefore, serves as a steppingstone for meaningful discussion. (Norris, 2016). One of the purposes of this paper is to share the non-traditional method with the field as an alternative approach to dissemination, using one of the four identified narratives from a larger study as a real example.

Actualizing transformative change necessitates experimenting with approaches and behaviors that may be at odds with the current research culture, and the arts are legitimate epistemologies in that they offer another way of knowing that yields insight into the lived experiences (Barone & Eisner, 2011). Through development of a research-based ethnodrama, the goal is to ultimately deliver an ethno-theater performance, this research utilizes a performative action research approach from four different narratives that has the potential to communicate the reality of Black doctoral students' experiences in engineering.

Theoretical framework

We approached the stories using an interpretive lens. Therefore, this work is grounded in postmodernism as we represented stories beyond traditional norms of dissemination. We added some layers to complete the narratives without changing the actual stories. Based on the experiences of marginalization common to Black students navigating engineering, this project is theoretically framed in Critical Race and Role Strain Theories. Critical Race Theory (CRT) provides a framework for challenging the ways in which race and racism implicitly and explicitly impact social structures, practices, and discourses; it has also been used to understand the experiences of Black graduate students navigating

engineering environments (Crenshaw, 1991; Ladson-Billings & Tate, 1995). One basic tenet of our epistemological foundation is Critical Race Theory (Delgado & Stephanic, 2012). *Critical Race Theory* (CRT) examines the race and the concept of membership of different races. Critical Race Theory challenges the normalization of colorblindness and White Supremacy. CRT acknowledges that the dominant groups manifest some advantages that are tied to their membership with a particular race. Over the years CRT scholars expanded their critical lens and CRT does not only examine race critically, but they also study membership to a specific class, gender, nation, sexual orientation, first generation student status etc that are attached to other marginalized identities. CRT acknowledges that race is socially constructed, and they also highlight intersectionality and anti-essentialism, that means a member of a particular group for example a Black graduate student can be member of a church or a single mother. Also, CRT acknowledges that individuals from non-dominant groups often face additional stereotypical scrutiny and microaggression and at the end everything operates under institutionalized racism, including higher academia. In context to our study, marginalized experiences were reality to every doctoral student when they navigated their engineering PhDs in higher academia, and we presented diverse experiences of students enrolled in Predominantly White Institutions (PWIs). One of our assumptions for the data collection and analysis was racism exists and all the systems including educational institutions operate with in racism.

We situate this work also with in Role Strain Theory and seeks to expand it to incorporate the additional roles Black students in engineering PhD balance, simply by virtue of being Black. The Black identity has not been recognized as its own role associated with responsibilities, needs, and expectations or examined to elucidate how it aligns or contradicts with the responsibilities, needs, and expectations of the role of being a doctoral student in engineering. Role strain theory recognizes that social institutions are supported and operated by role relationships (Goode, 1960). As such, individuals are part of multiple role relationships, which often results in conflict. For Black doctoral students in engineering, and in this specific study— the role of the doctoral student has been salient whereas the role of being Black has had lesser explicit recognition and/or understanding, especially as it relates to complications in meeting the

expectations of the professional role and the associated consequences. Our contribution to this framework is introducing race related strains which can be intra (conflict within a role-doctoral student in engineering) and inter (outside of the role-outside life of Black doctoral students in engineering) specific to the role of being Black PhD students. For example, being Black means the engineering students will often be scrutinized for their successes and admission into Ivy leagues and will go through the experiences of interest convergence by their academic advisers. Both the theories played a critical role while formulating interview questions and analyzing the data. The frameworks provided us a snippet of racial, gendered, and other identities related realities for the Black doctoral students in their programs. The theoretical framework informed conversation (interview) questions and data analysis to identify the initial themes, however, the theoretical framework directly did not influence us to write the scripts because scripts were direct excerpts from our community members. The script writing was guided by our sense of aesthetic principles.

Methodology

Participants in this work are referred to as community members. This was an intentional selection of the research team as the greater work involves Community Based Participatory Research (Bush, 2019). In efforts to position Black students as the experts of their own experiences and needs, we have thoughtfully framed this work to honor their voices. In these approaches the concerns of a specific group are addressed as they become co-creators of knowledge with the potential for change resulting from research findings, which fosters cultural sensitivity and responsive research practices.

Recruitment

Community Members were recruited from an existing research pool via email with a Google form questionnaire. This research is part of a national study funded by National Science Foundation (NSF). As the most diverse representation across Black engineering graduate students was desired, snowball sampling was followed. In total, 33 Community Members representing 11 institutions and diverse types (PWIs, HBCUs, International) were represented. Community members were compensated with a $100

Amazon gift card. Narrative interviews composed of a narration and conversational phase were conducted and ranged from 1.5-2 hours in duration. Interviews prompted Community Members to reflect on their experiences navigating engineering paying special attention to any aspects uniquely correlated with their identity.

Interview Protocol

The initial prompt used was, "*We are hoping that you will share the details of your story and path through engineering spanning from your decision to pursue engineering to arriving in your current engineering pursuits. We would like to start by asking you to describe your journey through engineering. Be sure to describe any instances where facets of your identity (being Black, gender, person with disability, etc.) factored into these experiences*." Examples of the semi-structured questions asked in the conversational phase included: *What were some challenges you experienced on your journey? Where did you seek support from in these times? Who was involved in supporting you through these challenges? How is your relationship with your academic adviser? How would you describe your relationship with your peers?*

Questions asked in the conversational phase varied depending upon the narrative shared by Community Members. However, all our interviews were more conversational. Our research is a community based participatory work, hence just asking questions based on semi-structured protocol does not suffice, we prompt students with a lot of impromptu questions.

Data Analysis

The team's major goal was to create a research medium that facilitated greater reach while also prioritizing integrity to amplification of the Community Member's voice. We followed a multi-step analysis process. We simultaneously coded the transcripts deductively and inductively (Saldana, 2016) and made a codebook framing the tenets of critical race theory and role-strain theory.

In the current moment, when institutions are receptive to hearing the voices of the marginalized, we sought to make these experiences visceral through translating the data from interview to narrative to script. Using the steps outlined by Saldana (2005), we recognize:

A researcher's criteria for excellent ethnography in article or book formats don't always harmonize with an artist's criteria for excellent theatre. This may be difficult for some to accept but, to me, theatre's primary goal is neither to educate nor to enlighten. Theatre's primary goal is to entertain--to entertain ideas as it entertains spectators. With ethnographic performance, then, comes the responsibility to create an entertainingly informative experiences for an audience, one that is aesthetically sound, intellectually rich, and emotionally evocative. (Saldana, 2005, p.14)

To answer that charge, we first had to identify which participants narratives would be used. This proved to be a challenging process, as each of the narratives had rich accounts with shared, and yet, differentiated experiences. We went through each transcript and finally, as a research team we agreed to represent four stories by X, Mia, Shasha and Assata due to the multiple layers of complexity, forms of oppression and intersectionality in the data. We collectively agreed as a team their narratives best captured their soul crushing experiences or marginalized experiences and they can be grouped together as a form of composite narrative.

The transcript of X, Mia, Shasha and Assata serve as our primary source of data for this work. Those transcripts are between 90 -120 minutes in duration and is too long and rich to include fully in a single ethnodroma. Then we sought to make meaning of each story, its critical components and embedded lessons that were identified by the research team as important messages for various stakeholders (e.g., institutions of higher education, faculty, prospective engineering students, families, etc.). As a research team, we met several times to identify the broader themes that we thought would be the best representation each story. We also coded the transcripts by using previously developed codebook for the larger study. First, we worked individually four transcripts to identify the critical components and then we worked collaboratively. Some of our themes overlapped and finally we were able to consolidate all the critical concepts. Once we identified the broader category of themes, we engaged in script writing. The focus of our analysis remained identity of our community members and negotiation of their identity to navigate through his graduate studies. Finally, we transformed all the broader themes into "masks", masks are reciprocal of all the identity hats they wore to navigate through different contexts. The analysis was our own adaptation of script writing grounded on Teman and Saldana's work (2019).

The following table introduces all the themes that we transformed into masks to explore the marginalized experiences of Black PhD students at PWIs. The reason we chose to represent the narratives by using masks are-we anticipated the magnitude of the audio-visual elements of emotions and metaphors of marginalization through different "masks" will prove to be profound tools for reflection. Also, masks can help enhance a theatrical experience if we perform the narratives as ethno-theatre.

Table 1: Masks and all the identity hats description

Masks (Themes were transformed into masks)	Definition of each identity-related mask
Model Student Mask	Navigating as Black student at Predominantly White Institutions and expectations that students deal with
Mental Health Mask	Mental Health Struggles of Black PhD student
Spirit Murdering Mask/Marginalization Mask	Originally conceptualized by Patricia Williams and applied to education by Bettina Love, is a form of racism that inflicts pain and kills the humanity and spirits of people of color
Spiritual mask	Rooted in spiritual empowerment and understanding
Self-preservation Mask	Community, shared identity to make it work
Activism Mask	Advocacy masks for Black students
Intersectionality Mask	Myth of monolithic Black identity-unpacks the experiences of intersectionality.

It is also critical to note that many of the stakeholders identified would not necessarily be individuals accessing the peer-reviewed journals to learn about the lived experiences of Black PhD students. To maintain the "voiceprint" of our community members, our goal was to include as many verbatim excerpts from the original transcripts as possible in a power and aesthetic way. Artistically, we will also incorporate additional characters, or the alter egos, associated with the various faces or masks to fill in the narratives that community members communicated through interview if we were to perform the script. For this work we represent four different narratives through the marginalization mask or spirit

murdering mask. The term spirit murdering has been used to study the experiences marginalized communities, such as people of color or LGBTQ+ community, who often face systemic discrimination and oppression that can damage their soul and kills their spirit.

Findings

One mask, composite voice

Bettina Love defined spirit-murdering as "the personal, psychological, and spiritual injuries to people of color through the fixed, yet fluid and moldable, structures of racism, privilege, and power" (Love, 2013, p. 300). We used the same definition to identity spirit murdering masks in our study and we also call it marginalization mask interchangeably in our study and through this mask we unfold series of soul crushing events that students had to navigated at different points in their journey.

Showing the death of 1000 cuts and the myriad ways Black students experience marginalization in engineering. To present the marginalization mask, we used the composite narrative approach. In this, we will read story 1 (X), story 2 (Mia), story 3 (Shasha) and story (4) Assata to collectively represent these "deaths of 1000 cuts" experiences. This will be recorded as one story/voice although it represents the varied manifestations of marginalizing experiences that Black students have encountered in engineering. The first script depicts X's experience of facing marginalization during his undergraduate time at Golden West University (Pseudonym) during a summer research program where he had to navigate racialized stereotypes and microaggression. In Mia's story the professor perpetuated racism and microaggression through her behavior in the classroom. Shasha's metaphor of room was full, and table was empty represented the loneliness a Black woman endure during a regular engineering class. Lastly, Assata's narrative represents a classic example of interest convergence, a faculty member only tried to build professional relationship with Assata after she won the fellowship and not only that he also credited himself in public for her success. All those four narratives describe soul crushing experiences that Black students in engineering navigate.

I felt so violated that my identity as a potential researcher was questioned because of my race

First script starts-

Oh, umm I am so excited that I got nominated for such a prestigious (name of the award) experience-I was nominated for it. (recalls with happiness and sense of accomplishment)-excitement (pause) then I reached Golden West University (Ivy league PWI), we were going to be staying at a dorm you know that said "Welcome, summer research science scholars, (excitement). Then the same dorm, there were football players who were getting ready to move in.(sigh). Literally when I approached the desk, before I could even get a word out, the white woman at the table says, "Uh, are you here for football? it's over there." I was just like ... Again, there's nothing wrong. I was a athlete from sixth until I graduated my high school. There's nothing wrong with that, but why do you think I'm mistaken? Then you know I approached her again, what even irritated me more was the surprise on her face when I said, "No. I'm here for the research program." (Pause and sigh) . Then after that, she asked me a series of questions such as, "Oh wow, whose lab are you in? Which institution are you from," all this other stuff. I felt so violated that my identity as a potential researcher was questioned because of my race. (Stop)

(Pause)

The professor would never ever, ever, ever call on me (sigh)

Transition to second script.

You know I did really good in my chemical engineering class, I knew most of the concepts (with exclamation), I was always raising my hand because I knew the answers, but I realized the professor would **never ever, ever, ever call on me** (sigh). The one time that she did, she literally said like, "You," and like pointed at me, and I was like finally, I was just really like thrown off because I had noticed that she would ... Like my hand will be raised, and then **she would call on someone sitting in the back who's half-asleep whose hand was not raised** and call them by name like, "Mr. Johnson, what do you think?" I was literally sitting in the front row with my hand raised, and I wasn't called to answer ever. So, once you know umm I went to her office hours and introduce myself, umm **she knew my name** (puzzled). But you know she **would frequently forget to hand us back our papers or she would skip us if she was handing back** like homework assignments or handing out like worksheets and stuff. (Surprise)

**Pause

The room was almost full but my table was empty

Third Script starts-

You know at LT for engineering design classes we had to do group projects. Basically, the table you sit at on your first day is your engineering group. So, with there being very few black people we tended to sit together. So, say I was the first one to come into the room, I would sit at a table and I would notice that people that were not African-American typically would not sit at my table. So, it's **like the room was almost full but my table was empty**. (sigh)

(Pause)

You weren't there for me

Fourth Script Starts –

> it was very clear to me, while I was in the lab that my advisor wasn't invested in me succeeding. When I came into grad school, I got like a fellowship from the university. And then my first year I got NSF. And so when I got it, my advisor at the time, sent an email out to the whole department saying, like, oh, let's congratulate Assata on winning this prestigious fellowship, blah, blah, blah. But what he also didn't include was that whenever I was writing my NSF fellowship application and asking him for help, he didn't even respond to my emails. He used to help me. And granted I really do I think I was going to get the NSF award and I hadn't chosen to join his lab, when I submitted. Because you submit, all the way in October and I joined his lab in January. And so it's like, you want to congratulate me now that I've won this fellowship award, but when I'm get the help, like you weren't there for me. I just said whatever kept moving. And then it's like, when I am in your lab, the project that I wrote about that I wanted to do for my NSF that obviously I got awarded on, you wouldn't let me do it. You gave me some shitty throwaway project that didn't work.

Pause**

Script ends

Scholarly significance of the work

The development of the script from the constructed narratives will offer a fresh and broader reaching dissemination of the experiences of a critical population (i.e., Black students with intersectional identities) during a critical time in which United States continues to grapple with the realities of its history of oppression. The critical components embedded within the ethnodrama will stimulate thought about the unique challenges encountered by Black students when navigating their engineering environments. Furthermore, to maximize the impact of the work, we plan to partner with and leverage the expertise of ethno-theater experts from academic cluster. If we wish to elevate the counternarratives of people of color in ways that challenge the perpetuation of systemic racism, we must continue to find the seams of research and art to fully explore the true potential for impact. This work is a steppingstone toward that goal.

Most importantly, ethno-drama as a non-traditional mode of dissemination has the potential for more critical engagement beyond academia. Microaggression, role negotiation, hypervisibility vs invisibility and other marginalized experiences that Black PhD students navigate in academia are a reflection of our

society, hence its critical time that academic work reaches beyond the traditional journal venues. Also, development of the ethno-theater-based monologues/scripts call for a re-consideration of current pedagogical practices and policies in higher academia as professors and stakeholders will witness the enactment of some experiences that are everyday reality for Black students. The magnitude of the audio-visual elements of emotions and metaphor of marginalization through different "faces" are profound reflection tools.

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