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Articulating a Succinct Description: An Applied Method for Catalyzing Cultural Change

Coleen Carrigan, Noah Krigel, Mira Banerjee Brown, and Michelle Bardini

Articulating a Succinct Description uses ethnographic data to create case study interventions facilitated with people who belong to the culture with whom the ethnographer is engaged. We do so in order to disseminate research findings, address problems presented in the case, and collect additional data for further collective analysis. Further, *Articulating a Succinct Description* is designed as a means of intervention for underrepresented group members to be heard and gain support and promote equity engagement among majority members in efforts to create more inclusive cultures. In this paper, we validate this method using findings from its application with engineering students at a public university. This method allowed us to view engineering culture not as monolithic, but rather as one with multiple sets of cultural beliefs, values, and behaviors. In particular, we noted a behavior among students we've called Swing Staters, who expressed meritocratic beliefs, yet, who we argue, may be critical to reducing bias in engineering education. These findings, analyzed along interwoven threads of race and gender, demonstrate the efficacy of the *Articulating a Succinct Description* method and contribute to efforts in engineering education to advance pedagogical tools to reduce bias and exclusions in these fields.

Key words: anthropology, ethnography, case study, engineering education, diversity, equity and inclusion

Introduction

Despite the attention and money put toward diversifying engineering, many of these fields remain largely segregated in terms of race, class, sexuality, and gender (Hamrick 2019; Yoder and Mattheis 2015). Though engineering education scholars have invoked "culture" as a factor in resistance to broadening participation in these fields (Foor, Walden, and Trytten 2007), the complexity of culture needs further exploration (Godfrey and Parker 2010). Applied anthropology and its long history of conceptualizing and contesting the meaning of culture can offer unique tools in the social movement to desegregate engineering.

We present in this paper one such innovative method called *Articulating a Succinct Description*, which serves both as a means of intervention and a means of inquiry. In other words, *Articulating a Succinct Description* conjoins an act of research with social activism. Both iterative and reflexive, it can enable researchers to deepen our understanding of a particular culture, interrupt bias, and foster inclusive cultural change. *Articulating a Succinct Description* invokes the multiple meanings of articulate, which is first meant to express an idea or problem effectively, and second, to join and unite disparate segments (Merriam-Webster 2020).

Articulating a Succinct Description has four main components outlined below in Figure 1. In the case presented here, the research team applied this new method toward two socially just ends. First, we aimed to engage scholars in engineering who are "outside the choir," in this instance the choir being people who believe that bias and discrimination against underrepresented group members are too common in engineering and want to take action accordingly. We hypothesize that there were engineers who were not highly resistant to social justice issues nor highly supportive of them either—engineers who would benefit from education on social relations in engineering and society more broadly. Our application of this method aims to generate a critical mass of change agents in these fields. Second, we use *Articulating a Succinct Description* methodologically, as a means of intervention for underrepresented group members to be heard and gain support without risking their anonymity and making them more vulnerable to bias and harassment.

Coleen Carrigan is an associate professor of Anthropology and Science, Technology and Society at Cal Poly, San Luis Obispo. Using ethnography, she investigates the cultural dimensions of science and technology and the politics of knowledge and reproduction. Noah Krigel was a research assistant and lab manager of the Carrigan Lab from 2016-2019. He holds a B.A. in Sociology from Cal Poly, San Luis Obispo, with minors in Gender, Race, Culture, Science, and Technology, and Women and Gender Studies. He is passionate about challenging inequities within engineering education and the study of conservative college student mobilization. Mira Banerjee Brown served as a research assistant for the Carrigan Lab during her time at Cal Poly, San Luis Obispo, where she majored in Anthropology and Geography and minored in Ethnic Studies. She now works for the J3 Foundation, which provides free, after-school reading programs in partnership with high-need schools in Los Angeles that serve students of color. Michelle Bardini served as lab manager and research and teaching assistant for the Carrigan Lab. Her research interests include investigating cultural phenomena that contribute to social and economic disparities and how these disparities connect to race and gender.

Diversity, Equity, and Iclusion in Engineering Education

In this paper, we offer a particular, culturally-situated case study of applying *Articulating a Succinct Description* in technoscience classrooms to help engineering students consider the criticality of social context of representation in their fields. We document how this intervention is received by both minoritized and majoritized students to elucidate the broader structures of power that influence their educational experiences.

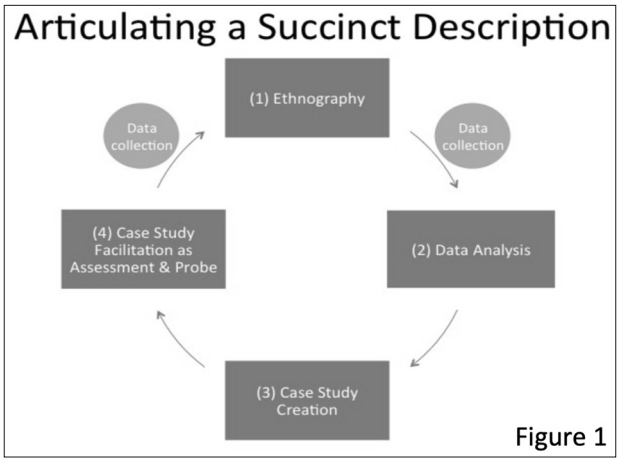
The lack of progress on broadening participation in technoscience is often explained by exclusionary behaviors, such as negative stereotypes, bias and hostile environments (Bystydzienski and Bird 2006). Resistance to diversity may also correlate with what Cech (2014) has coined as a "culture of disengagement" to describe an engineering educational system that decreases student interest in public welfare initiatives. Lack of concern for public welfare may be a barrier to efforts to increase participation in engineering fields because underrepresented group members typically exhibit tendencies to want to use their technical skills in service of the social good (Barth et. al. 2015; Carrigan 2017; Cheryan et al. 2017; Diekman et al. 2010; Seron et al. 2015; Simpson 2001; Yang and Barth 2015). Further, this culture of disengagement in technical fields augments and amplifies ideals of meritocracy that are a common cultural phenomenon in engineering. Meritocratic ideologies operate according to the assumption that science is objective and power relations like racism and sexism are irrelevant to science, matters that belong to the realm of the social and the political. In this way, meritocracy can not only inhibit efforts to desegregate technoscience and reproduce inequitable power relations in these fields (Castilla and Benard 2010; Seron et al. 2018), it acts as an accelerant to unexamined biases.

The outcomes from this particular application of *Articulating a Succinct Description* included successfully resonating with a critical population of engineering students who, while under-informed about applied research in technoscience, welcomed opportunities to learn more about the social dimensions of their fields. These students are not as advanced in their critical thinking as some of their peers, nor are they deeply threatened by efforts to raise concerns about inclusion and discrimination in technoscience. Instead, they engage meritocracy in engineering as a prescriptive belief, what Son Hing et al. (2011) call "an idealized justice principle," a desire for meritocracy to exist. While these students are not free of oppressive beliefs like racism and sexism, they do not exhibit a strong propensity toward them.

We have coined these curious scholars "Swing Staters," borrowing a colloquial term used in the United States to designate states whose support for one of the two main political parties in the country's electoral system remains undecided, and thus, open to influence. The first author has experience with campaigns to get out the vote and register voters in swing states. This experience taught her the value

Figure 1. Articulating a Succinct Description

Figure 1 illustrates the iterative process of the Articulating a Succinct Description method. The four primary aspects of the method are: (Step 1) Ethnography, (Step 2) Data Analysis, (Step 3) Case Study Creation, and (Step 4) Case Study Facilitation as a Cultural Probe. Data collection occurs at two distinct moments, during ethnography and the case study facilitation.



of talking with other citizens about meaningful issues that shape our communities and strategizing about with whom these conversations will be most impactful. She found that inviting others to participate in shared governance is more important than proselytizing. It was in that spirit that she created *Articulating a Succinct Description*. This voter registration experience catalyzed her to seek ways to invite engineers to be more fully cognizant the social dynamics of their communities and more consciously participate in the politics of knowledge production in their fields. The term Swing Stater is a categorization that allows for multiple interpretations of the engineering culture under study, interpretations that entwine, enchant, interact, and conflict. We argue that these Swing Staters are potential change agents to be prioritized in efforts to transform cultures of technoscience.

Methodology

Articulating a Succinct Description is a response to Clifford Geertz's (1973) rendering of ethnography as a "thick description," which means that this qualitative method requires robust, detailed, and meaningful descriptions of culture. With this conceptual resource of a "thick description," Geetz helped to develop a cultural theory that broke from traditions of nomothetic inquiry. *Articulating a Succinct Description* builds on Geertz's nontraditional formulation of ethnography. The cases crafted from the ethnographic data are idiographic, and the curriculum designed for their facilitation use theoretical concepts, like bias and meritocracy, as a means

to encourage case participants to recognize and reflect on the specifics of the case. The facilitation part of *Articulating a Succinct Description* serves two purposes. First, it is true to Geertz's commitment to ethnographic particularism. We break with Geetz's commitment to thickness, trading quantities of details for a performative approach to ethnography that uses script form to evoke for the reader the setting and interpersonal dynamics of a specific setting. Performative ethnography—an artistic or theatrical rendering of ethnography—has advantages over textual inscription of culture in that a range of senses can be engaged by multiple people to invoke a complex portrait of cultural phenomenon (Johnson 2008; Madison 2005). Second, the theoretical foundations and collective interpretation of the case offer an opportunity for systems-analyses that do not resort to universalizing. It is designed to address particular cultures with multiple stakeholders with an iterative process of triangulation to guard against possible nomothetic outcomes.

The *Articulating a Succinct Description* method also extends Geertz's contributions to the interpretative turn in anthropology, in that the method is designed to be shared with the community from which the data was collected. This form of stewardship to the community who helped make the anthropologist's research possible is part of the "new story" of anthropology (Forsythe and Hess 2001) embraced by those scholars whose work is oriented in decolonial, and feminist theory, and science and technology studies (STS) (Behar and Gordon 1995; Gusterson 1995; Harrison 1991; Nader 1972). As Hugh Gusterson (2004) experienced, not all community members will appreciate the anthropologist's interpretation of their culture. This outcome was anticipated by the creator of *Articulating a Succinct Description*, which is why the cultural probe is designed to turn negative reactions into data used to enhance the impact and verisimilitude of the case study. In essence, the time and energy required to move through all four stages of the *Articulating a Succinct Description* methods are similar to those required to perform "deep hang." The case method and cultural probe are innovations on Geertz's anthropological outputs, intended to create an artifact that is legible to people outside of the social sciences and that can be engaged with collectively.

The performative aspects of *Articulating a Succinct Description*, paired with a facilitated discussion of the cases, is a way for applied anthropologists seeking to share what they learn in the field with both experts and lay audiences to catalyze cultural change. In this paper, we used the *Articulating a Succinct Description* method to provide an opportunity for engineers to practice important professional skills such as working on diverse teams, communication, and conflict resolution. During the case study facilitation, students practice these skills as they engage in dialogue with their classmates on challenging topics of race, gender, culture, and bias within the context of their engineering education.

Articulating a Succinct Description is rooted in critical methodology, which "begins with an ethical responsibility to address processes of unfairness or injustice within a particular lived domain" (Madison 2005:5). Applied anthropologists use critical methodology to make visible oppressive power relations within a culture and apply their findings to have positive impacts on their communities of study. For the anthropologist doing applied work, one way to use ethnographic data is to help facilitate a collective process of discovery that involves multiple perspectives on power, laying the groundwork for articulating a vision of what Faye Harrison (1991) coined as an "anthropology of liberation." The term "anthropology of liberation" describes the nexus where knowledge and praxis intertwine (Harrison 1991). This approach can illuminate and document not only the texture of underrepresented groups' lived experiences but also the power exercised by dominant groups in the reproduction of the status quo. As applied anthropologists, our study of our university culture is motivated to uncover and disrupt operations of power and control with the goal of transforming institutional culture to be more just and equitable.

Why Use Case Studies?

Case studies have commonly been used in anthropology as a means of data collection and research (Mills, Durepos, and Elden 2010) as well as a vehicle to preserve holistic realism of daily events (Yin 2003). Undergraduate students who engage with case studies have also demonstrated increased awareness of an institution's culture (Case and Light 2011), increased critical thinking skills (McDade 1995; Yadav et al. 2007), retention of material (Herreid 2007; Shulman 1992), and understandings between public concerns and social relations beyond the classroom (Yadav et al. 2014).

Ethnographically designed case study facilitations are skill-building interventions constructed from everyday relationships, creating common experiences with verisimilitude to enhance participants' engagement with the material. These scenario-based learning modules establish a collective framework for discussion and debate among participants. Problem-solving with peers facilitates the sharing of best practices and strategies, catalyzing transformational changes at micro, mezzo, and macro levels.

Case Studies as Cultural Probes

Cultural probes are design interventions that capture participants' insights by having them document experiences on notecards, journals, cameras, and maps before returning them to researchers for cultural analysis (Gaver and Pacenti 1999). This form of data collection, while messy, can offer "fragmentary clues about their lives and thoughts" (Gaver et al. 2004:53). It can also spark dialogue between participants and researchers, promoting an increased awareness of participants' own lives and actions (Graham et al. 2007). Since Gaver (2004) and his colleagues first shared their novel approach to design research, cultural probes have been adapted and utilized by a variety of researchers across disciplines (Crabtree et al. 2003; Graham et al. 2007; Hemmings et al. 2002). We analyzed and incorporated the cultural probe into

new case studies, using them to enhance the verisimilitude of social relations in the daily realities of the community with whom we were engaged.

Research Team

The *Articulating a Succinct Description* method was pioneered at a western primarily undergraduate institution with the intent to align with the university's goals of transforming its stubbornly homogenous culture, one in which underrepresented groups consistently report low levels of satisfaction with their experiences on campus. Led by the first author, a feminist anthropologist, the team was composed of eight undergraduate students and two AmeriCorps VISTA associates who studied Liberal Arts, Engineering, and STS.

Methods

The *Articulating a Succinct Description* method is a four-step reiterative process described below and depicted in Figure 1.

Ethnography (Stage 1)

Ethnography, a method invented by anthropologists, includes methods such as participant observation, field memos, autoethnography, interviews, and focus groups interviews (Spradley 1979, 1980). In this paper, we describe the application of this model in a pedagogical setting. The first author assigned students in her cultural anthropology class an ethnographic project investigating the cultures of their major field of study. They were required to do semi-structured interviews, built environment analysis, auto-ethnography, and participant observations of their respective majors, which provided rich data about campus culture from students' perspectives. Even though the site of this study is a public university, its student population has an overrepresentation of White, male students compared to its state population. Therefore, in order to ensure minoritized voices were included, we also led two focus groups with students from various engineering clubs.

Data Analysis (Stage 2)

We then open-coded data, noting emerging themes and patterns and developed a codebook to ensure intercoder reliability. Data were then close-coded using axial coding strategies (Strauss and Corbin 1990) and frequently memoed upon, drawing connections between different machinations of privilege and resistance to diversity. Data was analyzed using a grounded theory approach (Auerbach and Silverstein 2003; Glaser 1978; Glaser and Strauss 1967; Strauss and Corbin 1994).

Case Study Creation (Stage 3)

From this analysis, we identified experiences that captured moments of power and oppression—glimpses into the lives of students, with particular sensitivity regarding gender, race, major, and sexuality. Using verbatim quotes from our data, we wrote film scripts with dialogue, speech patterns, behaviors, values, relationships, and body language that evoked a verisimilitude of student life that had meaningful characteristics of daily campus life.

Case Facilitation and Cultural Probe (Stage 4)

In the last stage of this particular application of *Articulating a Succinct Description*, we presented case studies to an engineering audience so they could understand and respond collectively to the social dynamics articulated in the case. Our facilitation of the cases included a short presentation on unexamined bias, microaggressions, and diversity, equity, and inclusion. During these presentations, we also cited research studies and on-campus climate surveys that revealed the use of intimidation, exclusionary behaviors, and unexamined bias in creating hostile campus cultures and professional worlds.

In small groups, students were given thirty minutes to read and discuss the film script. Each group was told to assign a "scribe" to record and synthesize the group discussion, as well as a "facilitator" to guide the conversation, making sure all group members had a chance to contribute and build consensus. During group discussions, the research team also memoed on student interactions, capturing dialogue, body language, and other reactions while walking around the classroom. Afterward, each student was asked to provide anonymous feedback on the activity, disclosing only their race, gender, and major. These cultural probes were designed not only to help us assess the effectiveness of our intervention, but they also functioned as a broader cultural evaluation of the cultural context in which people from different standpoints made sense of social and educational phenomena manifesting in their daily lives.

The knowledge generated from the cultural probe is meant to be amalgamated into existing ethnographic data sets (see Step 1, Figure 1) and can be used iteratively in the creation of more case studies.

Articulating a Succinct Description Method in Engineering Classrooms

Case One (Fall 2016)

Using data from students in the first author's cultural anthropology classes from 2014-2016, we facilitated the fourth stage of *Articulating a Succinct Description* in a capstone class for civil and environmental engineering undergraduate students. The 2016 engineering capstone course was composed of 157 civil and environmental engineering undergraduate seniors. During the engineering capstone facilitation, a small group of students—primarily transfer and first-generation—from a professionalism course also joined. From the data collected by student researchers, we created a film script highlighting exclusionary behaviors that many students of

color noted in their engineering classrooms and group project teams. A summary of this film script is as follows:

> Greg is an African-American mechanical engineering student who is working on a group project for one of his design classes. Greg tells his roommate, Sarah, a White woman and civil engineering student, that his group has repeatedly delegated the less-technical tasks (presentation making, project organization, etc.) to him, despite his strong grasp on the class material. He also notices that they talk to him a lot about sports rather than the contents of the project at hand. Sarah says that she can relate to some of what Greg has experienced because of her gender, and then she asks if he has approached his professor about the situation. Greg explains that he already tried to talk to his professor about it, but he receives little support and is told that he has to work hard to be successful in his major. Sarah is empathetic to Greg and encourages him to talk to his teammates about how he feels.

Through this case study, we wanted to share the lived experiences of many students of color while modeling how majority students have the power and responsibility to become change agents. Both small-group answers and cultural probe data from individual participants were transcribed into Dedoose coding software, which was then open-coded for emerging themes and patterns to create a codebook to ensure intercoder-reliability. Codes focused on emotional states, specific phrases, critiques of the activity, and identity (race, gender, major) of respondent. Afterward, codes were analyzed by the authors for trends and relation to intersectional identities.

We discovered different textures of resistance. While there were two clear camps—one highly supportive and another highly dismissive of this diversity, equity, and inclusion initiative—we also noticed a third camp, which we called, "Swing Staters." This group proved, at worst, to be ambivalent with a minor inflection of rancor about diversity, equity, and inclusion initiatives, or, at best, curiously open-minded.

Case 2 (Fall 2017)

The Fall 2017 engineering capstone course was composed of 173 civil and environmental engineering undergraduate students. In this iteration, we created a case study centered around students of many different racial and gender identities and their varied interests and involvement with diversity initiatives outside their curriculum. Rather than reach those already comfortable with diversity and inclusion, we hoped this new case study could reach those just beyond the choir and engage those Swing Stater students who may be on the fence about diversity and inclusion initiatives, without pandering to those entirely resistant and close-minded. A shortened description is below:

> Lucy, Jose, Daniel, and Sara are working on a group project for a general education class in the library. During the past week, their professor lectured on the impacts of diversity and unexamined bias on underrepresented groups. Lucy, a Chinese-American female Biology student, is unsure how to be an ally to social justice causes. Daniel, a White male Mechanical Engineering student, believes that academia is a meritocracy, and thus, one's gender and race does not significantly influence their experiences. Daniel subtly insinuates that there are equal opportunities for everyone, regardless of race and gender, dismisses resources and programs dedicated to traditionally underrepresented students, and argues that respect should be gained solely from competency. Daniel debates these viewpoints with Sara, a White, female Environmental Engineering student who is involved in inclusion efforts as a result of her experiences of bias as a woman in engineering, and with Jose, a Latinx male Ethnic Studies major who experienced discrimination due to his race and sexuality and translated the experiences into involvement in campus activism.

This case study—like previous case studies—used verbatim quotes from the cultural probe done in the 2016 engineering classroom, which aligned with demographic identities, but also focused on the variations regarding resistance to diversity, equity, and inclusion initiatives. After facilitating a presentation and collecting the cultural probe instruments, we referenced the same codebook used in 2016 to analyze data but expanded certain codes to capture nuances in resistance, hesitancy, comfortability, and involvement with diversity as it related to social identities.

Findings

Verisimilitude

The iterative process of generating data within a particular culture and presenting this data to said community in the form of a case study helped bridge the epistemic divide between technical science and social science. Some engineering students marveled at the verisimilitude of the cases, stating the case study was "real" and "authentic." Indeed, many of these engineering students appeared to laud this tool, confirming the veracity of knowledge being imparted in the facilitation and acknowledging the effectiveness of a social science method. The latter sentiment was especially surprising given that the site of this study has a pervasive cultural bias against fields in the humanities and the social sciences, one the students have coined as "majorism" (Carrigan and Bardini 2021).

Many students identified with—or could identify in their lives—characters in the scripts. For example, one White male wrote, "I felt like this case study was an actual experience for me in my [other] class. One discussion led to one student being identical to Daniel, while the minorities in the class said things similar to Jose, Lucy, and Sara." Many other students had similar reactions, identifying moments when they encountered characters—particularly the resister, "Daniel"—in their lives. For example, another White male student said:

> My experience with this case study was very similar to personal experiences of my own. I've dealt with people like Daniel in my life and have had similar experiences as Jose so I can definitely say that this experience really hit home.

Other students wrote simple validations, such as a White female who said, "I really identify with Sara," or a Latinx

male who said, "I can relate to the case study." These case facilitation participants affirmed that the ethnographic data generated by peers used to create the case was accurate and resonated with them. In this way, the method was able to garner trust among students and capture complex dimensions of the campus culture. Some students even commented on the intentionally placed racial, gender, and major identities. One Asian-American female said, "I liked this talk and felt like it was important. I liked the different types of minorities addressed (race, gender, major). I feel like that includes more people and lets more people have things they can relate to." Similarly, an Asian-American male said:

> The case study was a nice eye-opening experience—our design group actually closely aligns with how the sample discussions' demographics were, and I believe we were able to draw from the characters' viewpoints a bit more because of that. The discussion between us members also clarified some confusions and interesting opinions.

The creation of characters from a range of social identities and with well-developed beliefs that mirrored campus culture allowed students to connect and participate in meaningful discussions in their small group breakout sessions during the facilitation.

Other students appeared to validate the themes portrayed in the case, describing the ways in which the unique case study dynamics accurately captured their life experiences. For example, a multi-racial female wrote, "I related to this case study. As a female in engineering, I do feel that I need to work harder for the same things as my male colleagues. I also feel like a minority on campus and have met people who do not understand my concerns." This student describes her experiences of the double bind (Ong et al. 2011): being underrepresented as woman in engineering, needing to work harder than her male peers, and being a scholar of color and being dismissed and ignored by White classmates. Here, *Articulating a Succinct Description* enabled a woman of color to hear the voices of other women of color on campus who are navigating similar oppressive conditions, thus offering an opportunity for consciousness raising that may reduce feelings of isolation. Further, we sought not only to amplify voices of students from underrepresented groups but also chose to disseminate our ethnographic data in case study form to heighten anonymity and protect against potential identification and retaliations.

Swing Staters

We identified three groups of students with regard to their understandings of diversity, equity, and inclusion initiatives: (1) those who were fully supportive; (2) those who were completely resistant to these matters; and (3) those we call "Swing Staters," who expressed ambivalence and/or resistance yet still engaged with our material. We received warm praise from underrepresented students in the aforementioned first category who felt validated by this intervention (Liptow et al. 2017). Engineers in the second category were, we felt, too intransigent to reach. They expressed outrage about the case facilitation, insulting the authors of this paper with demeaning comments in the cultural probe stage or expressing anger toward not only the pedagogical intervention but also toward the school or their peers. For example, one White male opined: "This topic was a waste of time that's contributed to an already bloated education." This comment is representative of unbending resisters who resented non-technical curriculum or activities, demonstrating a cultral trend in neoliberal universities that renders social concerns extraneous in higher education (Carrigan and Bardini 2021). Another White male felt the case was "BIASED TOWARDS WHITE MALES. If racism exists, why do we have seclusive minority groups? Because they are racist too!" [all caps original].

For the purpose of this paper, we focus on the third group—Swing Staters—and two different types of disengagement they expressed. The first type, whose experiences we characterized as "Revelatory," recognized that they were complicit in unexamined bias prior to this facilitation but were made aware of different types of oppression by engaging in this activity. The second type of Swing Staters, whose positions are "Meritocratic," were more resistant, reproducing meritocratic ideologies with textures of sexist and racist sentiments. These findings augment Cech's (2014) argument that a culture of disengagement is common in engineering education. However, we found different levels of disengagement, some that can be more easily ameliorated than others. For example, the ways these Swing Staters engaged with this material suggested these sentiments were a signal of the "idealized justice principle" (Son Hing et al. 2011), a prescriptive form of meritocracy which, we argue, educators can successfully trouble in order to help students become change agents. Meritocracy is a discourse that mythologizes the United States as a post-feminist, colorblind society (Bonilla-Silva 2006; Browne and Misra 2003; Essed 2001). When engineers participate in their workplaces and educational setting under the spell of this myth, it helps to calcify the obduracy of segregation in their fields. The idealized justice principle is an effective tool to break the spell of the meritocratic mythology without telling its subscribers they are wrong. Instead, it appeals to their aspirations for fairness and egalatarianism and enlists them in efforts to realize these aspirations.

Revelatory Swing Staters

Our findings showed that a significant number of Swing Staters demonstrated an increased awareness of and empathy for the experiences of underrepresented students on campus. The facilitation exposed many White students to their privileges and even prompted some to want to take a more active role in combating bias. For example, one White male said:

> I've realized that this is not really something I've thought about before, but I'm sure that I've unintentionally been biased at some point in my life. This session has made me more aware of my actions and word choice, and I will definitely pay more attention to it now.

This student's reaction manifests the intention of this intervention—the sparking of critical consciousness and a commitment to applying this new knowledge going forward. Another White female expressed a smiliar experience: "It was very interesting to consider ways that I unintentionally participate in propagating bias through my body language, comments, and preconceived notions. I want to work on combating these biases by being more comfortable with talking about it." Additionally, a significant group of Swing Staters expressed frustration that they were not taught these concepts earlier in their educational career. For example, one White male said, "I think it was good to talk about this topic, as it is something I don't think about very often but is certainly important to bring awareness and change." Revelatory swing staters appreciated the novelty of this topic in their education and validated the importance of these conversations.

Similarly, another White male said, "Eye opening. Was defensive at first, but in the end realized it was important because it helps us perform better. Helped me understand that the world is not necessarily as safe for others as it is for me." For this student—as for many others—the case study offered a new perspective on the experience of underrepresented students in engineering. Even if they could not personally relate to the experience of bias, they were able to sympathize with—and thus validate—the realities many of their peers faced and act reflexively to acknowledge a sense of safety in engineering, which not all share.

Along a similar vein, a White female stated, "I enjoyed hearing everyone's thoughts, ideas, and opinions about the issue of diversity. I learned a lot about it and how I can better myself and help others who don't have as much privilege." Likewise, another White male said, "I thought this was a very beautiful experience, and it has really encouraged me to be an ally." These sentiments show there is potential for increased allyship among dominant group members in engineering—one that could catalyze inclusive cultural change in engineering by further minoritizing engineers who are highly resistant to ending racism and sexism in their fields. The verisimilitude of the cases also helped generate empathy and allyship between underrepresented groups. For example, a Latinx male student said, "I have had experiences that can be seen as discriminatory, and I have felt out of place. This actually has made me realize or relate my experiences with the experiences of women and has made me more empathetic towards women in engineering."

As more engineering students recognize and empathize with the prevalence and injustice of bias, we may see a shift in engineering culture from one that embraces individualism and meritocracy toward a more collective culture that recognizes the importance of diversity and inclusion.

Meritocratic Swing Staters

The second type of Swing Stater demonstrated commitments to meritocratic ideologies hued with sexism and racism. "Himpathy" is a sexist form of meritocracy that grants men "a sense of not only legal impunity but also moral entitlement—secure in the idea that what they seize is theirs for the taking" (Manne 2017:218). Another dimension of himpathy involves interpreting in the most generous way possible the motivations and contexts in which men exert entitlement. In other words, himpathy is a disproportionate sympathy toward men from dominant groups, even when they have caused harm onto others.

For the 2017 case facilitation, we created a new case with a character named Daniel who represented a range of meritocratic beliefs in the data we collected during the 2016 cultural probe (see Stage 4, Figure 1). Daniel believes that implicit bias "isn't as big of a deal as people make it out to be" and that "people just use the race and gender card to make excuses for why they're not succeeding." When his peers share being targeted by bias, Daniel undermines their credibility, saying, "That's just your experience, and maybe you were misinterpreting it anyways." Despite Daniel's inability to understand his peers' experiences, let alone take them seriously, many participants reported feeling sympathetic for his character. While this sympathy for Daniel took various forms, the common thread amongst them was a tendency to overlook his dismissal of underrepresented engineering students' lived experiences and to agree with his meritocratic views on culture in engineering.

For example, a White female, reflecting on her experience in the case study, identified with Daniel, the resistant White male character:

> To be honest, I agree with what Daniel had to say in the case study dialogue. Looking around the classroom tonight, I see a diverse, success-driven, enthusiastic student body that doesn't need to be shamed into feeling guilty that there happen to be more White men than Black women. [original emphasis]

Rather than validate the experiences of underrepresented students, this participant—underrepresented as a woman in engineering, felt himpathy for Daniel (a fictional character) but offered no sympathy for her Black women peers. Viewing the class as a monolith, she leveraged pride to advance meritocracy. She could also be expressing racial solidarity with Daniel which, in a pique of White fragility, motivated her to frame the purpose of this socially relevant intervention as one meant to "shame" rather than educate. Yet, this student acknowledged feeling shame, which, in the tradition of transformative pedagogy (hooks 1994), must be accepted in order for educators to help someone move beyond it and exercise agency in transforming the cultures in which they participate.

In contrast, a White male expressed appreciation for the case facilitation but also admitted to identifying with Daniel. He said, "The case study opens your eyes to what others might face on a daily basis who aren't the stereotypical engineer. I could identify with Daniel. It is hard to empathize with others facing discrimination when you haven't directly experienced it yourself." His insights validate the model's capacity for generating empathy among majority members in engineering education. It also illuminates paths for further enhancing the facilitation with discussion questions that ask

those who identify with Daniel to augment their himpathy for the resistant character with empathy for underrepresented group members in their fields.

We also saw meritocracy inflected with racism, a colorblind ideology claiming that ignoring race, culture, and ethnicity will end racism, consequently obscuring its associated personal, social, and historical effects (Tynes and Markoe 2010; Mueller 2017). In other words, it reflects White people's propensity to "resolutely deny that racial inequality is structural and…explain it as the result of Blacks' 'cultural deficiency'" (Bonilla-Silva and Forman 2000:77-78). In effect, colorblind racism reproduces racial hierarchies by denying their existence. Ignoring the reality of our country's history and the impacts observed today, while asserting that success is earned and determined solely on merit, calcifies the mindset that the people worthy of participating in engineering are those who are already represented. Further, like himpathy, colorblind racism is often expressed "as broad sympathy toward some and broader skepticism toward others" (Coates 2018: 123-4).

This individualizing discourse ignores systems of oppression and privilege yet was highly prevalent among Swing Staters. For example, a White female noted that her small group members' meritocratic beliefs resulted in them blaming Greg, the African-American student who was targeted by microaggressions in the 2016 case:

> I feel like the White males in the group tended to put the blame/pressure on Greg that he was doing something wrong in communication or behavior, not really understanding how microaggressions doesn't allow those avenues to work like they do for majority groups. Just an interesting observation.

This student observed a key element of colorblindness, blaming targets for cultural deficiencies and failing to see the racial illiteracy of dominant group members. Some Swing Staters showed signs of an internalized meritocracy (Seron et al. 2018). For example, a White female engineering student felt that "we need to speak up for ourselves when we feel discriminated against." This student did not consider the behavior of Greg's group members and failed to assign them responsibility for addressing power dynamics when working on teams. Note, however, she aligned with Greg's experience of being a target of discrimination, and thus, may be expressing her own coping strategies as an underrepresented group member in engineering.

Many Swing Staters, however, rather than ignore the dominant group members' behaviors, centered them in their analyses. One White male Swing Stater reflected:

> It was cool discussing these topics because it isn't a common topic of conversation. I found it important because I've experienced similar circumstances. Sometimes being a White male makes you feel like the bad guy, and it sucks that other White males have ruined our reputation. I feel that because I'm White, I'm automatically racist or biased against other races, but it's far from that.

Although this student valued the opportunity to engage in conversations not often held, he focused on the presumed challenges associated with being labeled as racist. His guilt hobbled his more enlightened instincts and could also be an impediment to him becoming a change agent amongst White peers. It is heartening that he was embarrassed by racist peers. However, he focused on how he is perceived, showing a strong concern for his reputation, a behavior that, if not interrupted, could lead to a feeling of victimization in dialogues about race and racism, a common reaction to such discussions by right-wing students (Krigel 2020).

We also saw this concern in another White male's response:

> After talking with the group, I was more understanding about the bias on campus. I was upset that Daniel (White, male, Engineer) was an asshole because I don't think we all are. It is hard for me to understand the bias, but I really like to listen.

Again, while the student began by affirming the existence of bias on campus, his sympathy soon shifted away from students who experience it as targets and to dominant group members in engineering. While the student still wrote that his "understanding of bias" increased due to the exercise, his main concern seemed to be emphasizing that not all men are bad. Encapsulating many of these emotions, another White male wrote:

> I thought the discussion was very good. While it wasn't anything new, it's always important to continue the conversation. I felt my classmates raised some nuanced and interesting points, and I appreciate that it didn't dissolve into a White male slam-fest. I did feel that the discussion might have been hampered by deliberately choosing the gender/roles of the students in the case study. As a White male, I can personally attest that seeing "Daniel" be the asshole in the situation can hamper discussion because you instantly want to argue that you don't think or feel that way.

Similar to other responses, this student began with a validation of the facilitation but shifted the conversation into appreciation against a "slam-fest" of White men. Quickly though, he attempted to distance himself from a character in a film script and expressed a desire to protect his reputation. This type of response works to, again, center White men and misses the opportunity to learn from the characters in the case who assert their views and work to describe their experiences of campus culture to the White male character. Another White male wrote:

> Thoughtful, good purpose, but I felt like this was the typical situation where the White is "demonized." While this is most likely the most common scenario (White males being racist), it was a bit "set up" and corny for me to read.

Though this student began by stating that this case study was done for a "good purpose," he then argued that it still "demonizes" White men, despite reluctantly admitting that "this is…the most common scenario." Furthermore, rather

than explore why this portrayal is a "common scenario," the student criticized the researchers for the portrayal, even though many of Daniel's lines were direct quotes from White male students in the same class just one year prior. Even those who claimed to be in favor of desegregating engineering ultimately undermined this assertion by indulging White fragility rather than addressing the implicit bias that was present in Daniel's language or listening to and reflecting on the lived experiences of their underrepresented classmates.

Other Swing Staters, while more open to the case facilitation than the small group of resisters who were not just offended but outraged by our intervention, revealed a troubling aspect of colorblind racism. Here, we refer to the equivalency of discrimination between Whites and people of color. One White male began his reflection with a positive validation of the facilitation, writing, "I thought it was good to have a discussion about this even though many people have different views on it. Getting these ideas verbalized makes people more comfortable to talk about it in the future." His appreciation of the facilitation, however, quickly shifted. "During my time in college, I have actually experienced minorities being treated with a privilege, so I feel like that should be talked about, too." Though he initially recognized the importance of other viewpoints, he invalidated this appreciation with a criticism of these same group members and hinted he had been discriminated against, too.

Another White male reinforced this meritocratic ideology through a colorblind lens:

> I felt it was good intentioned but misplaced. I feel teaching people that they may get offended is good because that's what happens in the real world, and they should try to bridge the gap, but it is not an excuse for how successful one is. Everyone has their unique strengths, weaknesses, and challenges. Boiling everything down to race and gender is on its face discrimination.

While this student did acknowledge that bias exists, he downplayed the extent to which racial and gender-based bias constrained groups underreptresented in engineering, stating that individuals who are marginalized in engineering just need to accept how things are in the "real world." Worse, he also makes a "both-sides" equivalency—that facilitations like these that tackle power relations of race and gender in engineering are discriminatory against dominant groups. Ironically, this logic of equivalency does not swing both ways. When this Swing Stater suggested that educators should teach students that "they may get offended," to whom does he refer? He seems offended by the case, but instead of taking his own advice and "bridg[ing] the gap," he fell back on meritocratic ideals and felt victimized.

Conclusion

The novel method *Articulating a Succinct Description* can yield new knowledge about a particular culture. Its success in doing so lies in the way it amplifies the voices of underrepresented group members without putting them at greater risk of being targeted. Foundational to its design is that it does not assume that a culture is monolithic and experienced the same by all members. It can thus illuminate dynamics ripe for cultural and educational change interventions. Further, our method offers an effective way to break down complex cultural phenomena with which a general audience, in this case engineers, can engage.

Finally, it helps facilitate a collective process of cultural curiosity and exploration between people with varying standpoints without burdening underrepresented group members with the work of educating majority group members about privilege and structural power relations.

In this paper, we offer the results of our method to demonstrate its efficacy. We describe two types of Swing Staters—(1) Revelatory Swing Staters, students who have not had educational opportunities to learn about equity research and the lived experiences of their peers who do not look like them and (2) Meritocratic Swing Staters, students who rely on meritocratic ideologies when challenged to consider their role in the power relations in their communities. We argue Swing Staters are students in engineering education who, with more knowledge and practical application, can be inoculated from the longstanding and increasing popular resistance to social/intellectual movements aimed at enfranchising people who have long been denied equal opportunity and access to structures of power like higher education and stable, lucrative occupations like engineering.

Meritocratic Swing Staters exhibited a willingness to work past the discomfort of examining bias and systems of power and a potential to challenge these systems as change agents. Forms of meritocratic ideologies like himpathy and colorblindness emerged in our data as dangers to this potential that anthropologists must prepare for and mitigate in applied research. Rather than design interventions to change the hearts and minds of the most "rugged meritocratists" (Cech 2017), *Articulating a Succinct Description* works to educate Swing Staters in order to catalyze a critical mass of change agents needed for cultural transformations in science and engineering (Carrigan 2011). Evaluation results from this case study facilitation showed evidence that speak to the efficacy of the programmatic intervention. The great majority of respondents reported that the facilitation enhanced their knowledge (88%), specifically helping increase understanding of unexamined bias (86%), microaggressions (90%), meritocracy (88%), change agent (84%), and colorblindness (79%), as well as increasing understanding among peers (94%). Eighty-six percent of respondents indicated they have a better understanding of strategies to support diversity and inclusion in their department or institution.

Qualitative responses from the cultural probes (see Figure 1) also affirm the efficacy of focusing applied interventions on Swing Staters. Some positive feedback mentioned the generative quality of the small group discussions. One female Latinx stated: "The case study was informative, and it opened up many perspectives during my discussion with my peers." Another student noted that her "group was very

diverse and so our discussion was very productive and pro-diversity efforts" (Female, Asian-American). Swing Staters from dominant groups also reported they were better equipped to overcome cultural barriers. For example, one White male said: "I'm starting the descent after climbing over that fence to allyship." This student was on the fence, and his participation in *Articulating a Succinct Description* moved him to take an active role in changing cultural exclusions in engineering.

A range of cultural change efforts can be much enhanced with anthropological methods such as *Articulating a Succinct Description*. This paper seeks to address scholars who apply their research in service of cultural change, which requires convincing dominant group members that the lives and experiences of their peers from minoritized groups matter. This method is designed to be replicable, and the concept discovered in this particular application—Swing Staters—may also be useful in other contexts, too. Here, we offer insight into the complexities in undergraduate culture, and our findings augment recent theories explaining resistance to diversity and equity efforts in engineering education. This is just one example of a particular community with whom the first author, an anthropologist, has a long-standing relationship. She has used it in other contexts with faculty (Carrigan 2011), graduate students (Carrigan 2019), and senior administrators in higher education (Yen et al. 2019). Other anthropologists could use the *Articulating a Succinct Description* in their communities of engagement. Following the four stages of the process, as outlined in Figure 1, requires a skilled ethnographer, someone with script writing aptitude, an educator who can convey the theoretical underpinnings of the case to a lay audience, and access to community members who are willing to participate in the case facilitation and cultural probe stages. Of course, adopting the *Articulating a Succinct Description* method also requires time and funding.

We have codified our unique use of applied anthropology and share this mechanism so other ethnographers can design culturally appropriate interventions for underrepresented group members to be heard and gain support and to promote equity engagement among majority members in efforts to create more inclusive cultures.

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Note

The two cases discussed in this article can be found, along with corresponding facilitation materials, at https://www.coleencarrigan.com/case-studies.

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