Engineering a Culture of Public Engagement in the Trump Era—Challenging the Status Quo

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On May 25th, 2020, George Floyd's death sparked an international outrage that embroiles all extremes of the political, ethical, legal, and historical discourse on racist policing practices. Yet, there are STEM professionals who refrain from public and political discussions simply because they believe that these discussions are irrelevant to their professions. The purpose of this article is to call on those who have remained silent to speak out in support of the Black Lives Matter, specifically those scientific and engineering professionals who practice the "culture of disengagement" from politics and public discourse, for silence equates complicity when it comes to racism.

Key Words:

Black Lives Matter; Culture of Disengagement; STEM Education; Racial Inequality; Microaggressions.

“Please I can’t breathe!”

As his last words echo overwhelmingly in their poignancy, the world holds its breath as protests of the killing of George Floyd continue to incite sentimentality in the living. On May 25th, 2020, the 46-year-old black man, handcuffed and lying face down, was killed on the street in Minneapolis, Minnesota after a white police officer knelt on his neck for eight minutes and forty-six seconds while two other officers restrained him and a fourth prevented witnesses from intervening (Hill et al., 2020). Despite the police’s claim that Floyd had resisted the arrest and that chronic medical conditions had led to his death, the preliminary autopsy report by private doctors, commissioned by Floyd’s family, and the summary of the preliminary autopsy by the Hennepin County Medical Examiner’s Office both indicate that the cause of his death was homicide—the deliberate and unlawful killing of one person by another (Crawford-Roberts et al., 2020). Floyd’s death sparked an international outrage that embroils all extremes of the political, ethical, legal, and historical discourse on racist policing practices. Thousands continue to march the streets and corners of towns and cities across the globe in support of Black Lives Matter (BLM). The effort has become an international human rights movement whose mission is to eradicate white supremacy and empower locals to intervene in violence against the Black communities by the state and vigilantes (Black Lives Matter, 2020). Yet, every movement comes with critics. Many echo that all lives matter. Others reverberate blue lives matter. Some called those who support the movement “purveyors of hate.” One might even say that “both sides” were to blame for the violence against the Black communities. To those critics, your voices have been heard. However, here are a few reasons that Black Lives Matter, now more than ever before, particularly because racism had never ceased.

According to a recent article published in PNAS (Proceedings of the National Academy of Sciences) by Edwards et al. in 2019, police in the United States kill considerably more people than do police in other advanced industrial democracies; and people of color, especially African Americans, are at a greater risk of police-involved harm than are whites (Edwards et al., 2019). In fact, about 1 in every 1,000 Black men could expect to be killed by the police over the life course (Edwards et al., 2019). In addition, previous works have evidently established that race, sex, and age are significantly correlated with criminal justice contact (Gelman et al., 2007; Wakefield and Uggem, 2010; Shannon et al., 2017). For example, the chance of being killed by police peaks between the ages of 20 and 35 for men and women as well as for all racial and ethnic groups (Edwards et al., 2019). However, black women and men as well as American Indian and Alaska native women and men are much more likely to be killed by the police than are white women and men (Edwards et al., 2019). Additionally, Black men experience highest levels of inequality in mortality risk; they are approximately 2.5 times more likely to be killed by the police than are white men over the life course (Edwards et al., 2019). Furthermore, Black women are approximately 1.4 times more likely to be killed by the police than are white women over the life course (Edwards et al., 2019). Estimates for other groups are as follows: American Indian men are between 1.2 and 1.7 times more likely to be killed by the police than are white men; for

American Indian women, the chance of being killed by police is between 1.1 and 2.1 times higher than that of white women; Latino men are between 1.3 and 1.4 times more likely to be killed by the police than are white men (Edwards et al., 2019). Only Asian/Pacific Islander men and women and Latina women are less likely to be killed by the police than both white men and women (Edwards et al., 2019). Amongst all of these groups, Black men and boys have the highest lifetime risk of being killed by police (Edwards et al., 2019). Yet, a study by Nix et al. published in 2017 in *Criminology & Public Policy* that analyzed 990 police fatal shootings in 2015 using data compiled by The Washington Post showed that Black civilians were more than twice as likely as White civilians to have been unarmed in these shooting cases (Nix et al., 2017). These studies showed that there is an obvious implicit bias amongst the police officers in the United States against Black communities. For those who believe in the power of statistics, this is the reason that the BLM movement matters. Some might ask: “What about the lives of American Indian, Alaska natives, and Latino men?” Their lives matter. It is true that the police discriminate against American Indians, Alaska natives, and Latino men and that we must produce policies and measures to prevent this discrimination; it is also true that the BLM movement, whose mission is to eradicate white supremacy and address racial inequality, resonates with the effort to achieve equality for these groups. This is the reason I believe that people of all racial backgrounds need to support the BLM movement, as we have a common goal of eradicating racism.

Even though I have defended my position on the Black Lives Matter movement and stood with the Black communities in this extraordinarily distressing time of recorded human history, this article was not written to criticize opponents of the movement as I fully understand that it is a difficult task to influence the minds of those who have fixated on defending racism and white supremacy. The purpose of this article is to call on those who have remained silent, specifically those scientific and engineering professionals who practice the “culture of disengagement” from politics and public discourse, for silence equates complicity when it comes to racism.

However, we must, first, address the question of whether one has the power to influence politics or the course of history. Some might believe that one simply does not have the power to change or influence political issues because power is in the hands of a small group of people. Some might even say that power is a mysterious and autonomous force that exists outside the capability of human influence; thus, resistance to power is futile. According to the twentieth-century French philosopher, Michel Foucault, power is defined as establishing strategies embodying intentions of their own, above those engaged in them—i.e., individuals are both products of and participants in the games of power (Kelly, ISSN 2161-0002; Gutting and Oksala, 2019). His definition of power challenges the idea that power belongs to certain groups by way of sovereign acts of domination or coercion; instead, this definition suggests that power is, in fact, ubiquitous and pervasive. In Foucault’s terms, power is constituted through established forms of knowledge that are scientific and truthful in nature and is a key source of social discipline and conformity (Kelly, ISSN 2161-0002; Gutting and Oksala, 2019). This new form of power involves strategies which are produced through a series of power relations that have been existing throughout society; these

relations emerge from people interacting with one another to make others act in turn (Kelly, ISSN 2161-0002; Gutting and Oksala, 2019). Here, power is a socialized and embodied phenomenon that transcends the realm of politics. It is a matter constituted from unending struggles between people and constantly shifting relations underneath superficially stable social arrangements (Kelly, ISSN 2161-0002; Gutting and Oksala, 2019). According to Foucault, these seemingly peaceful and civilized social arrangements are built by people trapped in a struggle for supremacy (Kelly, ISSN 2161-0002; Gutting and Oksala, 2019). These arrangements, however, are always susceptible to change. Thus, no matter how stable or powerful an arrangement, we have the power and the ability to influence and change the way it works by making small interactions underneath. And even if we could not change the way these arrangements work, simply encouraging discourse can be a site of both resistance and empowerment. That is, it does not matter how powerful those who support racism and white supremacy are, we, the civilians, have the power to change. Simply by standing with those who are affected by racism and white supremacy or encouraging discourse about racial inequalities, one has already contributed to the protection of social equity.

Hopefully, by now, I have already convinced the audience, particularly those who are scientific and engineering professionals, that one has the ability to catalyze social change. Indeed, STEM professionals should not underestimate their capability to influence their communities, for this capability has not only led to a world with advanced development, but also an unevenly developed and racially segregated one. This is partly due to the fact that engineering work is often detached from social considerations.

However, Derek Bok, former President of Harvard University, suggests in his book “Our Underachieving Colleges: A Candid Look at How Much Students Learn and Why They Should Be Learning More” that, in addition to the technical career skills students develop within their major, institutions should also focus on developing the following social competencies: (1) learning to communicate effectively, (2) the ability to think critically, (3) building character, (4) preparing for citizenship, (5) living with diversity, (6) preparing for a global society, (7) acquiring broader interests, and (8) preparing for a career and vocational development.

Unfortunately, Cech (2014) suggests that engineering students (and even professionals) might consider these competencies not relevant to the engineering work. That is, issues such as addressing gender, racial, and ethnic inequalities in engineering education are often overlooked because they are considered “not the job” of the engineers.

This, however, should not be the case because every day, engineers make highly complicated and critical decisions that directly affect the health and welfare of the public. Even though the work of the engineers is technical, there are broader social components associated with their work that cannot be ignored (Lambrinidou and Edwards, 2013). In fact, previous literature has shown that engineers who do not take into account the public concerns about their projects are much more vulnerable to self-interest, self-delusion, and institutional pressures that contribute to unethical

and substandard decisions, leaving negative impacts on society (Lambrinidou and Edwards, 2013).

Unfortunately, the STEM education system in the U.S. typically values teaching scientific and engineering concepts while ignoring the social dimensions of these concepts, causing students to be insensitive or even indifferent to pervasive social and political issues such as socioeconomic inequality and discrimination as well as other community concerns (Bairaktarova and Woodcock, 2015; Bairaktarova and Woodcock, 2017; Nguyen et al., 2020). This missing piece of an important skill set, which engineers are expected to have, follows students from the classroom to the real world, leading to inequitable outcomes and failure to consider community concerns as well as broader impacts upon society (Riley, 2008, Nguyen et al., 2020). Even more alarming is that students were found to be less engaged with topics they consider “not relevant” to the design or implementation of technology such as racial inequalities at the end of their engineering studies than they were at the beginning, suggesting that there is a culture of disengagement in engineering (Cech, 2014). This culture of disengagement, deeply embedded within the broader U.S. engineering culture, manifests itself at the organizational level of engineering education programs, even when these programs introduce social justice concepts and practices directly into their curricula (Cech, 2014).

Therefore, this culture of disengagement, I strongly believe, is linked to the diverse microaggressions that Black students and other minorities experience on a daily basis. Microaggressions represent the subtle and stunning assaults that people face because of their membership in social groups such as race, gender, and sexual orientation (Poleacovschi et al., 2019). In fact, I believe that this culture of disengagement acts, at least partly, to enhance racial bias and allow it to remain implicit, unnoticed, and hidden by the more overt institutional enthusiasm for nurturing publicly and politically engaged future engineers.

Indeed, a study on microaggressions in engineering showed that assumption of criminality and ascription of intelligence are the two most frequently experienced microaggressions by Black engineering professionals (Poleacovschi et al., 2019).

According to psychologist Gloria Wong and colleagues (2014), race-related stress and racial discrimination continue to affect ethnic and racial minorities in engineering education. In addition, within the male-dominated culture of engineering education, inequalities for women persist according to sociologist, Michelle Camacho, and engineer, Susan Lord (2011). Even though the frequency and intensity of blatant forms of discrimination have indeed decreased, microaggressions are still experienced by various minority groups in engineering (Wong et al., 2014). Microaggressions could be experienced by women and underrepresented minorities in many forms: at the institutional level, at the interpersonal level, and as jokes and humor that subtly deride their place in engineering (Camacho and Lord, 2011). These microaggressions are hidden in everyday interactions and are harmful to minorities because of their cumulative nature that could lead to impairment of performance in many various settings (Wong et al., 2014). In

addition, these microaggressions are barriers to academic success (Grossman and Porche, 2013) and contribute to the low percentage of undergraduate engineering degrees awarded to minority students (NASEM et al., 2020).

Even more unfortunate is that this disengagement culture, which contributes to engineers being depoliticized and insensitive to social problems (e.g. microaggressions), may be characteristic of the broader engineering profession (Cech 2014). The existence of the culture of disengagement in engineering suggests that competencies such as living with diversity, preparing for a global society, and acquiring broader interests are missing from engineering education. Thus, here, in an effort to challenge the status quo and provide my support to the fight against racism, I denounce this culture of disengagement and those who practice it as their silence partially contributes to intensifying racial divides, leading to the deceleration of globalization and international development progress.

In fact, as global interconnectedness is becoming more prevalent and development is advancing at its highest speed, making their ways into the most remote corners of the world, the role of engineers in addressing existing socioeconomic inequalities and racial disparities is now more important than ever before. Even though more work is needed to conceptualize what public oriented and engaged engineering should be, we believe that engineering programs need, in the meantime, to focus on teaching engineering ethics to students along with technical materials; encourage them to participate in on-campus student organizations whose missions are to promote stronger public welfare commitments; and re-evaluate their institutional culture in order to identify current teaching practices that might contribute to the culture of disengagement in the field of engineering.

One final question remains, how do we address the existing culture of disengagement? To those who have been silent in this time of political unrest, particularly STEM professionals in the United States, I am asking you, as colleagues and friends, to speak out against racism; to condemn those who practice it; to educate yourselves on racial and socioeconomic inequalities; to encourage each other to participate in political discourse; and to support the BLM movement, for it not only resonates with the effort to achieve social equity, but also with the empowerment of those who have been suppressed.

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