Of Models and Myths:

Asian(Americans) in STEM and the Neoliberal Racial Project

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This paper examines historical and contemporary racialization of Asian(Americans) within the STEM system. The prevailing perception of Asian(Americans) as model minorities masks how their multiple and contradictory positionings in the STEM system perpetuate the neoliberal racial project and reproduce systems of racism and oppression. Through a multidisciplinary analysis of STEM education and industry, we demonstrate that the shifting racialization of Asian(Americans) secures advantages for White Americans by promoting meritocracy and producerism and justifies White supremacy. By serving these functions, the racialization of Asian(Americans) within the STEM system is central to the neoliberal racial project. This paper also suggests how STEM education researchers can reveal and resist, rather than veil and support, the neoliberal racial project in STEM.

Keywords: STEM; Asian American; education; race; neoliberal

Introduction

'How do we increase our math test scores?'

'We need more Asian kids.'

One of the authors was in a staff meeting as a teacher at a school under state pressure to raise test scores during the NCLB era. The mostly White teachers and administrators laughed at this comment and quickly moved on. This anecdote gives a sense for how Asian(American) students can be conscripted into neoliberal racial narratives. At a school with a majority Latinx student body, the premise that Asian students would outperform Latinx students on math tests was implicitly accepted. As the immediate and unchallenged response, this statement illustrates how teachers at this school used an underlying racial ideology to explain poor math test scores, and perhaps excuse their own teaching, by propping up an imagined Asian(American) student body at the expense of their actual Latinx students. In schools, this underlying racial ideology is particularly prominent in the STEM fields – science, technology, engineering, and math – where Asian(American) students are assumed to excel.

The relationship between Asian(Americans) and the STEM system, both education and industry, is both pervasive and undertheorized. The perceived prevalence and success of Asian(Americans) in the STEM system is widespread in popular media, political, and academic discourse. Some scholars have begun to examine this phenomenon more closely: Nasir and Shah (2011) explored the consequences for African American male high school students of believing Asians to be 'good at math' and McGee, Thakore, and LaBlance (2017) studied the consequences of similar beliefs on Asian and Asian American college students in STEM fields. More broadly, Ng, Lee, and Pak (2007) surveyed how Asian Americans are portrayed in K-12 education research, Teranishi et al. (2009) called for the use of critical race theory in research on

Asian Americans and Pacific Islanders (AAPIs) in higher education, and Poon et al. (2015) conducted a critical review of the model minority myth (MMM) in higher education research. This work, however, has not focused on STEM specifically, and research on Asian(Americans) in STEM is sparse (Ing and Victorino 2016). Outside of education, historians, sociologists, ethnic studies scholars, and legal scholars have written extensively about the racialization of Asian Americans (e.g., Takaki 1998; Tamura 2016; E. Wu 2013; Prashad 2000; Kim 1999; E. Lee 2007). Although the STEM system emerges as a driver of immigration and a location for Asian(American) labor in many of these narratives, it is similarly not central to their arguments.

Bartell and colleagues draw on the work of scholars like Martin (2013) to argue that mathematics is 'part of a larger, neoliberal narrative disconnected from the experiences and realities of students from nondominant communities' (2017, 8). Similarly, Bencze and Carter (2011) describe how science education prepares most students to be consumers by conditioning students to follow labor rules and consume goods. Given their privileged positions, both mathematics and science education operate as mechanisms for accumulating 'the cultural and material spoils' of smartness (Leonardo and Broderick 2011, 2214). Math and science education, and the STEM system broadly, corroborate the neoliberal racial project by perpetuating particular ideologies.

This phenomenon is not unique to STEM. Given the relationship between Asian(Americans) and the STEM system, however, and the STEM system's connection to the neoliberal racial project, we hope that situating our analysis at the intersection of Asian(American) racialization, the STEM system, and the neoliberal racial project can reveal insights about all three. By integrating interdisciplinary lenses for analyzing race, politics, and labor, we build on prior conversations to illustrate that the promulgation of meritocratic and

producerist ideologies within the STEM system relies on the shifting racialization of Asian(Americans). This shifting racialization functions to: (1) secure advantages for White Americans, often at the expense of Black, Latinx, and Native Americans; and (2) justify the supposed natural supremacy of White Americans, both of which are key to sustaining racial oppression.

We begin by defining Asian(American) and identifying the ideologies of the neoliberal racial project that are most salient in analyzing the relationship between Asian(Americans) and the STEM system. Next, we describe how the shifting racialization of Asian(Americans) secures advantages for White Americans through immigration policy and education policy in the realms of STEM industry and K-12 STEM education. Then, we discuss how the racial positioning of Asian(Americans) is used to justify the purported superiority of White American workers and students. Finally, we suggest how STEM education researchers can recognize and resist conscription into a neoliberal racial project that illogically and invisibly perpetuates White supremacy.

Conceptual framework

Defining 'Asian(American)'

'Asian' is an imprecise term, describing over half the world's population. The word's usage as an umbrella term emerged from Supreme Court rulings in the 1920s. In *Ozawa v. United States* (1922) and *United States v. Bhagat Singh Thind* (1923), the Japanese and Indians, respectively, joined the Chinese as groups that were unilaterally excluded from Whiteness and therefore from American citizenship (Ngai 2004). In the 1960s, activists reclaimed 'Asian' as a political identity to recognize a shared history of racialization in the United States and to demonstrate solidarity in

fights against US imperialism and racial oppression (Philip 2014). In this paper, we use 'Asian' in this reclaimed sense, and in the tradition of Guinier and Torres's concept of 'political race' (2002): although race is a social construction, it is also a signifier of structural inequality and a strategic tool for organizing to resist power.

'Asian' blurs the diversity of people, practices, languages, and experiences contained within it, and many scholars have reported the unique stories, challenges, and contexts of low-income Southeast Asians (e.g., Ngo and Lee 2007) or Central and South Asians and Asian(Americans) who are, or are perceived to be, Muslim (Ghaffar-Kucher 2012), to name a few. In this paper, we use 'Asian' as a reflection of what Museus (2014) calls 'Asianization,' a process by which Asian(Americans) from a range of backgrounds are treated as a supposedly monolithic racial group. People who 'look Asian' are similarly racialized in the United States and are not singled out for being a member of a particular ethnic group or of a particular national origin, but rather, for 'looking' as if they belong to the pan-ethnic racial category of 'Asian.' People who 'look Asian' are seen as never fully belonging or never truly American, regardless of how long they or their families have lived in the United States; in other words, they are marked as 'forever foreigners' (F. Wu 2002; Tuan 1998; Museus 2014). Although the umbrella term minimizes the important differences that calls for disaggregation are attempting to reveal, this usage reasserts the interconnectedness of racialization and oppression in the United States.

Distinguishing between Asians, Asian migrants,[1] Asian immigrants, and Asian Americans is complicated, although the different histories and interests of these groups have occasionally been acknowledged. For example, Cold War narratives constructed Asians (living in Asian countries) as Communists but painted Asian refugees (fleeing to the United States to escape Communist rule in Korea, China, and Vietnam) and Asian Americans (US citizens) as

ambassadors who could spread the democratic gospel in their ancestral homelands (E. Wu 2013). Generally, however, the boundaries between these groups are porous. Some Asian migrants intentionally or accidentally outstay temporary visas or enter the United States without documentation; the Department of Homeland Security estimates that about 11.4% of unauthorized residents currently in the United States were born in Asian countries (Baker and Rytina 2013). Others plan to return to their home countries after completing an education or a job but ultimately seek permanent residency or asylum for familial, economic, or political reasons. Some Asian immigrants leave the United States before attaining US citizenship, while others become Asian American. Some Asian Americans have Asian migrants or Asian immigrants in their immediate families, while others have had centuries of family members born in the United States.

In this paper, we use Asian(American) to refer to people of Asian ancestry in the United States, regardless of citizenship status, who self-identify or are identified as Asian by census forms and what the Supreme Court in *United States v. Bhagat Singh Thind* (1923) called 'in accordance with the understanding of the common man.' We ourselves identify as Taiwanese American and Chinese-Japanese American and as the first and third(ish) generations in our families to be born in the United States, respectively. We are a former mathematics teacher and a former science teacher, and we have both bristled at assumptions that of course we work in the STEM system because we are Asian(American). As East Asian(Americans), we have benefitted from a sense of belonging under an Asian(American) umbrella that often privileges the perspectives and experiences of East Asian(Americans), and we have both worked to reclaim our individual and collective Asian(American) histories. We recognize the limitations of our perspectives in writing about Asian(Americans) as a heterogeneous and complex group, yet we

hope that we can contribute a useful perspective to the conversation about the relationship between Asian(Americans) and the STEM system.

The Neoliberal Racial Project

Race and racism have been integral to the development of the United States (Bell 1992). Rather than being tied to immutable biological classifications, racial definitions have shifted along with the economic and political interests of the mostly White, wealthy, and male governing class. In their updated text, Omi and Winant (2014) describe racial projects as the work of shifting these definitions; racial projects simultaneously explain racial identity (i.e., who is an Asian(American)?) and reorganize resources along racial lines. In the United States, the most fiercely defended racial line has divided Whites from non-Whites, and various legal, political, and social systems have developed to legitimize White supremacy: the myth that White Americans are superior to and thus deserve more resources than everyone else (Mills 1997; Leonardo 2004). White supremacy, of course, is not based on any fact, so its maintenance requires racial logics that are complex, contradictory, and constantly in flux. Racial projects, which create and foster these racial logics, reproduce structures of domination by people defined as White and American over people defined as not-White and/or not-American (Omi and Winant 2014).

The neoliberal racial project is currently the predominant racial project in the United States (Giroux 2003; Omi and Winant 2014). It has several defining characteristics, such as a focus on individualism and individual rights, rather than the collective, and the achievement of its aims through persuasion and rationalization rather than violence or coercion (Rhee 2013). The neoliberal racial project emphasizes freedom and competition, which, in practice, concentrates resources for those who are already politically and economically powerful, and in the United

States, mostly White (Kumashiro 2010). In this paper, we center two principal assertions of the neoliberal racial project: (1) meritocracy as a justification for racial stratification, and (2) producerism as a definition of people's worth by their economic value.

First, the neoliberal racial project promotes the bootstrapping idea that 'character and merit', as colorblindness advocates would have us believe, are the prime determinants for social and economic mobility and a decent standard of living,' (Giroux 2003, 199) rather than structural advantages and disadvantages organized by race. We target this assertion because Asian(Americans) have long been used to promote meritocratic ideals through the model minority myth. The model minority myth (MMM) claims that Asian(Americans), first Japanese Americans and now all East and South Asian(Americans), have succeeded academically and economically, despite obstacles, because of individual and cultural determinants. Far from being a benign narrative, the MMM was introduced as a juxtaposition to Black activism in the late 1960s to contend that structural inequalities could be overcome through hard work within existing systems, as opposed to requiring structural change (Poon et al. 2015). As a result, the MMM serves to normalize White supremacy as the status quo by claiming that whoever is at the top, so to speak, deserves to be there, and whoever is at the bottom must not have worked hard enough.

Second, the neoliberal racial project employs a producerist ideology that determines whether people, be they students, migrants, or welfare recipients, deserve resources based on their potential for contribution to national interests (Omi and Winant 2014). We target this second assertion because STEM education narratives commonly marshal support by arguing that the purpose of education is to prepare students for jobs, and the fastest-growing jobs in the contemporary economy are in STEM (e.g., NAS 2010; PCAST 2010). Basile and López (2015)

analyzed 17 K-12 STEM education reports commissioned by the federal government over the past 20 years and found that the most common justification for including students of color in STEM is the economic benefit to the state. Producerism, then, defines the value of one's life, measured in 'rewards' from the state – such as citizenship, health, and safety – based on one's perceived or potential contribution to the economic and political dominance of the United States.

The ideologies of meritocracy and producerism, in concert with other ideologies of the neoliberal racial project, serve to: 1) secure advantages for White Americans, often by constructing barriers to the advancement of Black, Latinx, and Native Americans, and 2) legitimize the myth of White superiority. Together, these two outcomes justify the reallocation of resources from the 'less deserving' to the 'more deserving': from Black, Latinx, and Native Americans to White Americans. Not only is this reallocation dehumanizing, it also overlooks that transnational geopolitical interests affect Asian(Americans) in ways that have not been true for Black Americans, who have been forcibly stripped of connections to home lands through slavery, or for Latinx and Native Americans, whose home nations are seen as less powerful and thus less relevant to White American interests (E. Lee 2007; Coloma 2006)

Furthermore, while some Asian(Americans) may appear to benefit economically or socially from the current system – typically those who are educated professionals, or those with ties to geopolitically and economically influential countries such as China, Japan, and Korea – these benefits reinforce rather than deconstruct systems of racial stratification. Regardless of any perceived or material benefits some Asian(Americans) have accrued within STEM, the field itself has historically served and continues to serve as a site of reproduction for ideologies such as meritocracy and producerism that are fundamental to the neoliberal racial project and its accumulation of resources for White Americans.

In the next section, we examine moments where the racialization of Asian(Americans) has shifted according to the economic and political interests of White Americans because these shifts suggest that racial positioning is socially constructed rather than resulting from an inherent characteristic shared by all people racialized as Asian(American). First, we illustrate how shifting from treating Asian(Americans) as the 'yellow peril' to viewing them as idealized labor occurs across STEM industry and STEM education and functions to secure advantages for White Americans. Then, we connect Asian(American) racialization to the justification of White supremacy.

From 'yellow peril' to 'idealized labor'

Between the mid-nineteenth and mid-twentieth centuries, mostly-male Asian migrants labored in dangerous and difficult conditions to build railroads across the country, pick cotton in the South during Reconstruction (under the ultimately false assumption that they would be a more docile workforce than recently emancipated Black Americans), break strikes in New England manufacturing plants, and work agricultural fields along the West coast and in Hawai'i (Kim, 1999). These men, however, were viewed as the 'yellow peril': an invasive plague that threatened White American jobs, women, and national security. Their much-needed labor was often rewarded by anti-immigrant hysteria, state-sanctioned violence such as the deliberate burning of Chinatowns, and exclusion from legal immigration and citizenship (Pfaelzer, 2008).

After World War II, the United States entered a period characterized by rapid domestic growth and rising international threats from Communism and the Cold War. Transportation infrastructure, military defense, and the space race emerged as nationally prioritized industries. Due to rapid advances in medical knowledge and the expansion of a national healthcare system, the number of medical providers in the United States skyrocketed as well. As a result, there was

a greater demand for STEM-specific skilled labor than there were workers available. This problem could have been solved through improved education for Black students in post-*Brown vs. Board of Education* schools, but this is not what occurred (Bell 1980; Hannah-Jones 2014). Instead, the STEM industry and STEM education system turned to Asian(American) migrant workers, who, in this process, shifted from an invasive threat to an idealized labor force coded as docile, cheap, and hard-working.

'Idealized labor' in STEM industry

During this post-war period, large numbers of Asian students migrated to the United States seeking technical expertise in STEM fields, studying civil or aerospace engineering (Hsu 2015). The 1965 Hart-Celler Immigration and Nationality Act, which replaced national origin quotas with occupation-based preferences, opened the proverbial door to Asian migrants who had previously been barred by the 1882 Chinese Exclusion Act[2] and 1924 Johnson-Reed Act. Highly skilled professional and technical workers could now prove themselves to be valuable, rather than threatening, to the American enterprise. As a result, many of these Asian migrant students applied for employer-sponsored permanent residency in the United States, working as scientists and engineers in military defense and space race technology, rather than returning home (Prashad 2000). Their labor contributed to the securing of American technological pre-eminence in the post-Sputnik era. In the decades since, Asian migrants have contributed extensive intellectual labor to the development of new types of networks, such as the interstate freeway system and the internet, rather than providing physical labor building railroads (Dash 2016).

Hart-Celler also enabled an unprecedented post-war expansion in the medical field. Physicians became increasingly specialized, and more hospitals opened in rural areas and in high-needs communities, creating a significant shortage of medical personnel. Drawn by the

promise of jobs that paid more than those in their home countries, and in some cases fleeing the consequence of American military intervention in their homelands, large numbers of Asian physicians migrated to the United States, especially from the Philippines, Korea, and India. Faced with the prospect of White American physicians losing jobs to Asian migrants, however, state medical licensing boards implemented racially targeted restrictions that denied physicians who had been educated abroad the opportunity to practice their profession unless they redid their medical training at an American university (Takaki 1989). As a result, Asian migrant physicians often ended up in lower-wage, less-desirable positions that required fewer certifications (Hsu 2015).

Simultaneously, a dramatic need for nurses arose and has continued to rise up through the present, although nursing pay has stagnated over the past few decades (Spetz and Given 2003). This, along with generally poor nursing conditions, has created tens of thousands of difficult-to-staff nursing positions filled by Filipinx migrant nurses (Ong and Azores 1994). Accordingly, Filipina women, who were once perceived as morally lax, licentious threats to US military and colonial officers stationed in the Philippines (Coloma 2012), became perceived as exceptionally caring (Choy 2003). The importation of Asian migrant medical personnel secured numerous advantages for White Americans, who benefitted from increased access to healthcare without the dramatically increased costs and labor shortages that would have resulted from staffing hospitals solely with American-trained workers, while the highest-paying and most prestigious jobs in this system were reserved for White American doctors.

The Hart-Celler Act also introduced the H-1B visa, granting priority to engineers, mathematicians, scientists, and other STEM professionals to work in the United States for a three-year term with limited pathways to immigration. H-1B quotas were increased in 1998 to

promote global competitiveness in technology (Prashad 2000). The overwhelming majority of H-1B visa holders are Asian, with India alone accounting for nearly 70% of H-1B visas issued in 2014. In STEM fields, computer scientists accounted for nearly two-thirds of visas that same year (USCIS 2016). H-1B employees, however, are typically ineligible for benefits such as health insurance, which makes them cheaper to employ than American citizens and, due to their temporary status, are also unlikely to ascend to managerial and leadership positions. This ensures that the mostly-White political and economic elite, who control the government agencies and corporations that employ H-1B workers, amass the material benefits of Asian migrant labor. Additionally, the reservation of H-1B visas for 'highly skilled guest workers' reinforces the producerist ideology that the primary worth of human life is its potential for economic contribution.

In sum, shifting from a racialization of Asian(Americans) as the 'yellow peril' to positioning them as 'idealized labor' secured advantages for corporations and government agencies mostly owned and run by White Americans. A mostly-White citizenry also benefited from innovations reliant on Asian migrant labor: a stronger interstate freeway system, which often bisected and destroyed Black American neighborhoods (Dash 2016), a premier medical system, and a Cold War detente. These gains relied on producerist ideologies that support the neoliberal racial project. In STEM education, a similar shift in the positioning of Asian(Americans) secures advantages for White American students, sometime at a direct cost of constraining opportunities for Black, Latinx, and Native students.

'Idealized labor' in STEM education

For decades, Asian(American) students were classified as 'colored' and excluded from White schools, with the legal segregation of Chinese American students upheld by the Supreme Court

in 1927 (*Lum v. Rice*). However, as first Japan (before WWI) and then China (after WWII) became geopolitically strategic allies, the US government gradually allowed Japanese and Chinese American students to attend White schools (Kuo 1998). The racialization of Asian(American) children thus shifted from being unacceptable classmates for White American children to begrudgingly acceptable classmates, and in the decades since the emergence of the MMM, they have even become conditionally desirable classmates.

Zirkel and Pollack (2016) studied Berkeley High School's decision to reduce before- and after-school science lab offerings, which were primarily consumed by White students, in order to allocate teachers and resources more equitably across official school hours. Opposition to this plan demonstrated that Asian(Americans) were used as a rhetorical device to support meritocratic narratives about the cultural inferiority of Black and Latinx students who 'chose' not to take advantage of before- and after-school opportunities; and whose purported laziness led the school to do away with the resources that helped White students gain advantages in college admissions. Opponents of the plan claimed that 'Whites and Asians' were more successful because they worked harder, despite data demonstrating heterogeneity in the academic outcomes of Berkeley High School's Asian(American) students. The case of Berkeley High School is not unique. The presumption of meritocracy echoes in education reform conversations around the country, implying that the academic barriers faced by Black, Latinx, and Native American students result from their lack of resilience rather than reflecting inequitable funding and staffing in the schools they attend (O'Brien 2014). Despite the absence of factual evidence for the success of Asian(American) students at Berkeley High School, their existence, and assumptions about their characteristics as students, was used to argue for the inequitable distribution of resources such that White American students would benefit at the expense of Black and Latinx

students. In other words, an idealized image of Asian(American) students served as labor towards the goal of securing advantage for White students.

Now, however, the racialization of Asian(American) children is shifting again, becoming the justification for a 'new White flight.' White families are increasingly fleeing school districts that have become 'too Asian' because they fear their children cannot compete academically (Hwang 2005). Suddenly, Asian(Americans), who were once considered good students and desirable classmates, are repositioned as ‘too good at math’ and threatening to White students’ self-esteem, creating an excuse for racial re-segregation. White Americans who flee not only divert resources away from the schools they leave, which now by definition serve greater concentrations of students of color, but also secure advantages by creating school communities in which all the resources are dedicated to White students (Enjeti 2016). Ironically, the meritocratic belief that students who are not successful must be inherently inferior does not hold when White students are no longer at the top, testifying to the illogicality of White supremacy (e.g., Martin 2009).

White students are not the only ones who benefit from shifting racialization of Asian(Americans). Many researchers have noted that White teachers are reluctant to work in schools that serve primarily students of color (e.g., Achinstein et al. 2010). Teacher shortages in such schools reflect both the Whiteness of the teaching profession (US Department of Education, 2016) and the systematic dismissal of Black teachers after *Brown v. Board of Education* (Roberts and Carter Andrews 2013). Many districts import migrant teachers to fill difficult-to-staff positions, using the same H-1B visa program that has played a crucial role in the Asian(American) STEM industry story and relying on the same shift in positioning from Asian(Americans) as the ‘yellow peril’ to Asian(Americans) as ‘idealized labor.’ The plurality of

these migrant teachers are Filipinx and teach STEM subjects. These teachers are drawn in part by the opportunity to earn more than thirteen times what they can earn teaching in the Philippines and receive little to no support once hired (Bartlett 2014). Many enter the United States through recruitment agencies that charge crushing fees for placement and exorbitant interest on loans for those fees, garnish portions of teachers' wages, and require that teachers live in substandard agency-owned housing. Some even confiscate teachers' passports and other legal documents until their fees are paid (American Federation of Teachers 2009). The use of the H-1B visa to cover STEM teacher shortages in high-needs schools, where Black and Latinx students in particular are often concentrated due to residential segregation and housing discrimination, mitigates the responsibility that teacher preparation programs and school district human resources departments have to recruit and hire teachers from local communities, and conceals the strong preference of White American teachers to educate their own.

Not only do Asian migrants working under the H-1B visa obscure domestic educators' unwillingness to teach students of color, they also camouflage the failure of domestic educators to provide a rigorous STEM education for students of color. Presumably, ineffective STEM education would result in massive STEM workforce shortages. Despite common rhetoric to this end, however, studies suggest that there may actually be a surplus of STEM workers (Charette 2013), in part due to the large numbers of Asian migrants who enter the United States through H-1B visas. As long as the STEM industry is able to import Asian labor, there is no STEM workforce shortage that would compel the improvement of STEM education for Black, Latinx, and Native American students, and as long as Black, Latinx, and Native American students are not seen as future STEM workers, the ideology of producerism devalues their humanity.

Of course, there are many calls for improving STEM education, and many of them once again use Asian(Americans) as a rhetorical device to secure advantages for White Americans. Internationally, assessments such as PISA and TIMSS consistently suggest that Asian students, particularly East Asian students, outperform American students in mathematics and science (Mullis et al. 2016; OECD 2016). These test scores are regularly used as a rallying cry for greater investment in STEM education lest 'billions of people from Beijing to Bangalore to Moscow… out-educate and out-compete us' (Obama 2013). Here, echoes of the neoliberal ideology of producerism call students to put their brains and bodies to work maintaining America's political and economic global dominance, through STEM education, against a new yellow peril: Asian competition.

The 2010 report by the President's Council of Advisors of Science and Technology claimed that 'STEM education will determine whether the United States will remain a leader among nations' (vii). This need for future scientists and engineers is often cited as a primary reason for reforming immigration and improving STEM education, and both causes are presumed to be race-neutral and beneficial for all Americans. Martin (2013), however, argues that mathematics education since World War II has maintained White male privilege by excluding Black students despite the *Brown v. Board of Education* ruling, promoted assimilation under the guise of colorblind 'Mathematics for All' initiatives. It also centered economic competitiveness and national security in discussions of teaching and learning, such that the current discourse around STEM education further secures advantages for White Americans, often at the expense of Black, Latinx, and Native Americans.

In both STEM industry and K-12 STEM education the constantly shifting racialization of Asian(Americans) has been used to validate ideologies of meritocracy and producerism. In some

instances, this shifting racialization has enabled White Americans to profit directly from Asian(American) physical and intellectual labor. In others, Asian(Americans) have been used as a rhetorical device to demand more resources for White Americans. Either way, the shifting racialization of Asian(Americans) has played a significant role in securing wealth, employment, healthcare, national security, educational opportunity, and other advantages for White Americans. In the next section, we will explore how this shifting racialization has also served to justify White supremacy.

Justifying White supremacy

In theorizing race and racism in the United States, scholars have discussed the racialization of Asian(Americans) using frameworks such as racial hierarchy (Martin 2009), honorary Whiteness (Tuan 1998), racial triangulation (Kim 1999), differential racialization (Omi and Winant 2014), and 'Asianiziation' (Museus 2014). Each of these frameworks offers different insights into the shifting and relative positioning of Asian(Americans), but all recognize White supremacy as the primary organizing 'logic' (we use quotation marks to signify that the claims and legitimization of White supremacy are based on faulty premises and are often inconsistent). In order to maintain a perception of White superiority, White Americans have treated Whiteness as property, using legal and extralegal means to exclude people of color from freedom, resources, power, and self-determination (Harris 1993). In preceding sections, we have described how the shifting racialization of Asian(Americans) has been leveraged to secure advantages for White Americans in the STEM system. In this section, we address the neoliberal techniques of persuasion and rationalization (Rhee 2013) within the STEM system that rely on the positioning of Asian(Americans) to explain and justify White supremacy.

White supremacy in STEM industry

In the semiconductor industry, racializing Asian(American) women as Not Black warranted low wages, the advancement of White women, and discrimination against Black women. For decades, the semiconductor industry operated many manufacturing plants in the California's Bay Area. Almost 90% of operations and assembly line workers were women, mostly immigrants from Mexico, Central America, and Asia (Hossfeld 1990). Hossfeld quoted a Silicon Valley production manager describing the perfect assembly line worker as 'small, foreign, and female,' and 90% of the hiring managers she interviewed identified Asian immigrant women as ideal hires (1999, 162). Hu-Dehart described the semiconductor industry as the 'prototype for global sweatshops' that, through the intersection of immigrant status, race, and gender, created 'a perfectly designed, segregated, segmented, and secondary labor market' (2007, 88). The racial and immigration status of Asian immigrant workers justified the advancement of White women into clerical and managerial positions. Their gender justified low wages under the assumption that this work was temporary or secondary income. Companies benefitted materially from being able to quickly prototype new products with low labor costs in a high-profit field and valorizing Asian immigrant women for their economic value in the semiconductor industry reinforced an ideology of producerism.

Asian immigrant women in the semiconductor industry also enabled meritocratic rationalizations for hiring discrimination against Black Americans. In interviews, managers explained their choices through racial stereotypes, such as Asians being prompt while Black Americans were chronically late. Similarly, companies refused to locate plants in Black communities such as East Palo Alto or Oakland because Black Americans were seen as troublemakers and resistant to authority. Asian immigrant women, on the other hand, were

stereotyped as thankful for employment and unlikely to unionize (Hossfeld 1999). Lowe (1996) identified a cycle of 'racialized feminization of labor:' Asian immigrant women were portrayed as docile, which gave them a comparative advantage in securing employment. This stereotype both made them ideal candidates and also contained them in low-wage jobs with no possibility of advancement because they would lose their hiring advantage if they resisted the stereotype by unionizing. In contrast, Black Americans were denied material opportunities, and their subsequent underemployment could be taken as evidence of laziness and resistance that then justified the further denial of opportunity. As Prashad has argued, the STEM system 'relishes immigrant workers from zones of exploitation, since many of them work for lower wages and their immigrant status renders them less able to be critical than enfranchised workers' (2000, 70). The case of Asian immigrant women in the semiconductor industry simultaneously allowed White American industry elites to secure material gain and to rationalize their hiring discrimination against Black Americans.

More recently, American technology companies have faced increasing public pressure to demonstrate racial inclusivity by diversifying their overwhelmingly White technical and executive workforces. The presence of Asian(American) employees, however, allows company executives to claim that they are working toward diversity. White males in particular, and by extension the companies they lead, gain social status by claiming to support workplace diversity (Hekman et al. 2017); these claims, rather than any actual outcome, are enough to produce financial gains (Leong 2013). To illustrate how this is operationalized in the technology industry, we surveyed the corporate websites for the four wealthiest technology companies in the United States: Amazon, Google, Microsoft and Apple.

Each company has a page on its website dedicated to highlighting corporate diversity efforts. Apple's site reports they are 'steadily attracting more and more underrepresented talent.' Google states that 'there's more work to be done' and that, while they are 'committed,' their efforts 'will take time.' Employment reports from these four tech companies all show similar patterns with Asian(American) workers concentrated in skilled technical labor, while executive and managerial positions are still largely White (see Appendix). Black, Latinx, Native employees are mostly absent at both levels, only showing up as 'laborers and helpers,' such as in Amazon distribution centers, and retail. As in historical examples, Asian(Americans) provide a technical labor force that operates between the White elite and other people of color. Their presence allows for the day-to-day perception of diversity in the workplace because their status as non-White helps obscure White dominance. Apple reports on its website that 54% of its new US hires are 'minorities.' Of these new hires, nearly half are Asian(American). These companies claim to be working toward, but failing at, attracting Black, Latinx, and Native technical employees and executives; this claim bolsters both meritocratic ideologies and the illusion that White supremacy is legitimate and normal.[3]

The not-Blackness or not-Whiteness of Asian(Americans) is differentially foregrounded in STEM industry depending on which better justifies White supremacy in a particular context. By combining meritocratic arguments with a focus on Asian(Americans) as being not-Black, the semiconductor industry legitimized the promotion of White women workers and White corporate interests. By emphasizing that Asian(Americans) are not White, the high-tech industry legitimizes assertions of meritocracy, diversity, and fairness without having to substantively change their recruitment and hiring practices, normalizing White supremacy. Although some Asian(Americans) may appear to benefit from employment in the semiconductor and high-tech

industries – again, mostly educated professionals from East Asian countries – they remain underrepresented in management and leadership positions. More importantly, however, their existence is used to fuel the justification and thus perpetuation of White supremacist 'logic.'

White supremacy in STEM education

Similarly, Asian(Americans) are recruited into justifying White supremacy in K-12 STEM education. The pervasiveness of the stereotype that Asian(Americans) are good at math and science has been well-documented in both academia and mainstream reporting; it is present in movies and pop culture, casual journalistic references, and national education policy, among other sources. Less often explicitly stated, however, are the corresponding stereotypes that Black, Latinx, and Native students are bad at math, or at least not as logical, precise, or talented. This implication creates a racial hierarchy within STEM education (Martin 2009) that 'work[s] to reinforce and even justify those material advantages [to Whites], rendering them normal and natural' (Spencer and Hand 2015, 237). The racial hierarchy in STEM education has been shown to negatively influence the self-perceptions and STEM identities of White, Asian(American), and Black students alike (Nasir and Shah 2011; McGee, Thakore, and Lablance, 2017; Bablak, Raby, and Pomerantz 2016).

As was discussed earlier in the paper, the STEM system masks the miseducation of Black, Latinx, and Native students. Positioning Asian(Americans) as 'naturally good at math' is another way in which that happens. We opened this paper with an anecdote where a White teacher joked that mathematics test scores could be improved by recruiting more Asian(American) students rather than by providing a better education for Latinx students. The tradition of examining humor as a site where teachers can articulate otherwise inappropriate racial ideologies (Philip, Rocha, and Olivares-Pasillas 2017) suggests that this utterance could be

read as an example of how a mostly White teaching force seeks absolution from blame for the poor performance of Black, Latinx, and Native American students in STEM education and, by extension, the underrepresentation of Black, Latinx, and Native Americans in the STEM industry. As Leonardo (2004) has discussed, the presumption of White innocence, rather than complicity in the creation and perpetuation of oppression, is a key feature of White supremacy.

Furthermore, pitting Asian(American) students against Black, Latinx, and Native students can imply that because Asian(Americans) do not need culturally responsive pedagogy or culturally relevant curriculum or culturally competent teachers to achieve high test scores, the students who require such supports must be in some way inferior. This framing is emblematic of the meritocratic ideology that the students who succeed deserve to succeed, and those who do not succeed are unworthy. For example, Martin (2009) notes that when White students underperform Asian(American) students, this 'gap' is instead a reflection of poor teacher quality or curriculum, but performance 'gaps' between White students and Black, Latinx, and Native American students are used to pathologize the individual or cultural characteristics of the latter.

This framing is reflected in perceptions about pedagogy of Asian countries. The trendiness of pedagogies imported from East Asian countries (e.g., Japanese lesson study, Kumon, Singapore Math) suggests that educators in the United States revere programming associated with East Asian mathematics. Although East Asian countries also mostly outscore the United States in reading, no similar reverence is associated with their reading programs. Venerating East Asian mathematics as the solution for re-establishing American dominance, however, reinforces a global racial hierarchy that marks African, indigenous, Latinx, and other mathematics as primitive and inferior (Gutiérrez, 2016).

Of course, Asian(American) success in STEM is not always celebrated. Vincent Chin and Wen Ho Lee may be the most well-known examples of Asian(Americans) targeted for their race with tragic consequences, but they are not alone. Asian(American) scientists have been charged with espionage, despite little to no evidence, so often that Congress has asked the Justice Department to investigate the role of racial bias in these cases (Koo and Olmos 2016). McGee, Thakore, and LeBlance have cited studies indicating that the 'backlash against Asian STEM students and workers may be intensifying' (2017, 3), and President Trump's Chief Strategist, Steve Bannon, has suggested to *The Washington Post* that 'too many' Silicon Valley CEOs are Asian immigrants, situating them as a threat to 'civic society' (Fahrenthold and Sellers 2016). Brown Asian(Americans) who have roots in South and Central Asia, or who are perceived to be Muslim, have faced increasing hostility since 9/11 and with the rising White nationalism in recent years, with the 2017 shooting of Indian engineers Srinivas Kuchibhotla and Alok Madasani being a chilling example.

In both STEM industry and STEM education, positioning Asian(Americans) as 'good at STEM' serves to justify White supremacy by supporting meritocratic ideologies and White innocence. But, when Asian(Americans) begin to challenge White superiority in the STEM system, their positioning quickly shifts back to that of the 'yellow peril.' This shifting racialization is illogical because it depends on the whims of White supremacy rather than any inherent traits of the people being racialized as Asian(American). It exemplifies why Chin and Chan (1972) call the perceived positivity of stereotypes about Asian(Americans) 'racist love.' Regardless of how desirable it may seem to be seen as smart and hard-working, this stereotype still operates as 'an instrument of White supremacy' (p. 67).

Discussion and Implications

We have argued that the racialization of Asian(Americans) within the STEM system has repeatedly secured advantages for White Americans. This pattern is not unique to STEM; Asian(Americans) have long been racialized according to the interests of White American economic and political elites. Consequently, Asian(Americans) in STEM have variously been positioned simplistically as the yellow peril, talented workers, docile workers, a model minority, dangerous, desirable, not-Black, near White, and decidedly not-White. Rather than being mutually exclusive, these positionings often operate simultaneously, shifting to the foreground based on their utility in mitigating perceived threats to White American political and economic supremacy. The coexistence of these contradictory positionings gives credence to the argument that racism is not only endemic but illogical and persists not because it is the natural way of the world, but rather, because it is reified and re-instantiated in ways that secure material and psychic advantages for those already in power: White Americans.

Through this paper, we hope to contribute to an understanding of the role of Asian(Americans) within the STEM system in the reproduction of neoliberal racial projects that maintain White supremacy. Asian(Americans) have been both willing and unwilling agents and have achieved only limited and conditional gains. Often, these gains have come at the expense of other communities of color. Casting Asian(Americans) within the STEM system as meritocratic and deserving producers with high economic value, in opposition to other communities of color, obscures the role that the STEM system plays in re-creating and sustaining racial stratification. Moreover, by masking the mechanisms by which White supremacy is perpetuated, these racial positionings distract attention from structural and institutional changes that could lead to social transformation.

Further research might examine how Asian(Americans) have contributed to, responded to, and/or opposed how they are racialized in the STEM system. Historians have chronicled both Asian(American) complicity with and activism against yellow peril, model minority, and other stereotypes, but few have considered this agency specifically from workers in the STEM industry. Some scholars have reported Asian(American) students' reactions to their racialization (e.g., Lei 2003; Lee 1994), but rarely have focused on STEM education. Additionally, postcolonial theorists' work about migration, diaspora, and transnationalism have become increasingly critical to understanding a rapidly globalizing world. Additional research about the role of the STEM system in trans-Pacific migration would be welcome.

We join other scholars such as Martin (2013) and Gutiérrez (2013) in urging our colleagues to challenge neoliberal justifications for STEM education and call for a more just and humanizing rationale for STEM education. We can ground our work in students' humanity, their interests, and their agency, rather than in economic imperatives. We can work to disrupt how STEM contributes to the construction of the racialization of intelligence (Hatt 2016). STEM education has the potential to contribute to students' understanding of the world, to amplify critical consciousness, to serve as a tool for transformative social change, and to offer beauty and the joy of learning and discovery. Framing arguments for improving STEM education through these lenses offers an alternative to narrow neoliberal logics and their perpetuation of racist ideologies.

Asian(Americans) have historically been used as an ideological tool to suggest that other communities of color are to blame for how they have been historically and structurally marginalized. This framing intersects with the STEM system's role in defining the relative value and humanity of different communities of color to veil the complex history of race in America.

We suggest that STEM education researchers be particularly attuned to and critical of this narrative. Finally, we encourage our fellow Asian(Americans), particularly those who can tell stories that we, from our East Asian(American) positionalities, cannot tell, to join us in continuing to broaden, deepen, and disseminate academic scholarship about our shared history as a political race while resisting the idealization of our labor by challenging reductive and misleading narratives about Asian(Americans) in the STEM system.

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Notes

1. In the tradition of Mae Ngai (2004) and other scholars of global migration, we distinguish between migrants, people who live and work in the United States and may not have an interest in or a legal pathway to US citizenship, and immigrants, people who intend to and have the means to pursue US citizenship.
2. American diplomats and missionaries effectively lobbied for a graduate student exemption, however, that was primarily used to bring Chinese graduate students to study in the United States under the assumption that they would then return to their home country promoting Western, Christian, democratic ideals (Hsu, 2015). Like most of America's trans-Pacific policies in the twentieth century, this exemption was strategically designed to build geopolitical alliances with emerging world powers.
3. Incidentally, as racial 'diversity' or at least the appearance of racial diversity becomes increasingly valuable in higher education, the presence of Asian(American) bodies on college campuses serves a similar purpose; see Takagi (1992), Teranishi et al. (2009), Leong (2013, 2016), and other higher education scholars for more.

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Appendix 1. Employee data by race and job category

	White (% of total)	Asian (% of total)	Black or African American (% of total)	Overall Totals
Amazon				
Executives	98 (93%)	6 (6%)	0 (0%)	105
Professionals	15715 (52%)	11977 (39%)	798 (3%)	30433
Laborers and Helpers	47421 (42%)	6848 (6%)	33379 (29%)	113198
Apple				
Executives	88 (82%)	14 (13%)	3 (3%)	107
Professionals	11647 (50%)	9622 (41%)	400 (2%)	23200
Sales Workers	12036 (56%)	1610 (8%)	2980 (24%)	21315
Google				
Executives	24 (77%)	6 (19%)	1 (3%)	31
Professionals	17185 (54%)	12131 (38%)	617 (2%)	32092
Facebook				
Executives	249 (70%)	79 (22%)	8 (2%)	354
Professionals	3045 (50%)	2538 (42%)	90 (1%)	6093
Microsoft				
Executives	115 (73%)	29 (18%)	5 (3%)	157
Professionals	27316 (55%)	16667 (34%)	1617 (3%)	49299

Note: Employee data come from 2016 corporate equal employment opportunity reports retrieved January 2017. Racial designations listed as reported. Percentages rounded to nearest whole number.