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# Race, Racial Projects, and Mathematics Education

Danny Bernard Martin *University of Illinois at Chicago* 

Critical scholars have argued that mathematics education is in danger of becoming increasingly influenced by and aligned with neoliberal and neoconservative market-focused projects. Although this larger argument is powerful, there are often 2 peculiar responses to issues of race and racism within these analyses. These responses are characterized by what I see as an unfortunate backgrounding of these issues in some analyses or a conceptually flawed foregrounding in others. These responses obscure the evidence that, beyond being aligned with the market-oriented goals of these projects, mathematics education has also been aligned with their prevailing racial agendas.

Key words: Critical theory; Knowledge; Race/ethnicity/SES; Social and cultural issues

#### WHAT KIND OF PROJECT IS MATHEMATICS EDUCATION?

In her analysis of the increased corporate influence on the affairs of Canadian universities, sociologist Janice Newson (1998) suggested that these external pressures have caused a fundamental shift in the way that the university functions, including matters of day-to-day operations, the production of knowledge, and the ability of the university to serve the broader public interest. According to Newson, there has been a shift in the university from a *social project* to a *market force*. She argued:

these changes in university practices constitute a potentially, if not realized, significant transformation in the *raison d'être* of the university: from existing in the world as a publicly funded institution oriented toward creating and disseminating knowledge as a public resource—social knowledge—into an institution which, although continuing to be supported by public funds, is increasingly oriented toward a privatized conception of knowledge—market knowledge. (para. 7)

To support her argument, Newson conducted a historical analysis of the post-World War II university in terms of its evolving relationships to these democratic and economic projects:

The expansion of higher education in the late 1950s and 1960s was justified primarily in terms of two societal needs. On the one hand, massive financial investment of public

funds was premised on the need for a highly skilled and well-educated workforce to contribute to the economic health of the country. On the other hand, it was also emphasized that universities should play a democratizing role, not only by promoting opportunities for social, political, and economic mobility in society at large but also by providing an example of a public institution whose structures and practices conformed to democratic principles of governance . . . the university of the 1960s and 1970s could be viewed as having staged a contest between the two objectives of serving the needs of the economy, on one hand, and contributing to the political project of advancing democratic sensibilities and practices on the other. (para. 8–9)

### Newson went on to say that:

the salience in university affairs of the democratizing project and its apparent equality with the economic project of the university no longer describes the political and cultural situation of and within the academy. Something has changed . . . in the relative balance between these two projects. (para. 9)

Despite this shift from a democratic project to a market project, Newson made the keen observation that the relationship between the university and external, corporate influences is not a one-way relationship; the university has not been pulled unwillingly in the market direction. Newson pointed out the limitations of the one-way perspective by noting:

Such a representation of the university's relation to its "outside" is both disempowering and mystifying. It is disempowering because, in a practical sense, adapting to external pressures rarely offers much if any room for challenging the pressures themselves. It is mystifying because it camouflages the extent to which the university itself is implicated in the very social, political, and economic forces to which it then "must" accommodate. (para. 6)

Cued by Newson's analysis, and considering how it would read if the word *university* were replaced with *mathematics education* in the excerpts above, I raise two questions relative to the enterprise in which we do our work. The first question is, "How does mathematics education respond to the external projects in the larger society?" The second asks more directly, "What kind of project is mathematics education?" These questions give rise to a number of related questions, including: "Whose interests are served by these projects?" and "What other projects have influenced mathematics education or has mathematics education served?"

To address these questions, it is necessary to characterize the external forces to which mathematics education has had to respond and how the aims and goals of the field have aligned with, and resisted, these forces. It is also necessary to examine the internal structure of the domain to characterize the ideological bases of its movements and reforms as well as examine the configurations of power that surround those movements and reforms. Critical analysis of the structural arrangements and configurations of power might reveal aspects of the domain that make it more or less susceptible to serving particular kinds of projects.

The previously posed questions are not new. Over the last 2 decades, a number of critical scholars have offered their own assessments of mathematics education (e.g., Apple, 1992, 2000; D'Ambrosio, 1985; Dowling, 1998; Ernest, 1991;

Gutstein, 2008, 2009; Lerman, 2000; Powell & Frankenstein, 1997; Skovsmose, 1994; Skovsmose & Valero, 2001, 2002; Tate & Rousseau, 2002; Valero & Zevenbergen, 2004). Nielsen (2003), for example, in his analysis of university mathematics education, also invoked the idea of competing projects—he highlighted critical and conservative projects in his analysis—and pointed out that such projects are all involved in a fundamental struggle to "dominate society and to that end give different interpretations of what is important in society. They all try to make their descriptions look neutral and objective—to look like the truth about our society" (p. 35).

Moreover, a number of scholars have recently engaged in critical analyses of mathematics education in relation to market forces, market-driven goals, and increased globalization (e.g., Apple, 1992, 2000; Atweh & Clarkson, 2001; Atweh et al., 2008; Ernest, 2009; Gutstein, 2008, 2009). These scholars have provided compelling evidence that mathematics education and mathematics knowledge have increasingly been put in service to neoliberal and neoconservative projects and agendas. This has manifested itself, for example, in the prioritizing of mathematics knowledge in the development of military and national security technology as well as the commodification of learners as potential workers in these sectors (National Academy of Sciences, National Academy of Engineering, & Institute of Medicine of the National Academies, 2005; Domestic Policy Council, 2006; National Science Board, 2003; U.S. Department of Education, 1997, 2008). Reminiscent of the "market knowledge" referenced by Newson, these scholars also point to the use of mathematics knowledge via financial engineering (i.e., mortgage-based securities, collateralized debt obligations, credit default swaps) to manipulate financial markets and the flow of global capital in ways that have benefited a few and devastated the lives of millions of others (Case, 2009).

Many of the critical scholars referenced previously have extended their own analyses of the questions that I raised at the beginning of this article to suggest the kind of project that mathematics education *should* be (e.g., D'Ambrosio, 1985, 1990; Frankenstein, 1995; Malloy, 2002; Skovsmose, 1994; Skovsmose & Valero, 2001, 2002; Sriraman, 2007; Tate & Rousseau, 2002). For example, based on his work with Latino youth in Chicago and his political analyses of mathematics education, Gutstein (2003, 2006, 2007, 2008, 2009) has argued that mathematics education should be a social justice project that resists neoliberal and neoconservative agendas and that empowers students to understand and confront class-based oppressions created by differentials in wealth and power. According to Gutstein, students should do this by developing and integrating what he has identified as classical, critical, and community knowledge.

As an outgrowth of his long history of activism in the American South, Bob Moses works with Black adolescents in the United States in the context of the Algebra Project (Moses & Cobb, 2001). Moses has argued for conceptualizing mathematics education, and economic empowerment based on access to mathematics, as a civil rights project. Other scholars have made arguments supporting mathematics education as a broader democratic project (e.g., Malloy, 2002;

Skovsmose & Valero, 2001; Tate & Rousseau, 2002).

By infusing a focus on equity in its curriculum standards documents, it could be argued that the National Council of Teachers of Mathematics (1989, 2000), an umbrella organization for thousands of teachers and researchers, also was attempting to align school mathematics with similar social justice, economic, and democratic projects via social engineering and specifications of who should gain access to mathematics. This highlights the fact that curricular reforms in mathematics education are necessarily political projects.

#### WHAT ABOUT RACISM?

Can a discourse that pays so little attention to race be anti-racist? Historically speaking, critical pedagogy has constructed an illuminating political discussion around concepts like hegemony, domination, empowerment, and solidarity. . . . However, critical pedagogy has not taken the next step and applied these terms to a significant race-radical project. (Allen, 2005, p. 54)

I claim that although much of the research cited previously has linked mathematics education to market-focused projects—either as aligned with or as resistant—there are often two peculiar responses to issues of race and racism in these critical analyses, particularly in the U.S. context (the research of William Tate is one of the most notable exceptions). These two responses are characterized by what I have come to see as an unfortunate backgrounding of these issues, on one hand, or a conceptually flawed foregrounding, on the other. These critiques do not suggest that race has been ignored, as reflected in numerous studies and reports that refer, for example, to "underrepresented" and "minority" students and so-called racial achievement gaps. However, several scholars (e.g., Gutiérrez, 2008; Martin, 2009c; McGee, 2009; Nasir & Shah, 2011; Spencer, 2009; Stinson, 2011; Weissglass, 2002) have recently provided extended analyses of the way that race has been inadequately conceptualized in mainstream mathematics education. Moreover, the history of mathematics education research in the United States shows that this research has always been racialized because of its tendency to study White children as all children (Martin, 2009b, 2009c). Unfortunately, racism—especially white supremacy<sup>1</sup> (Allen, 2001; Anderson, 1990; Ernest, 2009; Gutiérrez, 2000; Joseph, 1987; Leonard, 2008; Powell, 2002; Weissglass, 2002)—rarely has been centered in the analyses, rarely theorized for conceptual clarity, and rarely theorized in relation to the market-driven goals of globalization that mathematics education increasingly is said to serve.

Although conceptual limitations in researching race characterize mainstream

<sup>&</sup>lt;sup>1</sup> Ansley (1997) defined *white supremacy* as a political, economic, and cultural system in which Whites overwhelmingly control power and material resources, conscious and unconscious ideas of White superiority and entitlement are widespread, and relation of White dominance and non-White subordination are daily reenacted across a broad array of institutions and social settings. (p. 592)

mathematics education, curious omissions also characterize some of the work in critical mathematics education. For example, the text *Internationalism and Globalisation in Mathematics and Science Education* (Atweh et al., 2008) contains 27 chapters spread over more than 500 pages and focuses on mathematics education in several contexts with histories marked by colonialism and oppression. Yet word searches of the table of contents and index revealed no instances of the words *race* and *racism*. Closer inspection of the individual chapters shows that the authors were faithful to the major themes of the book, but few discussed the racialized nature of internationalism and globalization. Discussions of culture, more than race and racism, predominate.

In his discussion of mathematics education reform, markets, and educational inequality in *Multiple Perspectives on Mathematics Teaching and Learning* (Boaler, 2000), Michael Apple only briefly mentioned deep structural racism and other processes of racialization (Miles, 1988) in his analysis.<sup>2</sup> It was through a single footnote that he directed readers elsewhere for a more thorough discussion of the racial state. In an earlier, widely cited paper analyzing standards-based reform, Apple (1992) did entertain race, class, and gender intersections in his critique. However, the word *racism*—as an accurate descriptor and signifier for white supremacy—appears nowhere in the text of his arguments.<sup>3</sup>

My reading of Gutstein's critical research program is that, despite his advocating for mathematics as a tool to understand and combat racial and class-based oppression, he continues to privilege a market-focused analysis in his critiques of globalization, capitalism, and neoliberalism. Largely absent from his work is explicit theorizing about race, racism, and racialization—drawing on sociological or race-critical accounts (Bonilla-Silva, 2001, 2003; Bulmer & Solomos, 2004; Essed & Goldberg, 2002; Macedo & Gounari, 2006; Omi & Winant, 1994; Winant, 2004). Gutstein has never made the conceptual error of reducing issues of race to issues of class, recognizing that there is a complex dialectic between the two, and he does draw on various tenets of African American liberatory education (Gutstein, 2006). However, the Freirian perspective from which Gutstein draws heavily—and that many other scholars appropriate from his work—has been criticized for its treatment of race and racism, especially in relation to the Black Diaspora. Haymes (2002), for example, stated:

Freire and his supporters seem to be confident that his work after *Pedagogy of the Oppressed* addresses race and racism. The question is not that Freire does not look at race, and that there is no doubt about his sincere commitment to fighting racism, but it is his conceptual limitations regarding race that must be called into question. . . . The problem, then, with Freire's pedagogy of the oppressed is that he assigns to the

<sup>&</sup>lt;sup>2</sup> I am not suggesting that Apple is a critical mathematics educator. However, he has shared his critical perspective in discussions of mathematics education.

<sup>&</sup>lt;sup>3</sup> It is worth noting that, elsewhere, Apple (1999) *has* addressed the "absent presence of race" in discussions of markets.

<sup>&</sup>lt;sup>4</sup> Gutstein (2006) does invoke racism in his topical discussions and projects with his students.

category "working class" a universal and transcendental quality.... Thus, when Freire says, "[he] did not focus specifically on oppression marked by the specificities [of race and color]" in that "[he] was more preoccupied with the oppressed as a social class," Freire fails to see that working class identities, and class identities more generally, can also be "black." ... Freire's pedagogy in fact denies black existence and in doing so it denies that black people have a point of view in the world. Yet, this point of view is the very place that a black radical humanist pedagogy of liberation in the Africana context begins. (pp. 155–158)

Without diminishing the great importance of the work, even the mathematics-literacy-as-a-civil-right perspective of Moses is tempered by the fact that mathematics literacy is deemed the key to participation in the very same technology-based, capitalist opportunity structure critiqued by many critical mathematics educators (D'Ambrosio, 1990; Frankenstein, 1995; Gutstein, 2009; Skovsmose, 1994). Moses' message about Black participation in this structure, as well as the prioritizing of algebra in the mathematics curriculum and experiences of students as well as the survival of the U.S., shares much with the rhetoric found in *Final Report of the National Mathematics Panel* (U.S. Department of Education, 2008), which was convened by former Republican President George W. Bush. Moses (Moses & Cobb, 2001) offered no critical analysis of the nationalist, nativist, and xenophobic rhetoric that has historically been used to link mathematics education reform, national security, and U.S. international competitiveness (e.g., Domestic Policy Council, 2006; National Commission on Excellence in Education, 1983; National Research Council, 1989).

Moreover, despite Moses's profound and deeply moving personal experiences, his consideration of racism faced by Blacks in the United States, as expressed in in his recent work (Moses & Cobb, 2001), is primarily historical, not accounting for the contemporary, politically expedient forms of everyday, institutional, and structural racism in the post-Civil Rights era, including neoliberal and neoconservative color-blind racism (Bonilla-Silva, 2001, 2003). The lack of a deeper racial analysis in his recent work precludes a critical discussion of the fact that Black access to mathematics and economic opportunity, as envisioned by him and others, is likely to be selective and contingent, and in protection of White and male privilege rather than truly democratic in nature (Bell, 2004; Berry & Bonilla-Silva, 2008; Bonilla-Silva, Lewis, & Embrick, 2004).

The responses to racism across the works cited above are even more curious given the scholarly attention that race and racism have received outside mathematics education. This research suggests that racism is not merely a matter of individual psychology but is a global phenomenon, with geopolitical variations and structurations found, for example, in South Africa, Brazil, India, Australia, New Zealand, Singapore, and throughout the European Union (e.g., Bulmer & Solomos, 2004; Essed & Goldberg, 2002; Macedo & Gounari, 2006; Omi & Winant, 1994; Winant, 2004). Furthermore, explicitly racialized characterizations of market forces such as neoliberalism and globalization by critical mathematics educators would seem to be warranted given sociological analyses which suggest that:

Globalization is a re-racialization of the world. What have come to be called "North–South" issues are also deeply racial issues. . . . It is a system of transnational social stratification under which corporations and states based in the global North dominate the global South . . . [through] a worldwide pattern of employment discrimination, violence, morbidity, impoverishment, pollution, and unequal exchange that shares a great deal with its colonial antecedents. This global system of stratification correlates very well with racial criteria: the darker your skin is, the less you earn; the shorter your life span, the poorer your health and nutrition, the less education you can get. (Winant, 2004, pp. 131–134)

# TURNING THE GAZE INWARD

My analysis thus far has focused on what I perceive to be limitations associated with critical mathematics education discourse in analyzing the racialized nature of market-oriented agendas and projects insofar as these forces affect mathematics education. There is even less evidence in the scholarly record—in both U.S. and international contexts—that critical scholars, particularly critical White scholars, have turned their analyses inward to examine the internal structure of mathematics education as a politically oriented project in order to expose its own enactments and validations of racial hierarchies and inequities (Anderson, 1990; Gutiérrez, 2013; Martin, 2008, 2011; Powell, 2002). With respect to the latter point, I raise the additional question, "How do race and racism structure the very nature of the mathematics education enterprise?"

There are at least two distinct possibilities. First, mathematics education, as a domain of inquiry, could be considered immune to the racial contestation, stratification, hierarchies, and ideologies that characterize most other societal contexts. Under this assumption, it follows that the prevailing practices and structural arrangements in the field are truly democratic in nature, allowing the domain to function above the fray of racial formation, racial politics, and racial subordination. Second, a structural analysis, coupled with my own worldview as a critical Black scholar (Martin & Gholson, 2012), lead me to believe that the enterprise of mathematics education is not unlike other racialized contexts in society; configurations of power and privilege in the domain are not simply the result of democratic principles and practices. Societal meanings for race are highly salient in structuring norms and relations in the domain. In my critical analyses (Martin, 2009b, 2009c, 2010, 2011; Martin & Gholson, 2012), I have argued that mainstream mathematics education research and policy, particularly in the United States, can be implicated in the production and reproduction of racial ideologies, meanings, disparities, hierarchies, and identities. Not only do scholarly interpretations of children's mathematical behaviors serve to inform societal beliefs about race, racial categories, abilities, and competence, I would also argue that race-based societal beliefs about children from various social groups also serve to inform the ways that mathematics education research, policy, and practice are conceptualized and configured in relation to these children, even when these conceptualizations and configurations are presented as race neutral or couched in social justice terms (Martin, 2010).

Super useful frame I contend that it is only within certain kinds of ideological and material spaces—contexts that sociologists have called *white institutional spaces* (Feagin, Vera, & Imani, 1996; Moore, 2008)—that the peculiar responses to race described above can coexist (Martin, 2008). White institutional spaces are characterized by (a) numerical domination by Whites and the exclusion of people of color from positions of power in institutional contexts, (b) the development of a White frame that organizes the logic of the institution or discipline, (c) the historical construction of curricular models based upon the thinking of White elites, and (d) the assertion of knowledge production as neutral and impartial, unconnected to power relations.

Characterizing the domain of mathematics education as an instantiation of White institutional space does not imply that all White scholars actualize, experience, or benefit from whiteness in the same way. However, analysis of the scholarly record shows that whiteness, as a powerful force in structuring the domain, has often escaped interrogation even by self-identified critical White scholars (see the work of Stinson, 2009; and Ernest, 2009 for notable exceptions). In a field that increasingly purports to be committed to equity for all children, it is reasonable to ask why there are no explicit discussions of the pervasive whiteness in mathematics education research and policy contexts or of the fact that the norms and values that emerge in these spaces typically prevail to influence knowledge production and commonsense understandings of what is best for all children. As I note elsewhere (Martin & Gholson, 2012), "being a critical Black scholar entails unapologetically challenging common-sense understandings, routine practices, policies, and forms of scholarship that intentionally or unintentionally dehumanize . . . in material and symbolic ways" (pp. 204-205). It is also important to make visible, as noted by Macedo and Gounari (2006), that:

many white liberals (and some black liberals as well) fail to understand how they can embody white supremacist values and beliefs, even though they may not embrace racism as prejudice or domination (especially domination that involves coercive control). They cannot recognize how their actions support and affirm the very structure of racist domination and oppression they profess to wish to see eradicated. . . . By not understanding their complicity with white supremacist ideology, many white liberals reproduce a colonialist and assimilationist value system that gives rise to a form of tokenism parading under the rubric of diversity. (p. 32)

I have also discussed how well-intentioned actors, including teachers, can reinforce white supremacy and deficit-oriented views of Black, Latina/o, and Native American children by uncritically embracing "achievement gap" rhetoric and ideology, which posit their inferiority, and interpreting the closing of such gaps to mean "raising these children to the level of White and Asian children" (Martin, 2009a, 2009b, 2009c).

# IS MATHEMATICS EDUCATION ITSELF A RACIAL PROJECT?

Despite tendencies for knowledge production in the field to minimize race and racism via limited conceptualizations or lack of deeper analysis of forces such as

neoliberalism and globalization, mathematics education has historically figured prominently in *racial projects* of the day. According to the sociological literature, a racial project is "simultaneously an interpretation, representation, or explanation of racial dynamics and an effort to reorganize or redistribute resources along particular racial lines" (Omi & Winant, 1994, p. 56). Moreover, racial projects "connect what race *means* in a particular discursive practice and the ways in which both social structures and everyday experiences are racially *organized*, based upon that meaning" (p. 56). Sociologists have characterized several racial projects that have figured prominently in the evolution of white supremacy and White identity in the United States. These include the *far right*, *new right*, *neoconservative*, *liberal*, *neoliberal*, and *new abolitionist* racial projects. Defining characteristics of the new right, neoconservative, and neoliberal projects were summarized by Winant (2004) and Giroux (2006):

New right racial project: Has its origins in resistance to the black movement of 1950s and 1960s. Has employed anticommunism, racism, southern chauvinism, states' rights doctrines, agrarian populism, nativism, and America First isolationism. Argues that white supremacy is not an excrescence on the democratic "American creed" but a fundamental component of U.S. society. Revives anti-immigration hysteria, targeting Latinos. Associates whiteness with capitalist virtues. Rather than espouse racism and white supremacy, espouses familiar "code-word" phenomenon to manipulate white fear. (Winant, 2004)

Neoconservative racial project: Seeks to preserve white advantages through denial of racial difference. Racial difference is something to be overcome, a blight on the core U.S. values of universalism and individualism. Argues that every invocation of racial significance manifests "racial thinking" and is thus suspect amounting to a defense of the racial status quo. Argues for "color-blind" racial politics. Has served to organize and rationalize white working-class and minority middle-class resentments. (Winant, 2004)

*Neoliberal racial project*: Neoliberal racism is about the privatization of racial discourse. Asserts the insignificance of race as a category at odds with an individualistic embrace of formal legal rights. Dismisses the concept of institutional racism or maintains that it has no merit. Asserts that since American society is now a meritocracy, government should be race neutral, affirmative action programs dismantled, civil rights laws discarded, and the welfare state be eliminated. (Giroux, 2006)

Elements of each of these projects can be associated with efforts such as the repeal of affirmative action and the restriction of bilingual education in California during the 1990s; recent efforts to racially profile Latina/os in U.S.—Mexico border states; explicit and implicit racial discourse focused on President Barack Obama at the personal level regarding his birthplace and credentials, and backlash against his social policies by Tea Party Republicans who use subtle race-based cues to incite White resentment and anger.

Moreover, it can be shown that mathematics education reform efforts over the previous 50 years—including the "New Math" movement that was ushered in by

College level math too? Same funding lead to increase in PhD level math

U.S. reaction to the launching of Sputnik on October 4, 1957; the Mathematics for All movement of the late 1980s and 1990s; and the formation of the National Mathematics Advisory Panel by former Republican President George W. Bush have not been disconnected from the racial projects that have continued to shape racial dynamics and social policy. This is true despite the fact that some historical accounts of mathematics education reforms make only passing mention of the larger racial context (e.g., Klein, 2003). Yet, even a slightly deeper analysis of these reforms is revealing. For example, although Cold War politics are put at the forefront of discussing the U.S. mathematics education reaction to Sputnik, a number of race-based considerations in the prevailing sociopolitical context are in order (Tate, 1997). Before and during the 1950s, the United States was in the midst of the new right racial project, characterized by overt Jim Crow racism and legal segregation. Just over a decade earlier, Black Americans were largely excluded from taking advantage of the GI Bill that helped many White males enroll in colleges and universities. During the 1930s and 1940s, Black Americans also failed to benefit equitably from Roosevelt's New Deal, Social Security, or Truman's Fair Deal social programs (Katznelson, 2005).

Moreover, in 1954, just 3 years prior to Sputnik, the U.S. Supreme Court announced its decision in the case of *Brown v. Board of Education of Topeka* that separate educational facilities are inherently unequal, thus overturning its previous ruling in the 1896 case of *Plessy v. Ferguson* and paving the way for school integration. However, as pointed out by Derrick Bell (1980), it was *interest convergence*<sup>5</sup> rather than moral compunction that explained this landmark decision. According to Bell, the court's decision "cannot be understood without some consideration of the decision's value to Whites, not simply those concerned about the immorality of racial inequality, but also those Whites in policymaking positions able to see that economic and policy advances at home and abroad would follow abandonment of segregation" (p. 524). As further explained by Delgado (2002):

Why then? Bell pointed out that the country had just celebrated the end of a bloody world war against Germany and Japan, during which many black men and women had served gallantly. Having risked their lives for the cause of freedom, they were unlikely to return meekly to the former regime of menial jobs and segregated facilities. For the first time in decades, the prospect of serious racial unrest loomed. . . . For Bell, the Brown decision came about when it did, not because of altruism or advancing notions of social morality. Rather, elite whites on the Supreme Court, in the State Department, and in other circles of power simply perceived that America's self-interest lay in publicly supporting blacks so as to gain an edge in the Cold War with Russia. (p. 372)

<sup>&</sup>lt;sup>5</sup> According to Bell (2004, p. 67), this principle can be stated in two rules. First, the interests of Blacks in achieving racial equality will be accommodated only when that interest converges with the interests of whites in policymaking positions. This convergence is far more important for gaining relief that the degree of harm suffered by blacks or the character of proof offered to prove that harm. Second, even when interest convergence results in an effective racial remedy, that remedy will be abrogated at the point that policymakers fear the remedial policy is threatening the superior social status of whites, particularly those in the middle and upper classes.

Of course, the desegregation ruling, pacified by the "with all deliberate speed" directive of *Brown II*, did not end racism or quell the racial climate. In August of 1955, 14-year-old Emmett Till was kidnapped, beaten, shot, and dumped in the Tallahatchie River allegedly for whistling at a White woman. In December of 1955, Rosa Parks, a Montgomery, Alabama, seamstress, refused to give up her seat on the bus to a White passenger and was subsequently arrested and fined, giving rise to the Montgomery bus boycotts. And, on September 4, 1957, just 1 month before Sputnik, the Governor of Arkansas deployed National Guard troops to block nine Black children from integrating Little Rock's Central High School.

An extended chronology of civil rights history surrounding the Sputnik era, including the death of Dr. Martin Luther King Jr. in 1968, would show that the New Math reform project was not an antiracist vessel in the sea of racial discord characterizing that time. With its emphasis on the "best and the brightest," it was just another mechanism for maintaining White (male) privilege. One chronology (Raimi, 2005) of the "prominent persons" involved in the political project of the New Math movement identified mostly White males, from various backgrounds, as the key leaders and decision makers of the movement, a finding that is common for White institutional spaces. If the nation had minimal will to integrate Black children into their schools and other public institutions or the voices of Blacks into its policymaking circles, it was certainly no more willing to integrate their needs into the mathematics education reforms of the day. As a result, it could be argued that the New Math movement to educate a generation of students who would help protect the U.S. from the Soviet intellectual threat did not include Blacks (or Native Americans, Chinese, Japanese, or Latina/os). Rather, mathematics education in the United States served to help maintain the prevailing racial project.

Mathematics for All, promoted as one of most egalitarian movements in the field since the 1980s, seeks to reorganize and redistribute access and opportunity in mathematics (NCTM, 1989, 2000; RAND Mathematics Study Panel, 2003). In my view, part of the appeal of this effort is that it presents itself as a colorblind and universal effort with equity and social justice ends. However, as a color-blind and universal effort, it is simultaneously aligned with the rhetoric and ideologies of neoliberal and neoconservative racial projects. Despite its social justice veneer, it could be argued that part of the subtext of Mathematics for All rhetoric is about assimilation (Martin, 2003). In classical assimilation theory, assimilation is defined as "the decline, and at its endpoint the disappearance, of an ethnic/racial distinction and the cultural and social differences that express it" (Alba & Nee, 1997, p. 863). In everyday terms, particularly in the context of mathematics teaching and learning, assimilation might involve (well-meaning) attempts by teachers to get students to speak "standard" mathematics language and adopt a singular form of communication in the classroom, accompanied by encouragement or sanctions that require students to abandon their "everyday" talk and culturally based communication styles. At another level, the move toward national curriculum, as reflected in the Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010), carries with it a push for assimilation, as do recent English-only, antibilingual education efforts that have re-emerged in the Southwestern and Western United States.

Bell (2004), in reviewing school desegregation efforts stemming from the Brown decision, and drawing on research by Ray Rist (1978), noted how such *cultural* integration can be equated with *racial* assimilation. As noted by Bell:

[Assimilation], Rist explains, is a "means of socializing nonwhite students to act, speak, and believe very much like white students." It leaves dominant values intact, does no damage to notions of white superiority, and helps to gain the support of those whites who view it as a means of helping "nonwhite peoples to become fully human by instilling in them 'white' ways of thinking and feeling." (p. 122)

The joint critique by Bell and Rist suggests that efforts such as Mathematics for All and Algebra for All, which attempt to integrate African American, Latino, and Native American students into the mathematics mainstream, are likely to be unsuccessful if they are based on the goal of getting these students to merely emulate White and Asian students under the assumption that their own racial and cultural backgrounds and identities serve as insufficient bases on which to facilitate academic and mathematical growth and development.

Viewed more critically, Mathematics for All could be viewed as an instantiation of the interest convergence principle and aligns with the nationalism found in conservative racial projects because of its underlying concern with U.S. international competitiveness and calls for strengthening of the scientific—technical (i.e., national defense) workforce in relation to real and perceived foreign and terrorist threats (Gutstein, 2008, 2009). Like assimilation, nationalism seeks to silence internal racial identity politics in favor of collectivism. Some scholars suggest that racism and nationalism are linked (e.g., Mosse, 1995). According to Miles and Brown (2003), "racism is implicitly defined as an excess of nationalism, therefore dependent on nationalism for existence-as-such" (p. 10).

A critical analysis of the *Final Report of the National Mathematics Advisory Panel* (U.S. Department of Education, 2008) reveals how it, too, aligns with prevailing racial projects. The fact that former President Bush was able to extend new right and neoconservative politics into mathematics education reform with the formation of the National Mathematics Advisory Panel further reveals the connection between mathematics education reform and the larger racial politics of the day (Martin, 2010, 2011). Although the main discourse in the report seems to be about mathematics teaching and learning, there is a parallel discourse focused on national security and safety, issues that clearly fall outside the realm of teaching and learning. The third paragraph of the Panel's *Executive Summary* is very clear in making this link:

Much of the commentary on mathematics and science in the United States focuses on national economic competitiveness and the economic well-being of citizens and enterprises. There is reason enough for concern about these matters, but it is yet more fundamental to recognize that the safety of the nation and the quality of life—not just the prosperity of the nation—are at issue. (p. xi)

As the preceding examples help to show, depending on the sociopolitical context of a given time, the enterprise of mathematics education simultaneously serves, and is influenced by, a host of competing racial projects, each of which calls for a preferred structuring of mathematics teaching, learning, curriculum, assessment, research, policy, and reform.

#### CONCLUSION

A structural analysis of the internal dynamics of the mathematics education enterprise shows that it is a racialized space, an instantiation of White institutional space. This structural analysis also shows that knowledge production in the domain, particularly within critical mathematics education, is often characterized by peculiar backgroundings and conceptually flawed foregroundings of race and racism. Critical analyses of market-oriented projects have typically left corresponding racial projects unanalyzed. An examination of modern mathematics education reforms, for example, shows that they have been aligned not only with neoliberal and neoconservative market-focused projects but these reforms have also been aligned with new right, neoliberal, and neoconservative racial projects.

To the degree that mathematics education reform policies and rhetoric have been, and continue to be, aligned with and put in service to the prevailing racial projects, I believe that mathematics educators must continue to ask "What kind of project is mathematics education?" and "Whose interests are served by this project?" Moving forward, several related questions can be asked in relation to research, policy, and practice. For researchers, how do we continue to make sense of the highly racialized nature of mathematics education, both as a knowledge-producing domain and as an activity experienced by teachers and students on a daily basis? In relation to mathematics education policy, how can we critically examine reform efforts such as the Common Core State Standards for Mathematics (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) or the recommendations for teacher preparation made by the Conference Board of the Mathematical Sciences (Conference Board of the Mathematical Sciences, 2001) and make explicit the racialized (and gendered and classed) underpinnings of these political projects? For example, I would argue that the heightened demands on teachers in both of these efforts—framed partly as concerns about international and economic competitiveness—reflects heightened demands on the work done by working-class White women, given their demographic dominance in the teaching profession. This racialized and gendered character of mathematics education reform is obscured in the counternarratives that focus on market-driven ideologies that are claimed to drive such reforms. Finally, in relation to teacher practice, how can we more effectively partner with teachers to uncover and understand the external forces that position them in ways where their teaching and classroom practice are put in service to larger political projects and ideologies?

#### REFERENCES

- Alba, R., & Nee, V. (1997). Rethinking assimilation theory for a new era of immigration. *International Migration Review*, 31, 826–875.
- Allen, R. L. (2001). The globalization of white supremacy: Toward a critical discourse on the racialization of the world. *Educational Theory*, *51*, 467–485. doi:10.1111/j.1741-5446.2001.00467.x
- Allen, R. L. (2005). Whiteness and critical pedagogy. In Z. Leonardo (Ed.), *Critical pedagogy and race* (pp. 53–68). Malden, MA: Blackwell.
- Anderson, S. E. (1990). Worldmath curriculum: Fighting eurocentrism in mathematics. *Journal of Negro Education*, 59, 348–359.
- Ansley, F. L. (1997). White supremacy (and what we should do about it). In R. Delgado and J. Stefancic (Eds.), *Critical White studies: Looking behind the mirror* (pp. 592–595). Philadelphia, PA: Temple University Press.
- Apple, M. (1992). Do the Standards go far enough? Power, policy, and practice in mathematics education. *Journal for Research in Mathematics Education*, 23, 412–431. http://www.nctm.org/publications/jrme.aspx
- Apple, M. W. (2000). Mathematics reform through conservative modernization? Standards, markets, and inequality in education. In J. Boaler (Ed.), *Multiple perspectives on mathematics teaching and learning* (pp. 243–259). Westport, CT: Ablex.
- Atweh, B., & Clarkson, P. (2001). Internationalisation and globalisation of mathematics education: Towards an agenda for research/action. In B. Atweh, H. Forgasz, & B. Nebres (Eds.), *Sociocultural research on mathematics education: An international perspective* (pp. 77–94). Mahwah, NJ: Erlbaum
- Atweh, B., Calabrese-Barton, A., Borba, M. C., Gough, N., Keitel, C., Vistro-Yu, C., & Vithal, R. (Eds.). (2008). Internationalisation and globalization in mathematics and science education. Dordrecht, the Netherlands: Springer.
- Boaler, J. (Ed.). (2000). Multiple perspectives on mathematics teaching and learning. Westport, CT: Ablex.
- Bell, D. A. (1980). Brown v. Board of Education and the interest-convergence dilemma. Harvard Law Review, 93, 518–533.
- Bell, D. A. (2004). Silent covenants: Brown v. Board of Education and the unfulfilled hopes for racial reform. New York, NY: Oxford University Press.
- Berry, B., & Bonilla-Silva, E. (2008). "They should hire the one with the best score": White sensitivity to qualification differences in affirmative action hiring decisions. *Ethnic and Racial Studies*, *31*, 215–242. doi:10.1080/01419870701337619
- Bonilla-Silva, E. (2001). White supremacy and racism in the post-civil rights era. Boulder, CO: Lynne Reinner.
- Bonilla-Silva, E. (2003). Racism without racists: Color-blind racism and the persistence of racial inequality in the United States. Lanham, MD: Rowman & Littlefield.
- Bonilla-Silva, E., Lewis, A., & Embrick, D. G. (2004). "I did not get that job because of a Black man . . . ": The story lines and testimonies of color-blind racism. *Sociological Forum, 19*, 555–581. doi:10.1007/s11206-004-0696-3
- Bulmer, M., & Solomos, M. (Eds.). (2004). Researching race and racism. New York, NY: Routledge.
- Case, J. (2009). What role did mathematical models play in the financial crisis? *SIAM News*, 42(7), 1–9. http://www.siam.org/news/news.php?id=1626
- Conference Board of the Mathematical Sciences. (2001). *The mathematical education of teachers*. Providence, RI, and Washington, DC: American Mathematical Society and Mathematical Association of America.
- D'Ambrosio, U. (1985). Ethnomathematics and its place in the history and pedagogy of mathematics. For the Learning of Mathematics, 5(1), 44–48.
- D'Ambrosio, U. (1990). The role of mathematics education in building a democratic and just society. *For the Learning of Mathematics*, 10(3), 20–23.

- Delgado, R. (2002). Explaining the rise and fall of African-American fortunes: Interest convergence and civil rights gains. *Harvard Civil Rights-Civil Liberties Law Review*, 37, 369–387.
- Domestic Policy Council. (2006). *American competitiveness initiative*. Washington, DC: U.S. Government Office of Science and Technology Policy.
- Dowling, P. (1998). The sociology of mathematics education. London, England: Falmer.
- Ernest, P. (1991). The philosophy of mathematics education. London, England: RoutledgeFalmer.
- Ernest, P. (2009). Mathematics education ideologies and globalization. In P. Ernest, B. Greer, & B. Sriraman (Eds.), *Critical issues in mathematics education* (pp. 67–110). Charlotte, NC: Information Age.
- Essed, P., & Goldberg, D. (Eds.). (2002). Race critical theories. Malden, MA: Blackwell.
- Feagin, J. R., Vera, H., & Imani, N. (1996). The agony of education: Black students at white colleges and universities. New York, NY: Routledge.
- Frankenstein, M. (1995). Equity in mathematics education: Class in the world outside the class. In W. G. Secada, E. Fennema, & L. B. Adajian (Eds.), *New directions for equity in mathematics education* (pp. 165–190). Cambridge, England: Cambridge University Press.
- Giroux, H. A. (2006). Spectacles of race and pedagogies of denial: Antiblack racist pedagogy. In D. Macedo & P. Gounari (Eds.), *The globalization of racism* (pp. 68–93). Boulder, CO: Paradigm.
- Gutiérrez, R. (2000). Advancing African-American, urban youth in mathematics: Unpacking the success of one math department. *American Journal of Education*, 109, 63–111.
- Gutiérrez, R. (2008). A "gap-gazing" fetish in mathematics education? Problematizing research on the achievement gap. *Journal for Research in Mathematics Education*, 39, 357–364.
- Gutiérrez, R. (2013). The sociopolitical turn in mathematics education. *Journal for Research in Mathematics Education*, 41, 37–68.
- Gutstein, E. (2003). Teaching and learning mathematics for social justice in an urban, Latino school. *Journal for Research in Mathematics Education*, *34*, 37–73.
- Gutstein, E. (2006). Reading and writing the world with mathematics: Toward a pedagogy for social justice. New York, NY: Routledge.
- Gutstein, E. (2007). Connecting community, critical, and classical knowledge in teaching mathematics for social justice. In B. Sriraman (Ed.), *The Montana Mathematics Enthusiast, Monograph 1: International perspectives on social justice in mathematics education* (pp. 109–118). Charlotte, NC: Information Age.
- Gutstein, E. (2008). The political context of the National Mathematics Advisory Panel. *The Montana Mathematics Enthusiast*, 5, 415–422. http://www.math.umt.edu/tmme/vol5no2and3/TMME\_vol5nos2and3\_a21\_pp.415\_422.pdf
- Gutstein, E. (2009). The politics of mathematics education in the US: Dominant and counter agendas. In B. Greer, S. Mukhopadhyay, A. B. Powell, & S. Nelson-Barber (Eds.), *Culturally responsive mathematics education* (pp. 137–164). New York, NY: Routledge.
- Haymes, S. (2002). Race, pedagogy, and Paolo Freire. *Philosophy of Education*, 151–159. http://ojs.ed.uiuc.edu/index.php/pes/article/view/1807/517
- Joseph, G. G. (1987). Foundations of Eurocentrism in mathematics. *Race & Class*, 28(3), 13–28. doi:10.1177/030639688702800302
- Katznelson, I. (2005). When affirmative action was white: An untold history of racial inequality in twentieth-century America. New York, NY: W.W. Norton.
- Klein, D. (2003). A brief history of American K–12 mathematics education in the 20th century. In J. Royer (Ed.), Mathematical cognition: A volume in current perspectives on cognition, learning, and instruction (pp. 175–225). Charlotte, NC: Information Age.
- Leonard, J. (2008). Culturally specific pedagogy in the mathematics classroom: Strategies for teachers and students. New York, NY: Routledge.
- Lerman, S. (2000). The social turn in mathematics education research. In J. Boaler (Ed.), *Multiple perspectives on mathematics teaching and learning* (pp. 19–44). Westport, CT: Ablex.
- Macedo, D., & Gounari, P. (Eds.). (2006). *The globalization of racism*. Boulder, CO: Paradigm Publishers.
- Malloy, C.E. (2002). Democratic access to mathematics through democratic education. In L. D. Eng-

- lish (Ed.), Handbook of international research in mathematics education (pp. 17–25). Mahwah, NJ: Erlbaum.
- Martin, D. (2003). Hidden assumptions and unaddressed questions in mathematics for all rhetoric. The Mathematics Educator, 13(2), 7–21. http://math.coe.uga.edu/tme/Issues/v13n2/v13n2.Martin.pdf
- Martin, D. (2008). E(race)ing race from a national conversation on mathematics teaching and learning: The national mathematics advisory panel as white institutional space. *The Montana Mathematics Enthusiast*, 5(2&3), 387–398. http://www.math.umt.edu/tmme/vol5no2and3/TMMEvol5nos2and3\_a19\_pp.387\_398.pdf
- Martin, D. (2009a). Does race matter? *Teaching Children Mathematics*, 16, 134–139. http://www.nctm.org/publications/tcm.aspx
- Martin, D. B. (2009b). Liberating the production of knowledge about African American children and mathematics. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of Black children* (pp. 3–38). London, England: Routledge.
- Martin, D. (2009c). Researching race in mathematics education. *Teachers College Record*, 111, 295–338. http://www.tcrecord.org
- Martin, D. B. (2010). Not-so-strange bedfellows: Racial projects and the mathematics education enterprise. In U. Gellert, E. Jablonka, & C. Morgan (Eds.), *Proceedings of the sixth International Mathematics Education and Society Conference* (Vol. 1, 57–79). Berlin, Germany: Freie Universität Berlin.
- Martin, D. (2011). What does quality mean in the context of white institutional space? In B. Atweh, M. Graven, W. Secada, & P. Valero (Eds.), Mapping equity and quality in mathematics education (pp. 437–450). New York, NY: Springer.
- Martin, D., & Gholson, M. (2012). On becoming and being a critical black scholar in mathematics education: The politics of race and identity. In W.-M. Roth & L. Verschaffel (Series Eds.), O. Skovsmose & B. Greer (Eds.), New Directions in Mathematics and Science Education: Vol. 23. Opening the cage: Critique and politics of mathematics education (pp. 203–222). Rotterdam, the Netherlands: Sense.
- McGee, E. O. (2009). Race, identity, and resilience: Black college students negotiating success in mathematics and engineering (Unpublished doctoral dissertation). University of Illinois at Chicago, Chicago, IL.
- Miles, R. (1988). Racialization. In E. Cashmore (Ed.), Dictionary of race and ethnic relations (2nd ed., pp. 246–247). London, England: Routledge.
- Miles, R., & Brown, M. (2003). Racism (2nd ed.). London, England: Routledge.
- Moore, W. L. (2008). Reproducing racism: White space, elite law schools, and racial inequality. New York, NY: Rowman & Littlefield.
- Moses, R. P., & Cobb, C. E. (2001). *Radical equations: Math literacy and civil rights*. Boston, MA: Beacon Press.
- Mosse, G. L. (1995). Racism and nationalism. *Nations and Nationalism, 1*, 163–173. doi:10.1111/j.1354-5078.1995.00163.x
- Nasir, N. S., & Shah, N. (2011). On defense: African American males making sense of racialized narratives in mathematics education. *Journal of African American Males in Education*, 2, 24–45. http://journalofafricanamericanmales.com/wp-content/uploads/downloads/2011/02/On-Defense.pdf
- National Academy of Sciences, National Academy of Engineering, & Institute of Medicine of the National Academies. (2005). *Rising above the gathering storm: Energizing and employing America for a brighter economic future*. Washington, DC: National Academy Press.
- National Commission on Excellence in Education. (1983). A nation at risk: The imperative for educational reform. Washington, DC: Government Printing Office. http://www.csus.edu/indiv/l/langd/Nation\_at\_Risk.pdf
- National Council of Teachers of Mathematics. (1989). Curriculum and evaluation standards for school mathematics. Reston, VA: Author.
- National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: Author.
- National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). Common core state standards for mathematics. Washington, DC: Author.

- National Research Council. (1989). Everybody counts: A report to the nation on the future of mathematics education. Washington, DC: Author.
- National Science Board. (2003). The science and engineering workforce: Realizing America's potential. Arlington, VA: National Science Foundation.
- Newson, J. (1998). The corporate-linked university: From social project to market force. Canadian Journal of Communication, 23(1), 107–124. http://www.cjc-online.ca/index.php/journal/article/ view/1026/932
- Nielsen, R. H. (2003). How to do educational research in university mathematics? *The Mathematics Educator*, *13*, 33–40. http://math.coe.uga.edu/tme/Issues/v13n1/v13n1.Nielsen.pdf
- Omi, M., & Winant, H. (1994). Racial formation in the United States. New York, NY: Routledge.
- Powell, A. B. (2002). Ethnomathematics and the challenges of racism in mathematics education. In P. Valero & O. Skovsmose (Eds.), *Proceedings of the Third International Mathematics Education* and Society Conference (pp. 1–13). Copenhagen, Denmark: Centre for Research in Learning Mathematics.
- Powell, A. B., & Frankenstein, M. (Eds.). (1997). Ethnomathematics: Challenging Eurocentrism in mathematics education. Albany, NY: State University of New York Press.
- Raimi, R. (2005, August). *Brief chronology and dramatis personae of the new math*. Retrieved July 1, 2010 from http://www.math.rochester.edu/people/faculty/rarm/chron.html
- RAND Mathematics Study Panel. (2003). *Mathematics proficiency for all students: Toward a strategic research and development program in mathematics education*. Santa Monica, CA: RAND.
- Rist, R. C. (1978). *The invisible children: School integration in American society*. Cambridge, MA: Harvard University Press.
- Skovsmose, O. (1994). Toward a philosophy of critical mathematics education. Dordrecht, the Netherlands: Kluwer.
- Skovsmose, O., & Valero, P. (2001). Breaking political neutrality: The critical engagement of mathematics education with democracy. In B. Atweh, H. Forgasz, & B. Nebres (Eds.), Socio-cultural aspects of mathematics education: An international research perspective (pp. 37–56). Mahwah, NJ: Erlbaum.
- Skovsmose, O., & Valero, P. (2002). Democratic access to powerful mathematical ideas. In L. D. English (Ed.), Handbook of international research in mathematics education: Directions for the 21st century (pp. 383–407). Mahwah, NJ: Erlbaum.
- Spencer, J. A. (2009). Identity at the crossroads: Understanding the practices and forces that shape African American success and struggle in mathematics. In D. B. Martin (Ed.), Mathematics teaching, learning, and liberation in the lives of Black children (pp. 200–230). New York, NY: Routledge.
- Sriraman, B. (Ed.). (2007). *International perspectives on social justice in mathematics education*. Charlotte, NC: Information Age.
- Stinson, D. (2009). Negotiating sociocultural discourses: The counter-storytelling of academically and mathematically successful African American male students. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of Black children* (pp. 265–288). London, England: Routledge.
- Stinson, D. (2011). "Race" in mathematics education: Are we a nation of cowards? *Journal of Urban Mathematics Education*, 4(1), 1–16.
- Tate, W. F. (1997). Brown, Sputnik, and mathematics reform: Lessons from the past. In C. Teddlie & K. Lomotey (Eds.), Readings on Equal Education: Vol. 14. Forty years after the Brown decision: Social and cultural effects of school desegregation (pp. 251–264). New York, NY: American Mathematical Society.
- Tate, W., & Rousseau, C. (2002). Access and opportunity: The political and social context of mathematics education. In L. D. English (Ed.), Handbook of international research in mathematics education (pp. 271–300). Mahwah, NJ: Erlbaum.
- U.S. Department of Education. (1997). Mathematics equals opportunity. Washington, DC: U.S. Government Printing Office.
- U.S. Department of Education. (2008). Foundations of success: The final report of the National Mathematics Advisory Panel. Washington, DC: U.S. Government Printing Office.
- Valero, P., & Zevenbergen, R. (Eds.). (2004). Researching the socio-political dimensions of mathematics education: Issues of power in theory and methodology. Dordrecht, the Netherlands: Kluwer.

Weissglass, J. (2002). Inequity in mathematics education: Questions for educators. *The Mathematics Educator*, 12(2), 34–39. http://math.coe.uga.edu/tme/Issues/v12n2/v12n2.Weissglass.pdf

Winant, H. (2004). The new politics of race: Globalism, difference, justice. Minneapolis, MN: University of Minnesota Press.

# Author

Danny Bernard Martin, College of Education (MC 147) and Department of Mathematics, Statistics, and Computer Science, University of Illinois at Chicago, 1040 W. Harrison Street, Chicago, IL 60607; dbmartin@uic.edu