The Promises of Deconstructing and Disrupting for Critical Transformations

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I want to thank the planning team for inviting me to participate in this conversation. I am going to talk about the wows, the wonders, and what I have learned in the last few days here. Some of the wows are the vision of the MTE-Partnership leadership, which is to bring together and develop a networked improved community and to transform secondary math teacher education. Another wow is the creation of these RACs that seek to identify and address particular issues related to teach you all specific goals and objectives. And lastly the incredible dedication and hard work of you all, in doing this work and doing it well. I did get to spend time in all of the RACs, and I am just blown away by the commitment to the work. Thank you.

I only have one wonder. Three positives, one wonder. I wonder if the MTE-Partnership will be bold and brave to move to a deeper and critical stance of transformation for secondary math teacher education by using its power and privilege as a collective identity to deconstruct and disrupt the hegemony of mathematics. I went and looked for the guiding principles that we can actually hang our hat on to do this work, namely the one that talks about the sense of justice: “The teacher preparation program fosters a sense of agency in its teacher candidates so that through their actions, behaviors, and advocacy, candidates demonstrate a dedication to equitable pedagogy that promotes democratic principles by holding high expectations for all students, while recognizing and honoring their diversity” (MTE-Partnership Guiding Principle 6-C, 2014). One of the things that I was thinking that might be a possibility or a possible exercise is could we situate this particular guiding principle within the context of our new AMTE Standards, specifically the ones talking about social context in mathematics teaching and learning, and even more specifically, section 4.4, which says “understand power and privilege in the history of mathematics education.” For those folks that do not know what the word hegemony means, it comes out of Marxist philosophy and tradition. Cultural hegemony is the domination of a culturally diverse society by the ruling class, I’d say whites, who manipulate the culture of that society, the beliefs, explanations, perceptions, values, so that their imposed dominant worldview becomes the norm. The universally validated dominant ideology that justifies the social, political, and economic status quo as just natural, perpetual and beneficial for everyone, rather than as artificial social constructs that benefit only the dominant culture. I want you to look introspectively and think about this question: Can you see the hegemony in math teacher education?

I want you to think about who made the decision, for example, a long time ago, about the scope and sequence of math courses? Algebra, Geometry, Algebra II, Pre-Calculus. Who decided that? Who made the decision about the type of math we need to learn? Why, in the face of 30 years of empirical research about the negative consequences of tracking, have schools still tracked in mathematics? It is benefiting someone. It is a part of a norm, right? And who decided that the GRE, ACT, or any other standardized assessment, that we often need to take for advancement, to get into programs, that those are the only legitimate measures of knowledge? Think about these things.

Why do we need an attempt to be bold? Why do we need you guys to be bold? I want to do an illustration and read a quick vignette in my book that I think really demonstrates hegemony in mathematics. This is the introduction of my book that I shared with you yesterday, “Interrogating Whiteness.” There is a picture that is titled “The Defaced Page in the Book: Black Mathematicians and Their Work.” Has anybody heard of that book? A
colleague who was an African-American faculty member in STEM, he’s a mathematician in fact, came to my office to show me something he found in a book that he had checked out from the institution’s library. The sentiments reflect widely held assumptions that are rooted in the belief that mathematics, like other STEM disciplines, is a white institutional space. In this book, “Black Mathematicians and Their Work,” are the contributions and photos of black female and male math faculty who hold a doctorate in pure mathematics or engineering or other STEM areas. Eleven of the photos have been defaced with comments such as “one-half white” (see Figure 1).

![Figure 1. Page from Black Mathematicians and Their Work.](image)

All 11 of those pages were defaced in that same way. I guess the writer of the defaced message wanted us to know that for a black person to hold a Ph.D. in engineering, he or she has be at least half white, right? Because achievements like these do not belong to blacks, but are also not typical, not normal, right? For black people. I looked at my colleague with despair and said, “This is one reason why our book is needed.”

The other thing that I want you to think about is that I created something called the STEM System (see Figure 2), which is why this is relevant to the MTE-Partnership. The bottom circle says STEM System in U.S. Education, white faculty in STEM departments, so that’s our white faculty in STEM education departments, secondary in particular, like most of us. And then white future secondary STEM teachers. That’s our audience, right? Those are the people that we teach. So what happens is when you have students that go into these STEM departments, most of them have to have an undergraduate degree in mathematics. You can see that all students are influenced by white faculty focused only on content that’s universal and culture-free even though certain students may feel or think differently based on their own lived experiences.
Figure 2. U.S. STEM education system.

Just to show you a pathway, we’ve got most people getting their degrees, and then they come into education. They come to see us, right? So white faculty teach all students who come from STEM departments and reinforce culture-free universal science, etc. Then we are teaching our teachers and then they go out and get their own class. So, these teachers perpetuate inequalities, unless disrupted. And then what happens? A pipeline of racialized minorities perpetuates and is stagnated, essentially. This is just to sort of provide a frame for us to think about those questions.

Why are racialized minorities not interested in teaching mathematics? This is just something for us to think about, why math is not something that racialized minority students want to do. I have learned that this group has a lot of power, thinking about a hundred institutions, thinking about all of its collaborations and partnerships that have been built across this country. You have a lot of power and privilege, I think, to make a very significant contribution that takes a critical approach to the complex problem of recruiting and retention-building, those two twin aims, right? I have also learned that taking this critical approach can promote catalytic promise in disrupting the myth of mathematics as a white institutional space and has the potential to, for example, improve the perceptions of marginalized students who do not see mathematics as part of their identities.

Promote catalytic climates in disrupting the myth, because it is a myth that mathematics is a white space. But, that culture has been sort of reified through society, through our programs, etc., and have the potential to, for example, improve the perspectives of marginalized students who do not see themselves, or do not see mathematics as part of their identity. And finally, we were kind of throwing around this idea in the PR² group, we really need to start a national movement to reclaim teaching as a respected profession. Because of the power and
the reach and the leverage that this group has doing something like that could really help raise and elevate the wonderful profession that we all do. Here is a start. Here’s a hashtag: #mathteachingforchange. You can use that if you want to do it.

I’m thinking that just like how Black Lives Matters sort of started organically and socially and then it grew, we could do it for math teaching. Find testimonials of those great math teachers that you know are fighting every day, reaching their kids, doing everything that they can to provide excellent teaching to all kids. We can elevate teaching as a transformative practice to change and to perhaps open it up for the type of students that you say that you want to get. So again, I thank you, and I hope that this is something that you all would be willing to think about more deeply.