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Commentary

Common Core State Standards for Mathematics: Love It or Hate It, Understand Those Who Don't

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Regardless your opinion of the Common Core State Standards for Mathematics (CCSSM; National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010), the current controversies involving it are both good and bad. Borrowing a common saying with regard to love and hate, the opposite of support for education is apathy, not criticism. Therefore, on the positive side, the heated debates signify public investment in our educational system. On the other hand, conflict is rarely a welcome state in which to reside. If you support the CCSSM, no doubt you are worried that political pressure will force a retreat before its effects can be ascertained. If you are a critic, you have reasons why a retreat should have already occurred. The CCSSM has fueled strong reactions on either end of the spectrum, compelling its supporters and critics to argue their positions. If you are such a person, you naturally have little interest in entertaining the arguments of those opposing your position. I claim, however, that you will develop the strongest case for your position if you clearly understand the opposition's point of view.

It is important to realize that my claim involves more than developing what I consider a shallow understanding of the opposition's arguments. For example, *understanding the opposition's point of view* involves more than simply listening to and acknowledging their arguments. It even goes beyond conceding some points. To understand the opposition's point of view you must, at least briefly, adopt their position and seek to

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empathetically interpret it. This practice provides insight into the beliefs and conceptions that underlie the opposition's positions, which in turn affords the opportunity to argue your case in terms they may find compelling. As a further benefit, understanding the opposition's point of view enables you to adapt your arguments to changing conditions or circumstances. Additionally, this deep understanding positions you to predict the reactions of oppositional members to subsequent policies or ideas, as well as ways in which those reactions may be contained or avoided.

I make these claims based on my personal experience studying the viewpoints of those with whom I disagreed: specifically, critics of the school mathematics reforms that were the basis of the *math wars* of the 1990s (Wagner, 2016). The math wars preceded the current CCSSM debate; therefore, it is unclear in what way the math wars relate to the current controversies. However, school mathematics reforms (separate from the CCSSM) continue to be a focus of teacher education and development. The insights I gained about the critics of these reforms has made me a better advocate for research-supported pedagogies in my work as a teacher educator. Additionally, I found that I understood (and could have predicted) some reactions to the subsequent CCSSM. In order to explain how an understanding of the math wars critics has benefited me, I must first provide some context. Below, I briefly describe the study of the critics of school mathematics reforms, including its methodology and findings. For the preparation of this commentary, I identified former study subjects' current positions with respect to the CCSSM. In doing so, I aim to support the claim that the knowledge I gained from the study continues to be relevant, even as the focus of controversy has shifted from reforms inspired by the National Council of Teachers of Mathematics (NCTM) to the CCSSM.

The Study

Conflict regarding school mathematics has been a near constant in the U.S. for over sixty years. From the debates over

new math in the 1960s through the *math wars* of the 1990s (see Orrill, this issue), U.S. society has grappled with questions about what mathematics *is* and how one can best learn it. For example, much of the new math movement reflected mathematicians' contemporary view of mathematics and offered pedagogical advice in the form of curricula (Herrera & Owens, 2001; Robitaille & Travers, 2003). After heated debates, the back-to-basics movement of the 1970s & 80s signaled the public's rejection of the mathematicians' views. Again, in 1989, the NCTM sparked new debates with its publication of *Curriculum and Evaluation Standards for School Mathematics*. Besides advocating pedagogical practices supported by research on how students learn, the NCTM shared its vision of what mathematics *is*, in part by emphasizing mathematical processes in addition to content. The ensuing controversies became known as the math wars.

The math wars were punctuated by impassioned voices on opposite sides of the debate over school mathematics. Given the intensity of reactions to proposed reforms, and the certainty each side expressed for their perspective, one could wonder if the two sides were discussing entirely different things. In a sense, that may have been exactly what was happening. According to Yannow (2000), individuals perceive policies (such as school mathematics reforms or the CCSSM) in unique ways, their perceptions depending on their beliefs and previous experiences. Yannow described individuals reacting to policies such as the CCSSM as inhabiting *communities of meaning*: groups in which "cognitive, linguistic, and cultural practices reinforce each other, to the point at which shared sense is more common than not, and policy-relevant groups become 'interpretive communities' sharing thought, speech, practice, and their meanings" (p. 10). She described communities of meaning as groups that share common ways of framing a policy that depend on deeper commonalities of experiences, beliefs, or values.

Methods of Study

Given that the critics of school mathematics reforms was likely a composition of different communities of meaning, I had to first identify these communities to understand their positions. The study was conceived, therefore, to explore the motivations and conceptions of individuals who publicly opposed school mathematics reforms and to identify the experiences, affiliations, beliefs, and conceptions of the reforms that shaped the basis for these communities. I used a grounded theory qualitative approach (Corbin & Strauss, 2008) to develop a theoretical description of the beliefs and interpretations that defined the communities of meaning within the larger group of critics.

Noting that critics of reforms during the math wars often connected with each other virtually, I began with critics' written documents that were readily available on the Internet. The initial data led to subsequent collections in order to answer questions that had arisen in analyses. At the conclusion of the study, the data consisted of web pages, documents posted to websites, commentaries, video, PowerPoint documents, books, and journal articles. In all, I analyzed 99 data sources written by 41 authors, which revealed three communities of meaning residing within the population of critics.

Communities of Meaning

I identified and named each community of meaning (Math Traditionalists, Education Traditionalists, and Conservatives) by the primary lens through which its members viewed mathematics and school mathematics reforms. Each of the 41 authors, comprising the subjects of the study, fit into one of the three communities. Within the last year, I followed up on these study subjects' most recent positions regarding the CCSSM. Of those whose opinions could be found, I describe their positions and note that the beliefs that fueled their opposition to school mathematics reforms continue to inform their interpretations and reactions to the CCSSM.

Math Traditionalists. *Math Traditionalists* (MTs) were academic mathematicians whose primary lens was their view of mathematics. The MTs prized mathematical precision, both in definitions and in mathematical discourse. The MTs particularly valued the coherence of mathematics and its internal structure. They believed these inherent qualities lead naturally to a conceptual understanding of mathematics, which the MTs related closely to proof. That is, the MTs believed that students evidence true conceptual understanding when they are able to produce mathematical proof of a procedure. The MTs viewed mathematics as cumulative, requiring the learner to commit to memory previously learned facts and skills, regardless of whether these are completely understood at the time. Eventually, said MTs, these apparently disconnected facts and skills will combine into a sensible system.

The MTs' view of mathematics shaped their interpretation of school mathematics reforms. They claimed the reforms introduced unacceptable levels of ambiguity in the name of "doing mathematics." They also disagreed with arguments that the reforms were necessary to ensure conceptual understanding, insisting that this understanding will develop over time as the student advances in mathematics. The MTs warned that the reforms emphasized non-mathematical objectives in order to ensure equal student achievement and to artificially suggest better student outcomes. They believed that those involved in recommending school mathematics reforms lacked the content knowledge to make good judgements about teaching mathematics. The MTs' overarching concern was that school mathematics reforms were redefining mathematics.

Members of the MT community can now be found on both sides of the CCSSM debate, but the majority of those expressing opinions viewed the CCSSM discussion as a continuation of the math wars. James Milgram stated, "We are hearing exactly the same kind of things now with Common Core as we heard back in the '90s!" (Berry, 2014, para. 23). Wayne Bishop similarly viewed the battle over CCSSM as a continuation of the math wars, stating:

> My conviction is that lots of professional math education 'experts' consider the mathematics portion of the Common Core to have endorsed exactly what they've been preaching for decades. The words about specifying the standard algorithms and deliberately not dictating pedagogy are present but basically BS." (English & Hatfield, 2014, Discussion section, para. 3)

Alternatively, Hung-Hsi Wu supports the CCSSM. Wu's (2011) opinions about school mathematics have not changed since the height of the math wars; indeed, he still criticizes earlier reform attempts. Wu's interpretation of the CCSSM, however, differs dramatically from his MT colleagues, to the point that he has claimed, "It will be a travesty if [the CCSSM] is forgotten. The main difference between these standards and most of the others is that the [CCSSM] are mathematically very sound over all" (p. 3).

In general, the majority of MTs continue their critical stance with respect to the CCSSM. Of the seven MTs expressing opinions, only two currently support it. Notably, both of these supporters were heavily involved in the development of the CCSSM.

Educational Traditionalists. *Educational Traditionalists* (ETs) interpreted the reforms through the lens of their views of education, which corresponded to those of the historical academic-traditionalists (e.g., Adler, 1940; Hutchins, 1936). In their arguments against school mathematics reforms, some ETs scornfully attributed the reforms to educational philosophies espoused by the academic-traditionalists' nemeses: progressive-experimentalists (e.g., Dewey, 1937a, 1937b). Academic-traditionalists highly valued subject matter content, which underlay the ETs' complaint that school mathematics reforms emphasized process at the expense of content. For example, the ETs equated standard algorithmic procedures to mathematical content and objected strongly to what they perceived as a de-emphasis on learning them.

Convinced that the reforms would produce mathematically incompetent students, the ETs expressed concern about disadvantaged students. The ETs believed that although

students from families with intellectual or financial capital had the resources to overcome the failures of schools, the "students who [would] pay the biggest price were those with the least to lose, those for whom the educational system has never worked very well" (Loveless, 2004, Why Important?, para. 1). The ETs' beliefs about teaching and learning were a product of their perspective about human nature, and were therefore highly integrated with their belief systems.

Of the ETs whose opinions could be found, a majority (5 of 6) continue their critical stance with respect to the CCSSM. The lone supporter, E. D. Hirsch (2013), has focused more on language arts than mathematics; yet, he has extended his support to the CCSSM, arguing that its explicit delineation of subject matter represents a vast improvement over previous standards. Hirsch disassociated the CCSSM from the pedagogical practices of prior school mathematics reforms, claiming that the standards "indicate what should be taught in ELA/literacy and mathematics. They do not dictate pedagogy" (para. 14). A fellow ET disagreed, however, arguing that the CCSSM is not neutral with regard to pedagogy. According to Vander Hart (2014), Barry Garelick stated:

> I believe that CC math, while not dictating particular teaching styles, has thrown gasoline on the ideological fire that has been raging for slightly more than two decades in education. I am referring to what is known as "reform math." (para. 3)

The United States Coalition for World Class Math (2012), a collection of ETs, also associated the CCSSM with the math wars. They argued that educational seminars designed to educate teachers and other stakeholders about the CCSSM have focused on the Mathematical Practices rather than the content standards. This focus, they claim, is similar to the NCTM's focus on mathematical processes, which they oppose.

Conservatives. *Conservatives* (CVs), a unique subset of political conservatives, viewed the school mathematics reforms through the lens of a worldview that emphasized good and evil, as well as humankind's innate propensity for the latter. They

operated from the perspective that social institutions must be structured to account for this propensity. They asserted the existence of absolute truth, our ability to discern it, and the necessity of living according to it.

The CVs believed school mathematics reforms were a product of a worldview counter to their own. To the CVs, the reforms represented a rejection of their fundamental beliefs and value systems and a subtle yet perhaps effective attempt to indoctrinate children into liberal ideology. Notably, the CVs associated terms such as *multiculturalism*, *social justice* and *diversity* with this oppositional worldview and interpreted these terms simply as code for liberalism. The CVs primarily directed their criticism of school mathematics reforms toward the motivations for them, as opposed to specifics related to pedagogy or content. A deep suspicion of these motivations was usually behind any targeted criticisms. For example, the CVs were troubled by the suggestion that correct answers are less important than mathematical processes. Not only did this appear counterintuitive to them, they associated this position with a rejection of absolute truth.

Of the 18 CVs in my original study, I was only able to ascertain the positions of six with respect to the CCSSM. Without exception, the CVs were critical, using language similar to that used to address previous school mathematics reforms. For example, Michelle Malkin (2013) encouraged her readers to oppose the CCSSM, writing, "For decades, collectivist agitators in our schools have chipped away at academic excellence in the name of fairness, diversity and social justice… Common Core is rotten to the core. The corruption of math education is just the beginning" (para. 14-15).

With respect to the math wars, the CVs and the ETs found the arguments of the MTs compelling because they viewed mathematicians as expert in determining the content for school mathematics. To the CVs and ETs, the mere existence of the MT faction was more powerful than the educational research supporting reforms.

From Understanding to Advocacy

In this commentary, I am intentionally withholding my personal opinion of the CCSSM. I readily admit, however, to being a strong supporter of the school mathematics reforms at the center of the math wars. As evidenced in the prior discussion, some critics of reforms view the CCSSM as a continuation of the math wars while others do not. If you hold a strong opinion of the CCSSM, you have your own interpretation of what it promotes, produces, and assumes. You may be surprised, however, by the different interpretations of the CCSSM held by others, as well as by the bases of these interpretations. I claim you can make a stronger case for your position regarding the CCSSM if you attend to the views of your opponents. In doing so, you position yourself to frame your arguments using language with which the opposition can identify. Furthermore, you may be able adapt your arguments to changing conditions or circumstances and leverage your understanding in future debates over school mathematics. I offer myself as a case study for this claim. In particular, I have experienced these benefits in my work as an advocate of school mathematics reforms because of the understandings I gained about their critics.

In my role as a K-12 mathematics teacher educator, I have been able to interpret some student questions or comments about school mathematics reforms as indicators of understandings similar to one of the communities of meaning from the study. In particular, I have encountered students who express beliefs similar to those of CVs and ETs. Having an understanding of the primary lenses of these communities, coupled with my certainty that school mathematics reforms do not violate their values or beliefs, has enabled me to address their concerns within a framework and using language with which they relate. The results are often frank discussions and, sometimes, an invitation into students' thought processes as they question what they believed about teaching and learning mathematics.

Occasionally, however, a student is unconvinced by my arguments for school mathematics reforms. In these cases, I

can at least leverage the insight I gained to prevent a strong oppositional voice from permeating the larger group. By avoiding language that I know may be misinterpreted (e.g., describing social justice rather than using the term) and by addressing concerns before they can be expressed, I have, thus far, avoided whole class mutiny (at least in the long term) and its more insidious cousin, mindless repetition of what students assume I want to hear.

The debates over school mathematics has now shifted to the CCSSM and the arguments, both in support and against, are probably different than those I use to support school mathematics reforms. Developing a strong argument requires developing a deep understanding of the opposition. Some may complain that developing such understandings requires effort they can little afford, especially if they believe the CCSSM will not endure. If the CCSSM is abandoned in the near future, however, I believe the effort spent understanding those with whom you disagree will continue to be relevant in the next iteration of debates over school mathematics. I too have found that my earlier work to understand critics of the math wars continues to be relevant in the current debates. As is evident from the reactions to the CCSSM by critics of earlier school mathematics reforms, individuals' conceptions of previous reforms influence their interpretations of subsequent reforms. The understandings I developed of the critics of school mathematics reforms has given me insight into the reactions of some individuals with respect to the CCSSM and has increased my political acuity. For example, I am able to comprehend the CCSSM developers' political reasons for including particular mathematicians in the development process. I also understand why one mathematician who refused to support the final product—James Milgram—is cited by many critics of the CCSSM (e.g., Malkin, 2013; Stotsky, 2014); as was seen in the math wars, the existence of critics who are mathematicians is sometimes given greater weight than empirical evidence. As another example, I have been able to objectively explain why some actions of CCSSM advocates have garnered unwelcome reactions. In 2013, while introducing parents to instructional changes supposedly driven by the CCSSM, a curriculum

coordinator innocently suggested that the quality of a students' reasoning is more important than obtaining the correct answer (Owens, 2013). A video clip of her presentation subsequently went viral on conservative social media, attracting ridicule and criticism. The curriculum coordinator may have predicted this extreme reaction if she had known that CVs view a de-emphasis of correct answers as evidence that educators are promoting moral relativity. With this perspective, she may have avoided the unwanted social media attention by emphasizing the importance of attending to student thinking *in addition* to obtaining the correct answer. As evidenced by these examples, the benefits of developing a deep understanding of the opposition does not necessarily end once the debates have subsided.

Although an understanding of the past critics of school mathematics reforms offers insight into the current debates, critics of the CCSSM are not confined to those who have opposed earlier reforms. Indeed, some supporters of previous school mathematics reforms have opposed the CCSSM (e.g., Gutstein, 2010; Rheannon, 2015). Conversely, one cannot assume that CCSSM supporters hold a positive view of NCTM and its positions towards school mathematics. Thus, as I observed for the math wars, critics and supporters of the CCSSM are likely composed of multiple communities of meaning. My experiences support the claim that to become an effective advocate for your position, whether that be as a critic or supporter, an understanding of the viewpoints and fundamental motivations of the opposite side is beneficial. The effort will help you develop a stronger argument now and follow you into future work as an advocate for effective school mathematics policies.

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