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BOOK REVIEW

Viewing "Others" as Mathematicians: A Book Review of *Inventing the Mathematician: Gender, Race, and Our Cultural Understanding of Mathematics*[1]

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Whenever I read, I am continually searching in the text for representation of myself (a Black, Jamaican American woman), my children (two daughters), or diversity in some other form. Therefore, when I received a copy of the book *Inventing the Mathematician: Gender, Race, and Our Cultural Understanding of Mathematics*, I was excited to learn from Sara Hottinger's (2016) perspective how mathematics relates to gender, to race, and to society, and just where I might be situated. Hottinger—a Professor of Women's and Gender Studies at Keene State College, New Hampshire—contends that Western mathematical subjectivity is largely male, White, and Western, and is constructed in ways that limit access to select groups of people. She details who gets to engage in mathematical knowledge and the mediums that reinforce the Western ideal of a mathematician. Hottinger claims that in our culture both mathematical subjectivity and feminine subjectivity are understood to be mutually exclusive. Throughout the book, Hottinger examines who gets to represent the subject position of mathematician and the varying ways that the single interpretation of who is a mathematician continues to be reified through the media, history of mathematics textbooks, and the field of ethnomathematics.

The issue of exclusion from the subject position of "mathematician" based on gender and racial biases is not new. Hottinger (2016), however, provides specific instances which confirm that we are still looking for Einstein as textbooks continue to perpetuate patterns and images that dictate who can be a mathematician and who has the authority to be a doer, knower, and producer of mathematics. She explains how the media plays its role in who gets to represent the subjective character of a mathematician by using actress, author, *and* mathematician Danika McKellar's mathematics textbook as an illustrative example. Moreover, she examines how eth-

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nomathematics did not disrupt Western mathematics but rather added to the discourse of its subjectivity. hooks (1994) critically critiques the idea that "from grade school on, we are all encouraged to cross the threshold of the classroom believing we are entering a democratic space—a free zone where the desire to study and learn makes us all equal" (p. 177). Similarly, Hottinger's analyses throughout the book speak directly to just how unfree and unequal Western mathematics knowledge is and who gets to enter this supposedly "democratic" space.

A Closer Look at the Chapters

There are six chapters in all, each designed to support Hottinger's (2016) mission to identify different domains where mathematical subjectivity is constructed and to explore the "limited and problematic nature of that construction" (p. 163). In chapter 1, "Introduction," Hottinger explains her mathematics journey and introduces readers to what the book offers. The chapter details her plan to discuss where and how we get our ideas about mathematics and who gets to engage in mathematical knowledge. She discusses the participants, the limitations, and the gender issues that are significant to society's acceptance of who is a mathematician. Hottinger outlines the four themes or areas of exemplification for how we come to understand mathematics—mathematics textbooks, history of mathematics, portraits of mathematics, and the field of ethnomathematics. Each area is discussed in depth in chapters 2 through 5, respectively.

In chapter 2, "The Discursive Construction of Gendered Subjectivity in Mathematics," Hottinger (2016) discusses the construction of mathematics subjectivity in the area of gender. She addresses the gender dynamics in mathematics, the limitations placed on women and girls generally, and the idea that women and girls *do* mathematics while men and boys are *natural* at mathematics. She demonstrates the media's struggle and cultural inability to connect mathematical success with femininity. Hottinger supports her argument by applying Valerie Walkerdine's scholarship that shows how Western mathematical subjectivity has been constructed as masculine. In other words, Walkerdine's scholarship illustrates the construction of a normative mathematical subjectivity that excludes more than half of the world's population, which presents a struggle for girls and women to be seen as mathematicians. The mathematics work of actress, author, and mathematician Danika McKellar is a "real-world" example that Hottinger uses to support her claim of this struggle. She reasons that the media's constant referrals to McKellar as "Winnie Cooper" during her book release privileges her past as a child actress rather than recognizing her as a mathematician. Hottinger's argument that McKellar's media portrayal as a child prodigy rather than as someone who changes our cultural understanding of gender and mathematics serves two purposes: (a) that McKellar's femininity is hid-

den behind her childlike qualities, and (b) that McKellar's being a prodigy serves as the excuse for her mathematical success.

In "Mathematical Subjectivity in Historical Accounts," chapter 3, Hottinger (2016) contemplates the ways that history of mathematics in textbooks normalizes how we come to know mathematical subjectivity. Hottinger describes how authors of mathematics textbooks function as both a subject and a subject producer in some capacity. Historical textbooks encourage us to understand ourselves, and how we understand the world in which we live. She argues that the approach textbooks authors often apply to the history of mathematics further reinforce the "White male math myth" (Stinson, 2013, p. 69). Hottinger contends that internalist textbooks limit the history of mathematics by erasing any identifiable subjects of who gets to engage or produce mathematical knowledge. Applying Michel Foucault's notion of deconstructing the "author," Hottinger demonstrates that the author (as well as the reader) is positioned as the mathematical subject. In other words, for Foucault, according to Hottinger, "the figure of the author functions to regulate the proliferation of meaning by limiting who is allowed to speak and what is allowed to be said" (p. 66). Hottinger explains that the externalist versions contextualize historical textbooks creating, in turn, who gets to be the normative mathematical subject. The difference is that some textbooks reify the normative discourse of maleness and whiteness, while others challenge these discourses.

Similarly, in chapter 4, "Portraiture and Mathematical Subjectivity," Hottinger (2016) makes another attempt using portraiture to demonstrate how the images in the history of mathematics determine who has authority or can be a doer of mathematics. Mathematical portraiture, she argues, serves "an important discursive function that connects mathematics to the gendered and racialized ideals of Western individualism and rationality" (p. 91). In short, the mathematical portraits in textbooks provide the visual that further normalize our cultural understanding that mathematics is a masculine and White male subject. Hottinger contends that mathematics textbooks depict more images of men than women and portray boys as active and engaged versus girls as passive and disengaged. Furthermore, illustrations in mathematics textbooks such as stamps and portraits support Western ideology that typically exclude non-Whites, non-Westerns, and women, even by those textbooks that try to convey a different message. Too often students of color and female students are denied this portraiture opportunity; that is, they are denied the opportunity "to see" themselves or "to be seen" by others in mathematics textbooks as doers, knowers, and producers of mathematics.

In "The Ethnomathematical Other," chapter 5, Hottinger (2016) considers the role that ethnomathematics plays in constructing and maintaining Western mathematical subjectivity. Hottinger explains that ethnomathematics is a type of "research program committed to critiquing the dominant discourse that constructs Western mathematics as *the* mathematics, a singular mathematics that is both uni-

versal and value-free" (p. 125). She argues that as a form of anthropology that still produces the mathematical subjectivity as male and White, ethnomathematics did not disrupt Western mathematics as intended but rather emphasized the discourse of its subjectivity. For instance, Hottinger explains that the decision to include mathematics as part of Western curriculum is made by the researchers rather than by the people being studied in ethnomathematics research. Furthermore, ethnomathematics researchers are rarely reflexive about their subjectivity and that the researchers yield power that is not always aligned with the culture they study. She claims that although the motive behind ethnomathematics research is noble, it is not enough in theory and only further supports Western mathematical subjectivity as superior.

Finally, in chapter 6, "Conclusion," Hottinger (2016) rationalizes that unlike the noticeable stereotypes of girls' mathematical ability, racist stereotypes are not as overt in popular culture, though they do exist. She states, "those who are Othered in the West are also Othered in mathematics" (p. 163). The Others who are excluded in this case Hottinger describes are not feminine and non-Western. Still, the construction of Western culture's mathematical subjectivity is, in a way, one that excludes marginalized groups from seeing themselves as mathematical doers, knowers, and producers.

Critiques and Closing Thoughts

A major critique of the book: "race" is not brought to the foreground. Hottinger's (2016) argument made throughout the book would have been improved, I believe, if she had included a separate chapter on race, rather than discussing race as part of the conclusion—somehow as a footnote. Given that the sub-title of the book—*Gender, Race, and Our Cultural Understanding of Mathematics*—explicitly lists race, a distinct chapter focusing on race seems appropriate. In other words, a chapter that spoke on the impact Western mathematical subjectivity has on race, similar to the chapters on gender and our cultural understanding, would have strengthened her overall argument. According to Hottinger, "through constant repetition and via a variety of discourses, we continually assert that women cannot be mathematicians, that people of color cannot succeed in mathematics" (p. 163). Given that "women" who are "of color" are situated within two distinct and intersecting spaces and in both spaces are not considered mathematical subjects, the scholarship of authors such as Patricia Hill Collins (e.g., 1989) and Kimberlé Crenshaw (e.g., 1991), which examines the complex intersections of race and gender, could have assisted Hottinger in identifying the mathematical experiences of women of color and their omission from the construction of Western mathematical subjectivity. In not addressing race explicitly, Hottinger missed an opportunity to include discussions on Black feminist thought all the while using Black women scholars to

demonstrate how intersectionality of Otherness regarding race, gender, and ethnicity are dismissed from Western mathematical subjectivity.

Hottinger's (2016) argument that Western mathematical subjectivity is gendered masculine and assumed White is a counter-narrative to my mathematical identity as a Black woman. As someone who regularly navigates the intersections of being Black, a woman, and one who speaks with an accent, Hottinger's argument highlights some of the subtle messages that we receive about how someone like myself is possibly viewed or not viewed as a mathematician. When (school) mathematics is presented to students, we should be aware that its history, the images, the textbook authors, the educators, and the learners are all subjects of the construction of Western mathematics. Hottinger draws attention to the fact that there is more work to be done to make the representation of Western mathematical subjectivity more inclusive of Others.

Hottinger's (2016) argument that mathematics and femininity are presented in Western culture as mutually exclusive makes me wonder: when will there be a society that provides "an alternative vision on who has engaged and who can engage with and produce mathematical knowledge" (p. 87)? Hottinger's point about who is represented as the subject in mathematics gives us much to consider given that statistically women outnumber men in college (Ryan & Bauman, 2016). The messages in the book provide understanding into my own children's mathematical subjectivity and help explain how they are situated in the discourse. Hottinger also has two daughters, who like mine, are presented with images, clothing, and books that most often convey feminine subjectivity and mathematical subjectivity as mutually exclusive.

In the end, reading Hottinger's (2016) book gave me hope that scholars are conveying the message that mathematics is still considered masculine and that we as beneficiaries have much work to do so that my children (and others who look like them) are no longer positioned in mathematics textbooks or the classroom as passive learners of the subject. The more stakeholders become aware of the issues that Hottinger highlights throughout the book, the better chances our children have to be part of a culture where neither their gender, their race, nor their ethnicity is used to judge their mathematical ability.

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