

BEARING WITNESS TO MATHEMATICAL GHOSTS: THE ETHICS OF TEACHERS SEEKING JUSTICE

Grace A. Chen
Vanderbilt University
grace.a.chen@vanderbilt.edu

Common mathematics education practices such as valuing speed and accuracy over creativity and reflection often cause mathematical trauma. Once established, this trauma haunts students, their teachers, and even a researcher in future mathematical experiences, calling for recognition and for a justice that can only be found through transformative engagement. This study integrates sociological theory, poststructural methods, and empirical data from an ethnographic study of veteran mathematics teachers to explore how teachers enact ethical relations by bearing witness to students' mathematical ghosts and, in doing so, make possible a more just future.

Keywords: social justice; marginalized communities; affect, emotion, beliefs, and attitudes

Common mathematics education practices such as tracking, valuing speed over reflection, and assigning repetitive procedural homework constitute a “slow violence” (Gutiérrez, 2018, p. 3) that (re)marginalizes students who have historically been marginalized in mathematics education due to racism and other forms of oppression, in part by denying students’ agency (Lange & Meaney, 2011). Students who have been repeatedly subject to such mathematical violence carry trauma resulting from their prior experiences and also from the “ongoing, accruing impact and consequences of social malignancies such as racism” (Dutro & Bien, 2014, p. 23). In mathematics classrooms, then, “the past haunts the present” (Gordon, 2008, p. viii). If this is the case, how can mathematics teachers engage in ethical response? In other words, how ought they attend to the lasting impact of traumas perpetuated on students by hegemonic forms of mathematics teaching and learning within an already oppressive society?

Conceptual Framework: Haunting

In this paper, I view haunting as an apparition of students’ mathematical trauma. Many scholars have probed the presence of ghosts in public schooling (e.g., Ewing, 2018; Lawrence-Lightfoot, 2003); here, I follow Gordon’s (2008) framing of ghosts as “one way in which abusive systems of power make themselves known and their impacts felt in daily life, especially when they are supposedly over and done with” (p. xvi). In Gordon’s conceptualization, ghosts call out for justice: for the damage that has been done by abusive systems of power to be addressed, not because it can be undone, but in order to “en[d] this history and se[t] in place a different future” (p. 66). In mathematics, then, ghosts might call out for transformative ways of teaching and learning that are no longer traumatizing, violent, or marginalizing.

Methods: Greeting the Ghost

The data for this study were collected ethnographically in a high school serving almost exclusively Latinx students eligible for free-and-reduced-price lunch. I followed two veteran mathematics teachers, Franck and Clark (all names are pseudonyms), in their Algebra 1 classes for one week each month across a full school year, taking extensive descriptive fieldnotes and writing in-process memos (Emerson et al., 2011). Since subjectivity is inevitable in qualitative research, I positioned myself as a partner for brainstorming and reflecting rather than minimizing my role, and was welcomed “as an outsider and as an insider” (email from Clark, 2/2019).

As I observed, I was struck by the frequency and force with which Franck and Clark named a teacher who had taught many of their students the previous year: Mr. Montoya. Mr. Montoya's ghost first appeared to me in October, when, in an interview about building relationships with students, Franck repeatedly cursed Mr. Montoya for "the damage that he did to these kids." According to students, Mr. Montoya's pedagogy included requiring them to memorize conventions of mathematical notation regardless of whether they made sense, randomly calling on students, and shaming them for not having immediate correct answers; in an interview, a student explained to me that "he kept on trying to make us better each time but in a way that would make us feel like we weren't good." Mr. Montoya may have intended tough love but nevertheless created a mathematical culture of exclusion (Louie, 2017) through hegemonic practices that are especially routine in classrooms with marginalized youth (Gutiérrez, 2018).

Mr. Montoya's ghost provoked strong affects throughout the school year, illustrating the "living effects, seething and lingering, of what seems over and done with" (Gordon, 2008, p. 195). Despite no longer being in his class, students brought him up unsolicited when I asked them about their *current* mathematics classes, saying he was "rude," "really bad," and "he would pick on me." He haunted teachers' interviews and collaborative meetings: Franck called his methods "public abuse," Clark mentioned "kids that hate him," and another teacher, Abigail, said that hearing them talk about him made her both "want to cry" and "fight." As a researcher, I felt constantly alert to his name or the mere possibility that someone might be referring to him. As an instantiation of both the individualized and structural trauma carried in mathematics classrooms, Mr. Montoya's ghost offers an analytic opportunity to examine 1) how students, teachers, and researchers are haunted by histories of oppressive mathematics education, and 2) how we can reckon with ghosts as "pregnant with unfulfilled possibility" for change (Gordon, 2008, p. 183).

To greet the ghost of Mr. Montoya, I engaged in Jackson and Mazzei's (2012) "thinking with theory," reading theoretical perspectives and empirical data through analytic questions derived from and tied to both. The entangled nature of this method presses against forms of research that seek to classify and determine truths after data collection is "complete," instead honoring the ambiguous and emergent nature of any possible "truth." To do so, I attended to the "*flow and arrest of thoughts*" (Gordon, 2008, p. 65, italics original) in students' and teachers' talk to identify Mr. Montoya's presence, looking for "how a person translates his or her experience of historical trauma across time and space" (Zembylas, 2006, p. 315). I sought moments of wonder and surprise (MacLure, 2013) experienced by those haunted—students, teachers, and myself as researcher—rather than moments of clarity. I used these moments to examine what is known and what counts as reality, thus allowing ghosts to speak.

Preliminary Findings: Bearing Witness to Mathematical Ghosts

How does one listen when ghosts speak? Gordon (2008) suggests that by haunting, ghosts are "leading us somewhere... [calling for] something to be done" (p. 205), and that exorcising ghosts requires attending to their insistence on a future that is more just than the past (Yoon, 2019). Those who see hegemonic practices of teaching and learning mathematics as violent, then, are called by mathematical ghosts to *do* something. Zembylas' (2006) draws on Kelly Oliver and others to articulate "witnessing as an affective practice [and] an ethical and political project" (p. 316); I use this theorization to describe the somethings that Franck and Clark *do*. First, I present how Franck and Clark bear witness to mathematical ghosts by "see[ing] Others with loving eyes that invite loving response" (Oliver, 2001, p. 19). Then, I illustrate how they "wor[k] through rather than merely repeating the blind spots of domination" (Oliver, 2001, p. 218), being vigilant against the injustices that cause mathematical ghosts to appear (Zembylas, 2006).

Seeing Others with Loving Eyes. In the “state-sanctioned violence” (Yoon, 2019, p. 421) of public schooling, students who do not meet participation expectations are typically viewed as off task, disengaged, or noncompliant; as a researcher who has observed in hundreds of mathematics classrooms, I have seen many teachers react to students this way, and many students accustomed to this treatment. Both I and students, haunted by these assumptions, were consequently *arrested* when these assumptions were subverted. For the sake of space, I offer two brief examples from my data. First, when a student was unprepared to answer a question that Franck had given students ample time to answer independently and also discuss in their groups, Franck responded: “Oh you didn’t have enough time. My bad.” Similarly, when Clark noticed that several students had left blank his request for comments on a homework assignment, he said to the class, “I don’t think you were being lazy. Maybe you just forgot and that’s fine... it would be great if you left me two comments today but you don’t have to.” Mathematics classrooms are haunted by the assumption that students who do not participate how teachers expect them to are deficient. Franck and Clark challenged this so-called reality by offering generous interpretations that saw students with loving eyes instead of recycling damaging assumptions about them. In doing so, they opened up opportunities for future connection and reciprocity (Dutro & Bien, 2014).

Working Through Rather Than Repeating Domination. Franck and Clark, respectively, wanted students to have “an enjoyable five hours [each week]” and to “be at ease in my class.” As a result, they grappled with whether particular pedagogical practices would contribute to or undermine this desire, even and especially those taken for granted as commonsense (Kumashiro, 2014) in other mathematics classrooms. Although they discussed many practices, here I share how they considered their participation expectations for students in light of mathematical ghosts summoned both in the guise of Mr. Montoya and by contemporary equity discourse.

Calling randomly on students to answer questions has long been commonsense practice in mathematics classrooms. Like many of their predecessors across decades and classrooms, several of the students I interviewed were haunted by memories of Mr. Montoya requiring that they stand at the whiteboard, in front of waiting classmates, until they could produce a correct answer. Clark bore witness to these mathematical ghosts, accounting for students’ experiences and affects—what he called their “anxiety”—by offering ways for students to demonstrate their interest and ideas without repeating this exercise of teacher power:

If you don’t want to share [with the whole class], you can raise your hand and share with me as I’m walking around... you don’t have to share in front of the class to get points... I don’t want you to share for points; I want you to share for love. (classroom observation, 8/2018)

Ethics, however, demands engagement with the uncertainties and complexities in teaching. Upon hearing that one of their students associated being “randomly pick[ed] on” with “the way [my teacher] trusts me” in an interview that I conducted, Franck and Clark negotiated their surprise around how students interpret their actions (collaborative meeting, 2/2019):

Clark: This is interesting: ‘because he really trusts you.’ That’s interesting. I would hesitate to pick students because I think they would feel—that’s an interesting correlation, right?

[Clark asks if I’ve seen comments like this before; I say I found it interesting too.]

Franck: When you are doing the task, you are not particularly looking to solicit an answer, you’re soliciting their thinking. ‘Whatever you say is correct, even if it’s wrong. It’s okay, just tell me what you’re thinking. You can’t think wrong, even if the answer is wrong.’ If we didn’t do those things and if the problem has one answer and the kid says the wrong answer then they’ll feel bad for being wrong...

Clark: I don’t call on them randomly.

Franck: But you don’t particularly call them for the ANSwer

Clark: No, I avoid that.

Franck: 'Cause there's no point.

Clark: I would rather not you contribute to the result. Maybe, the process, or something, contribute to the process. Is just as important as contributing the result. So you trust them to contribute is maybe the way it could be seen. You're basically saying, like, the kids feel like you trust them to contribute something to the class. That feels like agency to me.

Asking students to publicly share answers is a common ritual in mathematics classes (Mehan, 1979) and a traumatizing one in classrooms like Mr. Montoya's, but structured groupwork can also provide equitable access to mathematical learning opportunities (Cohen & Lotan, 1997). Even so, Franck wondered if insisting that students perform in specific ways repeats domination:

I'm not sure if I'm sold on the fact that we need to make all the students in our class talk to each other... I'll listen to the kids but I know like [student name] or certain kids in my class they don't want to talk out loud and I don't want to force them to. The philosophical questions I'm trying to reconcile are: what people are doing in their classrooms that's deemed as equity and access [e.g. making students talk], to me it just seems annoying and you're forcing it upon the kids... I'm still reconciling a lot of things. (interview, 2/2019)

Mathematical ghosts summoned by pedagogical practices taken for granted in both hegemonic and equity-oriented mathematics classrooms make students feel (uncomfortable, trusted, coerced) when teachers require them to speak in front of their classmates. Franck and Clark heed the affective hauntings of these ghosts and the power dynamics that they signal by contending with what forms of student participation they value and why, thereby starting to build towards a less traumatic, more transformative version of mathematics education.

Discussion: Stretching Toward the Horizon

Mr. Montoya is a named ghost who haunted Franck's and Clark's Algebra 1 classrooms during the school year I observed. He is also a stand-in for unnamed mathematical ghosts across contexts whereby students and teachers are haunted by histories of racialized oppression in public schooling, histories of hegemonic mathematics education, and their own personal histories of traumatizing mathematics experiences. I have begun to illustrate how Franck and Clark bear witness to mathematical ghosts by seeing their students with loving eyes and by working through rather than repeating domination. What happens when teachers bear witness to mathematical ghosts, rather than perpetuating the "abusive systems of power" that give rise to ghosts in the first place? I suggest that Franck and Clark are adopting an ethical stance in seeking to remedy past injustices by negotiating an alternative vision of mathematics education. The presence of mathematical ghosts attunes them to the violence done to students by hegemonic forms of mathematics education, and by transgressing—by attending to ghosts that might otherwise be ignored—they make possible a future that is different from the past.

Acknowledgments

This material is based upon work supported by the National Science Foundation under Grant Nos. DRL-1620920 and DGE-1445197. Any opinions, findings, conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation. I also thank Irene Yoon for suggesting I read Avery Gordon.

References

- Cohen, E. G., & Lotan, R. (1997). *Working for equity in heterogeneous classrooms: sociological theory in practice*. New York, NY: Teachers College Press.
- Dutro, E., & Bien, A. C. (2014). Listening to the speaking wound: A trauma studies perspective on student positioning in schools. *American Educational Research Journal*, 51(1), 7–35.

- Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic field notes* (2nd ed.). Chicago, IL: University of Chicago Press.
- Ewing, E. (2018). *Ghosts in the schoolyard: Racism and school closings on Chicago's south side*. Chicago, IL: University of Chicago Press.
- Gutiérrez, R. (2018). The need to rehumanize mathematics. In I. M. Goffney & R. Gutiérrez (Eds.), *Rehumanizing mathematics for Black, Indigenous, and Latinx students* (pp. 1–10). Reston, VA: National Council of Teachers of Mathematics.
- Gordon, A. (1997). *Ghostly matters: Haunting and the sociological imagination*. Minneapolis, MN: University of Minnesota Press.
- Jackson, A. Y., & Mazzei, L. A. (2012). *Thinking with theory in qualitative research: Viewing data across multiple perspectives*. New York, NY: Routledge.
- Kumashiro, K. K. (2004). *Against common sense*. New York, NY: Routledge.
- Lange, T., & Meaney, T. (2011). I actually started to scream: Emotional and mathematical trauma from doing school mathematics homework. *Educational Studies in Mathematics*, 77(1), 35–51.
- Lawrence-Lightfoot, S. (2003). Ghosts in the classroom. In *The essential conversation: What parents and teachers can learn from each other* (pp. 3–41). New York, NY: Ballantine Books.
- Louie, N. L. (2017). The culture of exclusion in mathematics education and its persistence in equity-oriented teaching. *Journal for Research in Mathematics Education*, 48(5), 488–519.
- MacLure, M. (2013). Classification or wonder? Coding as an analytic practice in qualitative research. In R. Coleman & J. Ringrose (Eds.), *Deleuze and research methodologies* (pp. 164–183). Edinburgh, UK: Edinburgh University Press.
- Mehan, H. (1979). *Learning lessons: Social organization in the classroom*. Cambridge, MA: Harvard University Press.
- Oliver, K. (2001). *Witnessing: Beyond recognition*. Minneapolis, MN: University of Minnesota Press.
- Yoon, I. H. (2019). Haunted trauma narratives of inclusion, race, and disability in a school community. *Educational Studies*, 55(4), 420–435.
- Zembylas, M. (2006). Witnessing in the classroom: The ethics and politics of affect. *Educational Theory*, 56(3), 69–84.