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Violence in un-rooted mathematics

YASMINE ABTAHI, DAVID WAGNER

Yasmine: Let's think about how mathematics is extracted from the life experiences of people and how claims of universality may be a violence that perpetuates social injustice. From where did mathematics get such power to possibly perpetuate social injustice?

Dave: All systems of human action (all discourses) are in some ways violent. Gandhi wrote in multiple contexts that to live is *hisma* (violence). When I inhale, I take oxygen that someone else might take. When I eat, I eat what someone else might eat. Like Gandhi, I wish to commit myself to *ahimsa* (non-violence). This non-violence cannot be achieved, but it is a worthwhile quest. I want to find ways of making my mathematics less violent, but it is important to acknowledge that there is violence in mathematics, and thus that this violence need not dissuade us from doing mathematics.

How is mathematics violent? Generally speaking, mathematics comprises moves to abstraction in the domains of number, measurement and position/location. Any time I abstract, I am dismissing important contextual particularities that are fundamentally connected to the "truth" that I am extracting. Fasheh (2015) beautifully connected this process to the extraction of sugar, which is present in all food. When we extract it and try to make it pure, it becomes poison. This is true of mathematics and of sugar. I think abstractions are powerful and potentially good in some ways, but we have to remember that they are born in the act of dismissing and ignoring context—it is *willful ignorance*.

How do you see violence in mathematics? What experiences have you had that have inclined you to pay attention to this aspect of mathematics?

Yasmine: Sometimes a less-context-based tool has more power over tools that are more context sensitive: for example, a chicken factory over a chicken farm or the worldwide banking system over local economies. I see this "power of abstraction" as a power that leads to producing more, faster, and *the same*. If mathematics becomes less-context-based and less situated in local communities, then it gains a power of abstraction. As seen, for example, with the power of the international banking system, such power can perpetuate social injustice. And as you put it, mathematics may become violent.

But this is different from if and how I have seen violence in mathematics. I do not see violence in mathematics, as I rarely see violence in any act of living. I have a more peaceful view of living, of humans, and of nature. As a Being of my history and culture, I believe what makes me useful to others and to my place is to be *neek* (possibly translated as good). "Neek in Thoughts, in Words, and in Deeds" (*The Zend-Avesta, The Gathas, Zoroaster*, 617 BCE). The word *neek* in Persian has a deeper meaning than the word good.

An action or a thought that is *neek* carries within it the wisdom of the doer. It is not a right-doing or wrong-doing, it is useful and wise-doing.

So I ask, is mathematics *neek* in what it does to our Thoughts, our Words and our Deeds? If the situatedness of mathematics is ignored, is it still wise and useful?

Dave: There are connections between the privileging of abstraction and an increasingly global society. A Mi'kmaq elder once described to me how her mother had asked her to fetch potatoes from the garden. I expected her to say that her mother had asked for a certain number of potatoes, but instead her mother said "enough" with a gesture indicating volume. Potatoes in a garden are not standard in size, so it makes no sense to ask for seven potatoes (or another number). We grade potatoes so that there is some standard sense of understanding of the amount we are pricing or buying. However, standards always reflect dominance and privilege. Why do we use kilograms or Arabic numerals?

Your question, "Is mathematics *neek*?" feels like this: "Is speaking *neek*?" I am inclined to think that there are *neek* ways of doing mathematics, and *neek* ways of speaking. Similarly, there are violent mathematics and violent utterances. I see mathematics in the same category as speech, positioned as relatively neutral. However, I wonder if mathematics might be fundamentally violent, characteristically violent, characteristically *neek*, or fundamentally *neek*. Nevertheless, I think the most important question to consider is how to do mathematics with more good and less harm. What specifically do you see as potentially harmful and potentially good/*neek* in mathematics?

Yasmine: I think your question relates to my previous question—enquiring if what mathematics does to our Thoughts, Words and Deeds is *neek*. I go back to what, I think, makes many other aspects of our being *neek*: our roots and our root-ed-ness. To clarify, I again borrow from old Persian thoughts. In *Masnavi-e Ma'navi*, Molavi (1253) described living as a drawing compass. He explained that one leg of the compass is fixed and rooted in a certain place. Yet, the other leg moves, drawing circles around the rooted leg. That is, in our living we have a part that is strongly based in our local root (our cultures and history) and a part that moves to connect to others, to feelings, places, cultures and people.

To me, a kind of mathematics that is *neek* is a mathematics that, as Fasheh (2015) put it, is embedded in the soil of culture. It is one that is rooted in the needs and values of local communities. I see mathematics that wishes to abstract and standardize as possibly harmful to us, to nature, to places, local cultures and most importantly to our children who are growing up with a leg strongly rooted in their local culture, history and beliefs. What do you think? How can we aim towards a more rooted mathematics?

Dave: My sense is that dangerous abstractions are ones in which the whole compass is picked up and moved somewhere else. There is no longer any sense that the ideas or ways of seeing are rooted in any particular place, or that they even come from a particular place. I would think that a lot of people (probably most people) think of mathematics as the compass; whereas I see mathematics as the act of using the compasses. Compasses are meaningless or useless without

fixing a point, so the centre of a circle is central to the act of using compasses. I see human intention: choosing a point to position the fixed arm and a radius to construct something that can be used or appreciated in a context. It is hard for me to think about how others who love the compass itself may think differently, even though I was probably one of those people some years ago. I think they (and myself decades ago) loved how we could make the same circles anywhere. We loved transposing a shape or idea in many places, and so we loved the shape/idea more than the place. Now I try to love the place and the people more than the idea. I ask how particular people in a particular place may use the compass (mathematics) for their utilitarian or aesthetic purposes. What do you say about how we can move ourselves and others toward a more rooted mathematics?

Yasmine: Our roots grow stronger as we get to be with others, as we experience, reflect and try to make sense. Every community, aside from beautiful values, has its needs and concerns. A mathematics that helps people talk about, think about, and address their local issues and values is a *neek* and rooted mathematics. Moving ourselves (and others) is a journey with duties. I think our first duty towards a more rooted mathematics is to not only notice and observe, but also to value cultures and histories of ourselves and of others. And our second duty is to build on what we observe and value.

References

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Realizing social justice in mathematics education through attending to us

NATASHA DAVIDSON

We came together—people wanting to advance social justice in our classrooms, in our practices, in our engagement with the world, various kinds of math folk—attracted to this working group for shared and individual reasons and purposes. And we had an *X*—through an experience of sharing, an airing of issues and ideas, interest in and respect for and of one another. Yet all 19 participants still wanting to establish ownership, wanting our image observed within it, our influence to be strong—to be most strong for some; merely be there for others. But it is an *X* and it is amazing in its own right—our shared creation surprising us by its character—by its own intrinsic nature that we do not see ourselves as having moulded. Perhaps it was the combination of all of that intellectual energy. Perhaps it was the manifestation of social justice in that room and in our discussion.

As we excitedly exclaim over this wondrous thing, having created it, we then start to poke it, sometimes gently, just to see what it is. It starts to collapse. It is an *X*—in our strug-

gle to be closest to it, to hold it the longest, to impart our own wisdom upon it, we almost forget—it is *our X*. Our *X* of our shared experience, our love, the concrete expression of our love for one another and more generally, a statement about our hope for the future, for humanity. It came from our collective belief that we, individually and together can bring something better to the world. In particular, we love this *X*, we don't want to be the one to destroy it by over-exposure to conflict between participants. What we do want is to impart to it all that is the best in each of us, with a conscious emphasis on the moral construct of best.

So we calm and relax ourselves, in order to fall back into our more gentle struggles of trying to impart to this, now *Y*, of our collective making, all those pet ideals we still carry and still unsure thoughts of how the other feels.

Who is the other? I don't know but I think I want to focus on the us.

I hope as our *Y* develops that it reflects the love that created it. I hope that it doesn't suffer too much from struggles those 19 participants indulge in by trying to have this *Y* be in their own image. I don't want another to be told that doors are closing unless they do the math—how many were lied to by these words? Or was it always the truth, as words become realities by their very utterance. And what of the math they must do? It is all a prescription, but whose prescription?

Trying to protect my religion (religion of mathematics, god is mathematics), I say *it* is the truth—there *is* a right answer. Yes, through my lens there is *a* truth and *an* answer, but I mustn't forget that there was a question and the decision on what the question should be, is all about subjectivity. About I, me, my lens, my culture and my values. If I want to defend my god then I need to realize, accept and embrace that this god is indifferent to my subjective choices—that anyone's choice may be as legitimate, and any other's question as pressing to answer.

How does the creation of *Y* impact my practice, what will it look like in my room?

It isn't my room, my classroom; it is our room, our classroom. Where room needs to be made for us, for you and for me, but most importantly for the dynamic interaction that requires a positive space for the development of what will become us. It is a room in which I hope to share some information with the other while keeping my eyes firmly open to what the other has to share with me; and in this I hope there is space created for us, in any room, but especially the classroom.

Tensions among competing goals when teaching mathematics for social justice

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Jhonel: Teaching for social justice could be a monumental task. But, tensions arise when we fail to see the fluidity of this kind of teaching. Teaching for social justice is definitely

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